Tutorial

EURO Schedule with Excel
Do it yourself

Automatic group tables

Consideration of all UEFA rules
including fair play and ranking

Automatic assignment of teams in the knockout phase

Choice of national language

Choice of time zone

Direct comparison tables

Warning display if the order in a group is not clear

https://hermann-baum.de/excel/UEFA_EURO/en/

Contents

Goal setting

The Excel schedule should have the following skills:

1. Automatic update of the group table

After each entry of a match result the group table is automatically updated.

All UEFA rules are taken into account, including fair play and European Qualifiers Rankings.

The teams qualified for the round of 16 are highlighted in colour.

2. Automatic assignment of teams in the knockout phase

The teams, including the four best third-placed teams, are assigned automatically.

3. Multilingualism

The team names and all other texts can be displayed in English, Spanish, Italian, French, German and Dutch. In addition, translations in your native language can be added.

4. Choice of time zone

All time zones of the earth can be selected in a selection field, so that the date and time of the matches are displayed in your own local time.

5. Colored highlighting of the current day's matches

The date of the matches that take place today is highlighted in color.

6. Colored highlighting of missing entries

If matches have already taken place in the past few days and no results have been entered, the input fields are highlighted in color.

7. Notice if an invalid tie was entered in the knockout phase

The matches in the knock-out phase will be decided by a penalty shoot-out at the latest. If a draw is entered for both the match result and the penalty shoot-out, a corresponding note will appear below the entry fields.

8. Display of all cases of direct comparison in the group stage

If at the end of the group stage two or three teams are tied in points, a direct comparison takes place in which only the matches of these teams against each other are taken into account.

These evaluations are shown on a separate worksheet.

9. Easier adaptation to future European Championships

The formulas are kept flexible enough to save a lot of work when adapting them for the next European Championship.

Hint:

All formulas refer to the ten Excel files that can be downloaded in addition to this tutorial (ZIP file).

There may be minor deviations compared to the most recent schedule (e.g. due to later changes in the "Language" worksheet).

1 Structure of the schedule

In the first step we create the template for the schedule. All fields remain empty at first because they later contain a formula that inserts the language-dependent content depending on the language selected. We call this first worksheet "**EURO**". It looks like this:

The entries that can already be seen here are for illustration purposes only. They will be replaced by formulas later.

The columns from column AA and the rows from row 94 are hidden.

If you want to skip this step, you will find the finished result in the file named „**EURO_Tut_1.xlsx**".

2   Choice of language

Before entries can be made anywhere, we need a worksheet with the translations of all team names and all labels into the various national languages. We are therefore creating a new worksheet with the name "**Language**". The illustration on the next two pages shows what this worksheet looks like.

Choose language — Click here and choose language: english →

	english	1
	spanish	0
	italian	0
	french	0
	german	0
	dutch	0
	my language	0

Rank		english	spanish	italian	french	german	dutch	my language
1	Belgium	Belgium	Bélgica	Belgio	Belgique	Belgien	België	
2	Italy	Italy	Italia	Italia	Italie	Italien	Italië	
3	England	England	Inglaterra	Inghilterra	Angleterre	England	Engeland	
4	Germany	Germany	Alemania	Germania	Allemagne	Deutschland	Duitsland	
5	Spain	Spain	España	Spagna	Espagne	Spanien	Spanje	
6	Ukraine	Ukraine	Ucrania	Ucraina	Ukraine	Ukraine	Oekraïne	
7	France	France	Francia	Francia	France	Frankreich	Frankrijk	
8	Poland	Poland	Polonia	Polonia	Pologne	Polen	Polen	
9	Switzerland	Switzerland	Suiza	Svizzera	Suisse	Schweiz	Zwitserland	
10	Croatia	Croatia	Croacia	Croazia	Croatie	Kroatien	Kroatië	
11	Netherlands	Netherlands	Países Bajos	Paesi Bassi	Pays-Bas	Niederlande	Nederland	
12	Russia	Russia	Rusia	Russia	Russie	Russland	Rusland	
13	Portugal	Portugal	Portugal	Portogallo	Portugal	Portugal	Portugal	
14	Turkey	Turkey	Turquía	Turchia	Turquie	Türkei	Turkije	
15	Denmark	Denmark	Dinamarca	Danimarca	Danemark	Dänemark	Denemarken	
16	Austria	Austria	Austria	Austria	Autriche	Österreich	Oostenrijk	
17	Sweden	Sweden	Suecia	Svezia	Suède	Schweden	Zweden	
18	Czechia	Czechia	Rep. Checa	Rep. Ceca	Rép. tchèque	Tschechien	Tsjechië	
19	Wales	Wales	Gales	Galles	Pays de Galles	Wales	Wales	
20	Finland	Finland	Finlandia	Finlandia	Finlande	Finnland	Finland	
21	Serbia	Serbia	Serbia	Serbia	Serbie	Serbien	Servië	
22	Slovakia	Slovakia	Eslovaquia	Slovacchia	Slovaquie	Slowakei	Slowakije	
23	Ireland	Ireland	Irlanda	Irlanda	Irlande	Irland	Ierland	
24	Iceland	Iceland	Islandia	Islanda	Islande	Island	IJsland	
25	Northern Ireland	Northern Ireland	Irlanda del Norte	Irlanda del Nord	Irlande du Nord	Nordirland	Noord-Ierland	
26	Norway	Norway	Noruega	Norvegia	Norvège	Norwegen	Noorwegen	
27	Kosovo	Kosovo	Kosovo	Kosovo	Kosovo	Kosovo	Kosovo	
28	Greece	Greece	Grecia	Grecia	Grèce	Griechenland	Griekenland	
29	Scotland	Scotland	Escocia	Scozia	Écosse	Schottland	Schotland	
30	North Macedonia	North Macedonia	Macedonia Norte	Nord Macedonia	Macédoine Nord	Nordmazedonien	Noord-Macedonië	
31	Hungary	Hungary	Hungría	Ungheria	Hongrie	Ungarn	Hongarije	
32	Slovenia	Slovenia	Eslovenia	Slovenia	Slovénie	Slowenien	Slovenië	
33	Romania	Romania	Rumanía	Rumania	Roumanie	Rumänien	Roemenië	
34	Georgia	Georgia	Georgia	Georgia	Géorgie	Georgien	Georgië	
35	Albania	Albania	Albania	Albania	Albanie	Albanien	Albanië	
36	Bosnia a. Herzeg.	Bosnia a. Herzeg.	Bosnia y Herzeg.	Bosnia ed Erzeg.	Bosnie-Herzég.	Bosnien/Herzeg.	Bosnië/Herzegow.	
37	Bulgaria	Bulgaria	Bulgaria	Bulgaria	Bulgarie	Bulgarien	Bulgarije	
38	Luxembourg	Luxembourg	Luxemburgo	Lussemburgo	Luxembourg	Luxemburg	Luxemburg	
39	Belarus	Belarus	Bielorrusia	Bielorussia	Bélarus	Weißrussland	Wit-Rusland	
40	Cyprus	Cyprus	Chipre	Cipro	Chypre	Zypern	Cyprus	
41	Armenia	Armenia	Armenia	Armenia	Arménie	Armenien	Armenië	
42	Israel	Israel	Israel	Israele	Israël	Israel	Israël	
43	Kazakhstan	Kazakhstan	Kazajistán	Kazakistan	Kazakhstan	Kasachstan	Kazachstan	
44	Montenegro	Montenegro	Montenegro	Montenegro	Monténégro	Montenegro	Montenegro	
45	Azerbaijan	Azerbaijan	Azerbaiyán	Azerbaijan	Azerbaïdjan	Aserbaidschan	Azerbeidzjan	
46	Andorra	Andorra	Andorra	Andorra	Andorre	Andorra	Andorra	
47	Lithuania	Lithuania	Lituania	Lituania	Lituanie	Litauen	Litouwen	
48	Estonia	Estonia	Estonia	Estonia	Estonie	Estland	Estland	
49	Faroe Islands	Faroe Islands	Islas Feroe	Isole Faroe	Îles Féroé	Färöer Inseln	Faeröer	
50	Gibraltar	Gibraltar	Gibraltar	Gibilterra	Gibraltar	Gibraltar	Gibraltar	
51	Moldova	Moldava	Moldava	Moldava	Moldavie	Moldavien	Moldavië	
52	Malta	Malta	Malta	Malta	Malte	Malta	Malta	
53	Latvia	Latvia	Letonia	Lettonia	Lettonie	Lettland	Letland	
54	Liechtenstein	Liechtenstein	Liechtenstein	Liechtenstein	Liechtenstein	Liechtenstein	Liechtenstein	
55	San Marino	San Marino	San Marino	San Marino	Saint-Marin	San Marino	San Marino	
	0							
	0							
	0							
	0							

Venues

Venue no.		english	spanish	italian	french	german	dutch	my language
1	London	London	Londres	Londra	Londres	London	Londen	
2	Baku	Baku	Bakú	Baku	Bakou	Baku	Baku	
3	Munich	Munich	Múnich	Monaco	Munich	München	München	
4	Rome	Rome	Roma	Roma	Rome	Rom	Rome	
5	Glasgow	Glasgow	Glasgow	Glasgow	Glasgow	Glasgow	Glasgow	
6	Saint Petersburg	Saint Petersburg	San Petersburgo	San Pietroburgo	Saint-Pétersbourg	Sankt Petersburg	St. Petersburg	
7	Copenhagen	Copenhagen	Copenhague	Copenaghen	Copenhague	Kopenhagen	Kopenhagen	
8	Seville	Seville	Sevilla	Siviglia	Séville	Sevilla	Sevilla	
9	Amsterdam	Amsterdam	Amsterdam	Amsterdam	Amsterdam	Amsterdam	Amsterdam	
10	Budapest	Budapest	Budapest	Budapest	Budapest	Budapest	Boedapest	
11	Bucharest	Bucharest	Bucarest	Bucarest	Bucarest	Bukarest	Boekarest	
12	Grimbergen	Grimbergen	Grimbergen	Grimbergen	Grimbergen	Grimbergen	Grimbergen	
13	Bilbao	Bilbao	Bilbao	Bilbao	Bilbao	Bilbao	Bilbao	
14	Dublin	Dublin	Dublín	Dublino	Dublin	Dublin	Dublin	
15	0							
16	0							

Titles

	english	spanish	italian	french	german	dutch	my language
European Championship 2020/2021	European Championship 2020/2021	Campeonato de Europa 2020/2021	Campionato Europeo 2020/2021	Championnat européen 2020/2021	EURO 2020/2021	EURO 2020/2021	
Direct comparisons	Direct comparisons	Comparaciones directas	Confronti diretti	Comparaisons directes	Direkte Vergleiche	Onderscheidend vergelijk	
Fair play	Fair play	Fair-play	Fair play	Fair-play	Fair-Play	Eerlijk spel	
Choose time zone	Choose time zone	Selección de zona horaria	Selezione del fuso orario	Choix du fuseau horaire	Wahl der Zeitzone	Kies tijdzone	
Matches	Matches	Partidos	Partite	Matchs	Spiele	Wedstrijden	
Choose language	Choose language	Elección de la lengua	Scelta della lingua	Choix de langue	Wahl der Sprache	Kies taal	
Assignment of the group third in the round of 16	Assignment of the group third in the round of 16	Asignación del grupo tercero en los octavos de final	Assegnazione del terzo gruppo agli ottavi di finale	Attribution de la troisième place du groupe en huitième de finale	Zuordnung der Gruppendritten im Achtelfinale	Toewijzing van beste derde plaatsen naar de achtste finales	
Groups	Groups	Grupos	Gruppi	Groupes	Gruppen	Groepen	

Illustration continued on next page

Captions

#	Idx	English	English	Español	Italiano	Français	Deutsch	Nederlands
93		Group	Group	Grupo	Gruppo	Groupe	Gruppe	Groep
94		Grp	Grp	Grp	Grp	Grp	Grp	Grp
95		Pts	Pts	Pt	Pt	Pt	Pkt	Pt
96		GD	GD	Dif	Diff	Diff	TD	DS
97		Goals	Goals	Goles	Gol	Buts	Tore	Doelpunten
98		Wins	Wins	ganó	vinto	gagné	Siege	Gew.
99		Pen	Pen	Pen	Pen	T.a.b.	Elfm	Pen.
100		Pts Goals	Pts Goals	Pt Goles	Pt Gol	Pt Buts	Pkt Tore	Ptn. Doelp.
101		Total	Total	Total	Totale	Total	Gesamt	Totaal
102		Fair Play	Fair Play	Fair Play	Fair Play	Fair-Play	Fair-Play	Eerlijk spel
103		Not clear	Not clear	No es claro	Non chiaro	Pas clair	Nicht klar	Niet duidelijk
104		Dir. Conp.(2)	Dir. Conp.(2)	Comp. dir.(2)	Confr. dir.(2)	Comp. dir.(2)	Dir. Vergl.(2)	Dir. Vergl.(2)
105		Dir. Comp.(3)	Dir. Comp.(3)	Comp. dir.(3)	Confr. dir.(3)	Comp. dir.(3)	Dir. Vergl.(3)	Dir. Vergl.(3)
106		Final table	Final table	Mesa final	Tavolo finale	Tableau final	Schlusstabelle	Eindstand groep
107		European Champion 2021:	European Champion 2021:	Campeón de Europa 2021:	Campione d'Europa 2021:	Champion d'Europe 2021:	Europameister 2021:	Europees Kampioen 2021:
108	1	Round of 16 - 1	Round of 16 - 1	Octavos de final 1	Ottavi di finale 1	huitièmes de finale 1	Achtelfinale 1	Achtste finale 1
109	2	Round of 16 - 2	Round of 16 - 2	Octavos de final 2	Ottavi di finale 2	huitièmes de finale 2	Achtelfinale 2	Achtste finale 2
110	3	Round of 16 - 3	Round of 16 - 3	Octavos de final 3	Ottavi di finale 3	huitièmes de finale 3	Achtelfinale 3	Achtste finale 3
111	4	Round of 16 - 4	Round of 16 - 4	Octavos de final 4	Ottavi di finale 4	huitièmes de finale 4	Achtelfinale 4	Achtste finale 4
112	5	Round of 16 - 5	Round of 16 - 5	Octavos de final 5	Ottavi di finale 5	huitièmes de finale 5	Achtelfinale 5	Achtste finale 5
113	6	Round of 16 - 6	Round of 16 - 6	Octavos de final 6	Ottavi di finale 6	huitièmes de finale 6	Achtelfinale 6	Achtste finale 6
114	7	Round of 16 - 7	Round of 16 - 7	Octavos de final 7	Ottavi di finale 7	huitièmes de finale 7	Achtelfinale 7	Achtste finale 7
115	8	Round of 16 - 8	Round of 16 - 8	Octavos de final 8	Ottavi di finale 8	huitièmes de finale 8	Achtelfinale 8	Achtste finale 8
116	1	Quarter final 1	Quarter final 1	Cuartos de final 1	Quarti di finale 1	Quarts de finale 1	Viertelfinale 1	Kwart finale 1
117	2	Quarter final 2	Quarter final 2	Cuartos de final 2	Quarti di finale 2	Quarts de finale 2	Viertelfinale 2	Kwart finale 2
118	3	Quarter final 3	Quarter final 3	Cuartos de final 3	Quarti di finale 3	Quarts de finale 3	Viertelfinale 3	Kwart finale 3
119	4	Quarter final 4	Quarter final 4	Cuartos de final 4	Quarti di finale 4	Quarts de finale 4	Viertelfinale 4	Kwart finale 4
120		Semi-Final 1	Semi-Final 1	Semifinales 1	Semifinali 1	Demi-finales 1	Halbfinale 1	Halve finale 1
121		Semi-Final 2	Semi-Final 2	Semifinales 2	Semifinali 2	Demi-finales 2	Halbfinale 2	Halve finale 2
122		Third place	Third place	Tercer lugar	Terzo posto	Troisième place	Dritter Platz	Derde plaats
123		Final	Final	Final	Finale	Final	Finale	Finale
124		Bonus	Bonus	Prima	Bonus	Prime	Bonus	Bonus
125		Penalty shoot-out:	Penalty shoot-out:	Tiro de penalti:	Tiro di rigore:	Tirs au but :	Elfmeterschießen:	Penalties:
126		Third in the group	Third in the group	Tercero del grupo	Terzo nel gruppo	Troisième du groupe	Gruppendritte	Derde van de groep
127		Group combination:	Group combination:	Combinación de grupos:	Combinazione di gruppi:	Combinaison de groupes :	Gruppenkombination:	Groepscombinatie:
128		Not qualified:	Not qualified:	No está cualificado:	Non qualificato:	Non qualifié :	Nicht qualifiziert:	Niet gekwalificeerd
129		Group combination:	Group combination:	Combinación de grupos:	Combinazione di gruppi:	Combinaison de groupes :	Gruppen-kombination:	Groeps-combinatie:
130 / 131		First in Group against third of Group	First in Group against third of Group	Primero del Grupo contra la tercera parte del Grupo	Primo nel gruppo contro il terzo del gruppo	Premier du groupe contre le troisième du groupe	Erster der Gruppe gegen Dritten der Gruppe	Eerste in groep tegen derde in groep
132		The red dot •	The red dot •	El punto rojo •	Il punto rosso •	Le point rouge •	Der rote Punkt •	De rode stip •
133	0							

Message

#	English	English	Español	Italiano	Français	Deutsch	Nederlands
135	Groups with fair play valuation:	Groups with fair play valuation:	Grupos con valoración de fair play:	Gruppi con valutazione fair play:	Groupes avec valorisation fair-play :	Gruppen mit Fair-Play-Wertung:	Groepen met Fair Play-classificatie:
136	The placement has been clarified in all groups.	The placement has been clarified in all groups.	La ubicación se ha aclarado en todos los grupos.	Il posizionamento è stato chiarito in tutti i gruppi.	Le placement a été clarifié dans tous les groupes.	Die Platzierung ist in allen Gruppen geklärt.	De rangschikking is verduidelijkt in alle groepen.
137	and	and	y	e	et	und	en
138	Invalid result!	Invalid result!	¡Resultado no válido!	Risultato non valido	Résultat invalide !	Unzulässiges Ergebnis!	Ongeldig resultaat!
139	If the fair-play ranking decides the better position in the group for two teams, a "1" is entered here for the better team.	If the fair-play ranking decides the better position in the group for two teams, a "1" is entered here for the better team.	Si la clasificación de juego limpio decide la mejor posición en el grupo para dos equipos, se introduce aquí un "1" para el mejor equipo.	Se la classifica fair-play decide la migliore posizione nel gruppo per due squadre, un "1" viene inserito qui per la squadra migliore.	Si le classement fair-play décide de la meilleure position dans le groupe pour deux équipes, se inscrit ici pour la meilleure équipe.	Entscheidet bei zwei Mannschaften die Fair-Play-Wertung über die bessere Platzierung in der Gruppe, so wird hier für die bessere Mannschaft eine "1" eingetragen.	Als de Fair Play-classificatie uitsluitsel moet geven over de plaatsing in de groep voor twee teams, wordt hier een "1" ingevuld voor het hoger geklassificeerde team.
140	Click here and choose time zone:	Click here and choose time zone:	Seleccione la zona horaria:	Seleziona il fuso orario:	Sélectionnez le fuseau horaire :	Hier klicken und Zeitzone wählen:	Klik hier en kies de tijdzone:
141	Time zone of the host country:	Time zone of the host country:	Zona horaria del país anfitrión:	Fuso orario del paese ospitante:	Fuseau horaire de l'hôte pays hôte :	Zeitzone des Gastgeberlandes:	Tijdzone van het gastland:
142	Click here and choose language:	Click here and choose language:	Haga clic aquí y elija el idioma:	Clicca qui e scegli la lingua:	Cliquez ici et choisissez la langue :	Hier klicken und Sprache wählen:	Klik hier en kies de taal:
143	-	-	-	-	-	:	:
144	For daylight saving time, the time zone must be adjusted accordingly (e.g. UTC+2 instead of UTC+1)	For daylight saving time, the time zone must be adjusted accordingly (e.g. UTC+2 instead of UTC+1)	Para el horario de verano, la zona horaria debe ajustarse en consecuencia (por ejemplo, UTC+2 en lugar de UTC+1)	Per l'ora legale, il fuso orario deve essere regolato di conseguenza (ad esempio UTC+2 invece di UTC+1)	Pour l'heure d'été, le fuseau horaire doit être ajusté en conséquence (par exemple, UTC+2 au lieu de UTC+1)	Bei Sommerzeit muss die Zeitzone entsprechend angepasst werden (z. B. UTC+2 statt UTC+1).	De tijdzone moet dienovereenkomstig worden aangepast voor de zomertijd (b.v. UTC+2 in plaats van UTC+1).
145	Qualification for the Round of 16	Qualification for the Round of 16	Clasificación para los octavos de final	Qualificazione per gli ottavi di finale	Qualification pour les 16èmes de finale	Qualifikation zum Achtelfinale	Kwalificatie voor de achtste finales
146	Criteria for placement within the groups:	Criteria for placement within the groups:	Criterios de colocación en los grupos:	Criteri per il posizionamento all'interno dei gruppi:	Critères de placement dans les groupes :	Kriterien für die Platzierung innerhalb der Gruppen:	Voorwaarden voor plaatsing in de groepen:
147	1. points in all group matches	1. points in all group matches	1. puntos de todos los partidos del grupo	1. punti da tutte le partite del gruppo	1. points de tous les matches de groupe	1. Punkte aus allen Gruppenspielen	1. punten uit de groepswedstrijden
148	2. points in the direct encounters	2. points in the direct encounters	2. puntos de los encuentros directos	2. punti degli incontri diretti	2. les points des rencontres directes	2. Punkte der direkten Begegnungen	2. punten uit de betreffende rechtstreekse
149	3. goal difference in the direct encounters	3. goal difference in the direct encounters	3. diferencia de goles en los encuentros directos	3. differenza di gol negli scontri diretti	3. différence de buts dans les rencontres directes	3. Tordifferenz aus den Direkt-Begegnungen	3. doelsaldo uit de betreffende rechtstreekse
150	4. number of goals scored in the direct encounters	4. number of goals scored in the direct encounters	4. número de goles marcados en los encuentros directos	4. numero di gol segnati negli scontri diretti	4. nombre de buts marqués dans les rencontres directes	4. Anzahl der in den Direkt-Begegnungen erzielten Tore	4. doelpunten vóór uit de betreffende rechtstreekse
151	5. reapplication of criterion 2 to 4 only to the teams that were not	5. reapplication of criterion 2 to 4 only to the teams that were not	5. volver a aplicar el criterio 2 - 4 a los equipos que no se	5. riapplicazione del criterio 2 - 4 solo alle squadre che non erano	5. Réapplication des critères 2 - 4 uniquement aux équipes qui	5. Nochmalige Anwendung der Krit. 2 - 4 nur auf die Mannschaften,	5. her-toepassing van de criteria 2-4 voor die teams tussen
152	distinguishable in the 1st run.	distinguishable in the 1st run.	distinguieron en la 1ª vuelta.	distinguibili nella 1a manche.	n'ont pas pu être distinguées lors du 1er passage.	die beim 1. Durchlauf nicht unterscheidbar waren	wie in eerste instantie geen beslissing kon vallen.
153	6. goal difference in all group matches	6. goal difference in all group matches	6. diferencia de goles en todos los partidos del grupo	6. differenza di gol di tutte le partite del gruppo	6. différence de buts de tous les matches de groupe	6. Tordifferenz aus allen Gruppenspielen	6. doelsaldo uit alle groepswedstrijden
154	7. number of goals scored in all group matches	7. number of goals scored in all group matches	7. número de goles marcados en todos los partidos del grupo	7. numero di gol segnati in tutte le partite del gruppo	7. nombre de buts marqués lors de tous les matches de groupe	7. Anzahl der erzielten Tore aus allen Gruppenspielen	7. aantal doelpunten vóór uit alle groepswedstrijden
155	8. number of wins in all group matches	8. number of wins in all group matches	8. número de victorias de todos los partidos del grupo	8. numero di vittorie di tutte le partite del gruppo	8. nombre de victoires sur l'ensemble des	8. Anzahl der Siege aus allen Gruppenspielen	8. aantal keren winst van alle groepswedstrijden
	9. fair-play ranking or penalty shoot-out in the	9. fair-play ranking or penalty shoot-out in	9. clasificación de juego limpio o tanda	9. classifica fair-play o rigori nell'ultima	9. classement fair-play ou séance de tirs	9. Fair-Play-Wertung bzw. Elfmeterschießen	9. Fair play scoren of penalty shoot-out in de

It contains the 55 nations of UEFA.

For a particular group (e.g. Group A), we later select four nations by entering four of the consecutive numbers (Rank) in the group table, e.g. 14 for Turkey, 2 for Italy, 19 for Wales and 9 for Switzerland (see chapter 4.1). This gives us maximum flexibility for future schedules as well.

In the "my language" column, a user can enter all translations in their own native language and then have a match schedule completely in their native language.

If you want to save yourself the work of creating this worksheet, you will find the finished result in the file named „**EURO_Tut_2.xlsx**".

The following describes how this Excel sheet is created and how it works.

First, all texts must be entered in columns B, D, F, G, H, I, J and K.
Column D will play an important role - see chapter 4.

A selection field is setup in cell **N1**: Menu „Data → Data Tools → Data Validation".
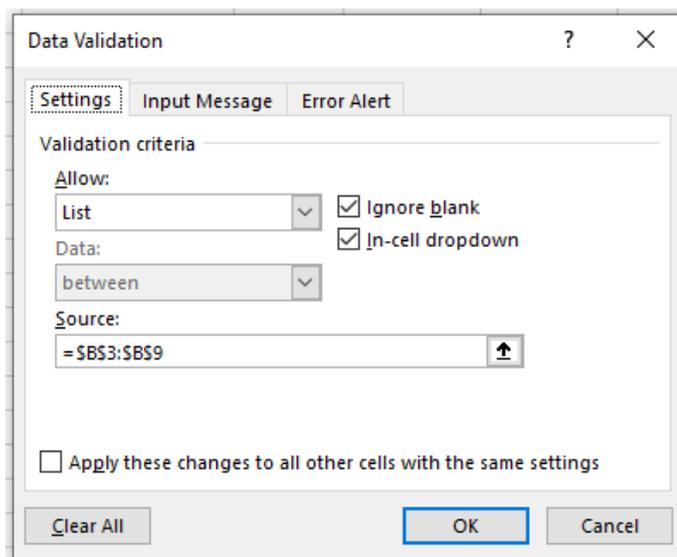
We choose the option „List". We specify the range **$B$3:$B$9** as the source for the list elements. In this range we enter the languages: „english, spanish, italian, ...".

Now we start with the first formulas. In cell **C3** we enter the formula **=IF($N$1=B3,1,0)**. This means: if the language "english" was selected in cell **N1**, a „1" appears in **C3**, otherwise a „0". We now copy this formula down to cell **C9** (move the mouse to the lower right corner until the mouse pointer turns into a small black cross, then drag it down with the left mouse button pressed).

A „1" now appears to the right of the language that was selected in field **M1**. Unfortunately, however, someone can also click cell **M1** and then press the "Delete" key. Then no language is selected at all. In this case, the language "english" should be selected (default value).
To make that happen, let's change the formula in cell **C3**:
=IF(AND($N$1<>B4,$N$1<>B5,$N$1<>B6,$N$1<>B7,$N$1<>B8,$N$1<>B9),1,0)
That means: If none of the other languages is selected, then there should be a „1" for "english".

In column E we now enter formulas which copy the texts of the selected language into column E.
We start with cell **E5**:

=IF($C$3,F5,IF($C$4,G5,IF($C$5,H5,IF($C$6,I5,IF($C$7,J5,IF($C$8,K5,IF(L5<>"",L5,F5)))))))

The formula starts with **=IF($C$3,F5,...** It should actually be there **=IF($C$3=1,F5,...**
If there is a „1" in **C3**, the English text from **F5** should be copied into column E. Since Excel regards a „1" as
TRUE and a „0" as FALSE, it is sufficient to write **IF($C$3,** here.

If there is a „1" in **C3** (**C3** is TRUE), the text from **F5** is adopted in **E5**, otherwise there is another IF condition:
IF($C$4,G5,... If **C4** is 1, the Spanish text is copied from cell **G5** to **E5**, and so on.

The last part of the formula **IF(L5<>"",L5,F5)** means: If the 'my language' option is selected and there is no text
in column L, the English text will be used.

We copy the formula in **E5** down to cell **E160**. In the lines where no translations take place, we delete the
formulas, e.g. in **E64**, **E65**, **E83**, ... The dollar signs in the formula are important: **$C$3** should remain
unchanged in the next line, but **F5** should become **F6**, **F7**, etc.

The auxiliary columns B, C and E can be hidden later.

As a first test, we connect the cells **E1** to **U1** on the worksheet "EURO" and enter the formula
=Language!$E$84 . The title of our match schedule now appears in the selected language.

The current status of the schedule can be found in the file named „**EURO_Tut_2.xlsx**".

3 Choice of time zone

We will create a new worksheet called "**TimeZone**".

	A	B	C	D	E	F	G	H	I	J	K	L
1			**Choose time zone**				Click here and choose time zone:	UTC + 2	←			
2												
3												
4		-12	UTC - 12	IDLW	-0,5		For daylight saving time, the time zone must be adjusted accordingly (e.g. UTC+2 instead of UTC+1)				Time zone of the host country:	UTC + 2
5		-11	UTC - 11		-0,458							
6		-10	UTC - 10	HAST	-0,417							
7		-9	UTC - 9	AKST	-0,375							
8		-8	UTC - 8	PST	-0,333							
9		-7	UTC - 7	MST	-0,292							
10		-6	UTC - 6	CST	-0,25							
11		-5	UTC - 5	EST	-0,208							
12		-4	UTC - 4	AST	-0,167							
13		-3,5	UTC - 3:30	NST	-0,146							
14		-3	UTC - 3		-0,125							
15		-2	UTC - 2		-0,083							
16		-1	UTC - 1		-0,042							
17		0	UTC	WET	0							
18		1	UTC + 1	CET	0,0417							
19		2	UTC + 2	EET/CEST	0,0833							
20		3	UTC + 3	AST/EAT	0,125							
21		3,5	UTC + 3:30	IRT	0,1458							
22		4	UTC + 4		0,1667							
23		4,5	UTC + 4:30		0,1875							
24		5	UTC + 5		0,2083							
25		5,5	UTC + 5:30	IST	0,2292							
26		5,75	UTC + 5:45		0,2396							
27		6	UTC + 6		0,25							
28		6,5	UTC + 6:30		0,2708							
29		7	UTC + 7	ICT	0,2917							
30		8	UTC + 8	CNST	0,3333							
31		9	UTC + 9	JST	0,375							
32		9,5	UTC + 9:30	ACST	0,3958							
33		10	UTC + 10		0,4167							
34		10,5	UTC + 10:30		0,4375							
35		11	UTC + 11		0,4583							
36		12	UTC + 12	IDLE/NZST	0,5							
37		12,75	UTC + 12:45		0,5313							
38		13	UTC + 13		0,5417							
39		14	UTC + 14		0,5833							
40												

We enter the formula **=Language!$E$87** in cell **A1** and merge cells **A1** to **F1**.

In column C we enter the currently existing time zones. We start with cell **C4**.

In cell **H1** we create a selection field that contains exactly this list of time zones (range **$C$4:$C$39**). The additional designations in column D are for convenience only and have no further functionality.

The numbers in the range **$B$4:$B$39** are decisive for the calculations of date and time. These are the shifts in hours compared to the coordinated universal time UTC. Central European Time CET, for example, is UTC+1. These numbers are not generated by a formula, but entered manually.

The kick-off times for the individual matches are always given by UEFA in local time. So that this schedule can also be easily adapted for future European Championships, we connect cells **L5** and **L6** and create the same selection field here as in **H1**. The time zone of the host country should be entered here. The columns from column K onwards will be hidden later.

As the EURO 2020/2021 was held in different countries, the kick-off times were given by UEFA in CEST (Central European Summer Time). Therefore we select the time zone UTC+2 in this second selection field.

We will take this time zone into account in the conversion formulas for the various local times. In this way, you only need to enter the official kick-off times of the host country for each European Championship and select the time zone of the host country in the second selection field. Everything else is then calculated automatically (see Section 4.2).

In column B, the hour shifts are in a form that we can read. Excel saves the hours in fractions of a day in its date and time formats. So three hours would be 3/24 = 0.125.

In Excel, a complete date with time (a timestamp) is nothing more than a decimal number indicating the number of days that have passed since 01.01.1900, 00:00 hours. The whole days are in front of the comma, the digits after the comma indicate the fraction of a day. So these digits contain the hours, minutes and seconds.

If we add the decimal number 0.125 to a full Excel date, we have added three hours to it. That's exactly what we want to achieve when converting to another time zone.

In cell **E4** we enter the formula **=$B4/24** and copy it down to **E39**. So we have the corresponding decimal number for each time zone, which we have to add to a UTC time.

The cells **G4:I6** are merged and we enter the formula **=Language!$E$144**. Cell **G1** contains the formula **=Language!$E$140** and the merged cells **K5:K6** contain the formula **=Language!$E$141**.

We select the cells **C4** and **D4** and insert a conditional formatting with the formula **=$H$1=$C4**. The selected time zone should be coloured green. The formatting is transferred to all time zones in columns C and D with the help of the "Format painter".

Columns B and E will be hidden later.

The current status of the schedule can be found in the file named „**EURO_Tut_3.xlsx**".

4 Grouping and entry of the matches

The simplest way would be to enter the matches in the individual groups directly on the "EURO" worksheet. In order to achieve maximum flexibility and make it as convenient as possible to adapt the match schedule for future tournaments, we will include two intermediate steps.

In the first step, we make the grouping on an extra worksheet called "**Groups**". In the second step, we create an overview of the 51 matches of the tournament on a worksheet called "**Matches**". The transfer to the worksheet "EURO" is then done automatically with the help of formulas.

4.1 Grouping

We create a new worksheet called "**Groups**".

The names of the nations are already available in different languages on the "Language" worksheet. The grouping should now take place on the worksheet "Groups".

	Team	Team no.	Name
			A
	A1	14	Turkey
	A2	2	Italy
	A3	19	Wales
	A4	9	Switzerland
			B
	B1	15	Denmark
	B2	20	Finland
	B3	1	Belgium
	B4	12	Russia
			C
	C1	11	Netherlands
	C2	6	Ukraine
	C3	16	Austria
	C4	30	North Macedonia
			D
	D1	3	England
	D2	10	Croatia
	D3	29	Scotland
	D4	18	Czechia
			E
	E1	5	Spain
	E2	17	Sweden
	E3	8	Poland
	E4	22	Slovakia
			F
	F1	31	Hungary
	F2	13	Portugal
	F3	7	France
	F4	4	Germany

In column B we enter the abbreviations A1, A2, A3, ... F4.

In column C we enter the numbers from the list of nations on the worksheet "Language", i.e. 14 for Turkey, 2 for Italy, 19 for Wales, 9 for Switzerland etc.

For a new grouping, simply change these numbers.

In order for the corresponding names to appear automatically in column D, we enter the following formula in cell **D7**:

=VLOOKUP($C7,Language!$D$5:$E$63,2,0)

The **VLOOKUP** function has four parameters.

1st parameter: $C7

The content of C7 is searched for, in our example for "14".

2nd parameter: Language!$D$5:$E$63

This is the range where searches are made and found. The search column is always the first column on the far left.

3rd Parameter: 2

The result is to be found in the second column.

4th Parameter: 0

The "0" (or also "FALSE") has the effect that when searching in the search column, only exact matches are found.

So the formula looks in our list of nations to see which name belongs to number 14 and enters this name in cell **D7**.

We copy the formula down to cell **D35**.

4.2 Matches

We'll create a new worksheet called "**Matches**".

Match No.	Teams		Date (local time host)	Date (local time)	Venue no.	Venue	Team 1	Team 2	Order of headings
				Matches					
1	A1	A2	Fr, 11.06.2021 21:00	Fr, 11.06.2021 21:00	1	London	Turkey	Italy	
2	A3	A4	Sa, 12.06.2021 15:00	Sa, 12.06.2021 15:00	2	Baku	Wales	Switzerland	
3	B1	B2	Sa, 12.06.2021 18:00	Sa, 12.06.2021 18:00	7	Copenhagen	Denmark	Finland	
4	B3	B4	Sa, 12.06.2021 21:00	Sa, 12.06.2021 21:00	6	Saint Petersburg	Belgium	Russia	
5	C1	C2	So, 13.06.2021 18:00	So, 13.06.2021 18:00	11	Bucharest	Netherlands	Ukraine	
6	C3	C4	So, 13.06.2021 21:00	So, 13.06.2021 21:00	9	Amsterdam	Austria	North Macedonia	
7	D1	D2	So, 13.06.2021 15:00	So, 13.06.2021 15:00	1	London	England	Croatia	
8	D3	D4	Mo, 14.06.2021 15:00	Mo, 14.06.2021 15:00	5	Glasgow	Scotland	Czechia	
9	E1	E2	Mo, 14.06.2021 18:00	Mo, 14.06.2021 18:00	6	Saint Petersburg	Spain	Sweden	
10	E3	E4	Mo, 14.06.2021 21:00	Mo, 14.06.2021 21:00	8	Seville	Poland	Slovakia	
11	F1	F2	Di, 15.06.2021 18:00	Di, 15.06.2021 18:00	10	Budapest	Hungary	Portugal	
12	F3	F4	Di, 15.06.2021 21:00	Di, 15.06.2021 21:00	3	Munich	France	Germany	
13	A1	A3	Mi, 16.06.2021 18:00	Mi, 16.06.2021 18:00	2	Baku	Turkey	Wales	
14	A2	A4	Mi, 16.06.2021 21:00	Mi, 16.06.2021 21:00	1	London	Italy	Switzerland	
15	B1	B3	Do, 17.06.2021 18:00	Do, 17.06.2021 18:00	7	Copenhagen	Denmark	Belgium	
16	B2	B4	Mi, 16.06.2021 15:00	Mi, 16.06.2021 15:00	6	Saint Petersburg	Finland	Russia	
17	C1	C3	Do, 17.06.2021 21:00	Do, 17.06.2021 21:00	9	Amsterdam	Netherlands	Austria	
18	C2	C4	Do, 17.06.2021 15:00	Do, 17.06.2021 15:00	11	Bucharest	Ukraine	North Macedonia	
19	D1	D3	Fr, 18.06.2021 21:00	Fr, 18.06.2021 21:00	1	London	England	Scotland	
20	D2	D4	Fr, 18.06.2021 18:00	Fr, 18.06.2021 18:00	5	Glasgow	Croatia	Czechia	
21	E1	E3	Sa, 19.06.2021 21:00	Sa, 19.06.2021 21:00	8	Seville	Spain	Poland	
22	E2	E4	Fr, 18.06.2021 15:00	Fr, 18.06.2021 15:00	6	Saint Petersburg	Sweden	Slovakia	
23	F1	F3	Sa, 19.06.2021 15:00	Sa, 19.06.2021 15:00	10	Budapest	Hungary	France	
24	F2	F4	Sa, 19.06.2021 18:00	Sa, 19.06.2021 18:00	3	Munich	Portugal	Germany	
25	A4	A1	So, 20.06.2021 18:00	So, 20.06.2021 18:00	2	Baku	Switzerland	Turkey	
26	A2	A3	So, 20.06.2021 18:00	So, 20.06.2021 18:00	1	London	Italy	Wales	
27	B4	B1	Mo, 21.06.2021 21:00	Mo, 21.06.2021 21:00	7	Copenhagen	Russia	Denmark	
28	B2	B3	Mo, 21.06.2021 21:00	Mo, 21.06.2021 21:00	6	Saint Petersburg	Finland	Belgium	
29	C4	C1	Mo, 21.06.2021 18:00	Mo, 21.06.2021 18:00	11	Bucharest	North Macedonia	Netherlands	
30	C2	C3	Mo, 21.06.2021 18:00	Mo, 21.06.2021 18:00	9	Amsterdam	Ukraine	Austria	
31	D4	D1	Di, 22.06.2021 21:00	Di, 22.06.2021 21:00	1	London	Czechia	England	
32	D2	D3	Di, 22.06.2021 21:00	Di, 22.06.2021 21:00	5	Glasgow	Croatia	Scotland	
33	E4	E1	Mi, 23.06.2021 18:00	Mi, 23.06.2021 18:00	6	Saint Petersburg	Slovakia	Spain	
34	E2	E3	Mi, 23.06.2021 18:00	Mi, 23.06.2021 18:00	8	Seville	Sweden	Poland	
35	F4	F1	Mi, 23.06.2021 21:00	Mi, 23.06.2021 21:00	3	Munich	Germany	Hungary	
36	F2	F3	Mi, 23.06.2021 21:00	Mi, 23.06.2021 21:00	10	Budapest	Portugal	France	
1/8 finals									
37	2A	2B	Sa, 26.06.2021 18:00	Sa, 26.06.2021 18:00	9	Amsterdam			
38	1A	2C	Sa, 26.06.2021 21:00	Sa, 26.06.2021 21:00	1	London			
39	1C	3D/E/F	So, 27.06.2021 18:00	So, 27.06.2021 18:00	10	Budapest			
40	1B	3A/D/E/F	So, 27.06.2021 21:00	So, 27.06.2021 21:00	8	Seville			
41	2D	2E	Mo, 28.06.2021 18:00	Mo, 28.06.2021 18:00	7	Copenhagen			
42	1F	3A/B/C	Mo, 28.06.2021 21:00	Mo, 28.06.2021 21:00	11	Bucharest			
43	1D	2F	Di, 29.06.2021 18:00	Di, 29.06.2021 18:00	1	London			
44	1E	3A/B/C/D	Di, 29.06.2021 21:00	Di, 29.06.2021 21:00	5	Glasgow			
1/4 finals									
45	W41	W42	Fr, 02.07.2021 18:00	Fr, 02.07.2021 18:00	6	Saint Petersburg			
46	W40	W38	Fr, 02.07.2021 21:00	Fr, 02.07.2021 21:00	3	Munich			
47	W39	W37	Sa, 03.07.2021 18:00	Sa, 03.07.2021 18:00	2	Baku			
48	W43	W44	Sa, 03.07.2021 21:00	Sa, 03.07.2021 21:00	4	Rome			
1/2 finals									
49	W45	W46	Di, 06.07.2021 21:00	Di, 06.07.2021 21:00	1	London			
50	W47	W48	Mi, 07.07.2021 21:00	Mi, 07.07.2021 21:00	1	London			
Final									
51	W49	W50	So, 11.07.2021 21:00	So, 11.07.2021 21:00	1	London			

The idea is this:

We create an overview of all 51 matches on the "Matches" sheet. We number the matches from 1 to 51. These numbers are entered in column B. The order is determined by UEFA's usual scheme for running the tournament: first the group matches A1-A2, A3-A4, B1-B2, B3-B4 up to H2-H3, then the knock-out matches.

On the "EURO" worksheet, our actual schedule, there is a box for each match with the venue, date, teams and result. Each of these boxes is given one of these numbers at the top left, for example the number 21. The formulas in the box then cause the data of match 21 to be displayed in the box.

When adapting to a new European Championship, we are now free to decide where to place match No. 21 on the new schedule.

We first transfer the teams according to the match schedule published by UEFA into columns C and D of the "Matches" table. Match no. 21 would be E1-E3, i.e. team 1 of group E against team 3 of group E.

In the columns I and J, we do not enter the names directly, but a formula that provides us with the names automatically. Cell **C4** contains **A1**. So we have to look up the name of the first team for match no. 1 on the sheet "Groups" under **A1**. We'll find this name in cell **Groups!D7**.

The **VLOOKUP** function is available in Excel for such a lookup. Therefore we enter the following formula in cell **I4** on the "Matches" worksheet: **=VLOOKUP(C4,Groups!$B$7:$D$35,3,0)**

It is important that the first parameter **C4** does not contain any dollar signs. So we can copy this formula both to the right and down. We go to the lower right corner of cell **I4** until the cursor turns into a small black cross and drag the formula over the entire range **I4: J39**. Now the team names appear in this range in the currently selected language.

4.3   Kick-off times

In column **E** we enter the date and time for each match and format the cells so that the date and time are displayed.

In column **F**, the times should now be converted into the time zone that was selected in the cell **TimeZone!H1** .

We enter the following formula in **F4:**
=E4-VLOOKUP(TimeZone!$L$5,TimeZone!$C$4:$E$39,3,0)
+VLOOKUP(TimeZone!$H$1,TimeZone!$C$4:$E$39,3,0)

The first VLOOKUP function looks up the table of all time zones to see which decimal number (positive or negative) corresponds to the local time of the host country.
In the Germany (EURO 2024) example, this is the number 2/24 ≈ 0,0833.

This number (0.0833) is first subtracted from the time at the venue (**E4**). Two hours are subtracted. That means it is converted to UTC. The expression **VLOOKUP(TimeZone!$H$1,TimeZone!$C$4:$E$39,3,0)** is now used to look up in the table of all time zones which decimal number (positive or negative) still has to be added to get the desired local time.

We copy the formula in **F4** down to **F58**.
In cells **F40**, **F49**, **F54** and **F57** we delete the formula again.

4.4   Venues

It is most convenient if we only have to enter the number of the venue for each match. We look up these numbers in the worksheet "**Language**" in column **D** and enter them in column **G** on the worksheet "**Matches**".

We now enter the formula **=IFNA(VLOOKUP($G4,Language!$D$97:$E$112,2,0),"")** into cell **H4** and copy it down to cell **H58**. In lines 40, 49, 54 and 57 we delete the formula again. The names of the venues now appear in column H.

The **IFNA** function has two parameters:
1st parameter: the value that should appear in the cell
2nd parameter: what is to appear in the cell in the event of the error "#N/A" (no value available).

In our case, the cell remains empty if the VLOOKUP function finds nothing.

Columns B, F, H, I and J should be locked to prevent accidental overwriting. They are no longer changed. Columns C, D, E and G, on the other hand, will be readjusted at the next European Championship.

The current status of the schedule can be found in the file named "**EURO_Tut_4.xlsx**".

5   Matches of the group stage

We will enter the required formulas for the first group match and then copy these formulas to all other matches in the group stage and also in the Round of 16. The formulas for the quarter-finals, semi-finals and finals will be discussed and entered later (see chapter 8).

With the help of the conditional formatting, we will highlight the date fields that contain today's date in color. So you can see immediately which matches are taking place today.

Also with the help of the conditional formatting, we will highlight empty input fields of matches that are in the past. So you can see immediately which match results are still to be entered.

5.1   Formulas for the matches

We go to the "EURO" sheet and fill in the following formulas:
Cell **B9**: **=Language!$E$93&" A"**
Cell **E9**: **=Language!$E$93&" B"**
etc. until group F. This means that these headings always appear in the selected national language.

We have numbered all the matches from 1 to 51. We now enter these numbers according to the following scheme at the top left of the box with the match data:

Group A	Group B	Group C	Group D	Group E	Group F
1	3	5	7	9	11
2	4	6	8	10	12
13	15	17	19	21	23
14	16	18	20	22	24
25	27	29	31	33	35
26	28	30	32	34	36

The first match in group A is match no. 1. So we enter a „1" in cell **A11**. We enter a „2" in cell **A16**.

Round of 16:   41, 42, 40, 38, 39, 37, 43, 44 (explanation of the sequence in chapter 8)

Quarter-finals: 45, 46, 47, 48

Semi-finals: 49, 50

Finale: 51

So there is a 41 in cell **A52**, a 42 in cell **D52**, a 40 in cell **G52** etc.

Now we are going to fill the boxes for the matches of the group stage and the Round of 16 with content. Normally, we would look on the "Matches" sheet to see which data belong to match no. 1 and transfer this data to the box. With the help of the VLOOKUP function, we let this transfer of data take place automatically.

In cell **B11** we enter the formula **=VLOOKUP(A11,Matches!$B$4:$K$58,7,0)**. The search criterion in this formula is **A11**. In **A11** there is a 1.

This 1 is searched for on the "Matches" worksheet in the first column of the range **B$4:$K$58**. After it has been found in row 4 of the worksheet, the content in column 7 ("London") is returned by the VLOOKUP function.

"London" now appears as the desired venue in cell **B11**.

All other formulas have the same structure:

Cell **B12**:   **=VLOOKUP(A11,Matches!$B$4:$K$58,5,0)**
Cell **B13**:   **=VLOOKUP(A11,Matches!$B$4:$K$58,8,0)**
Cell **C13**:   **=VLOOKUP(A11,Matches!$B$4:$K$58,9,0)**

A11 is a relative reference (without the dollar sign). That is why we can mark range **B11:C13** on the "EURO" worksheet and copy it into the boxes for the other group matches. The data of the match with the corresponding number appear in each box. We try it out: For example, in cell **M16** we change the number from 10 to 9. Immediately we see match number 9 in this box.

This flexibility also makes it easier for us to arrange the matches for the Round of 16 (see Chapter 8).

5.2   Conditional formatting

We click on the merged cells **B12:C12** and select "Start → Conditional Formatting → New Rule" in the menu. We select the last option as the rule type and enter the formula **=INT(B12)=TODAY()**.
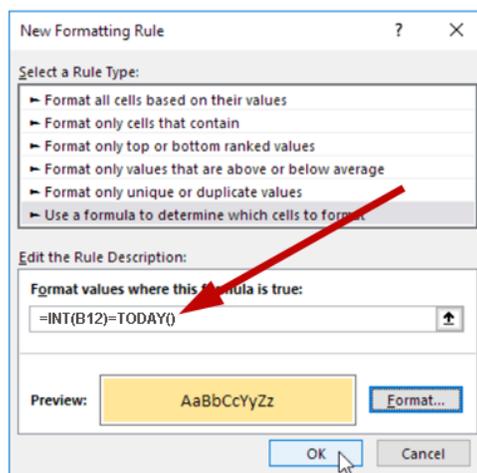
We click on "Format ..." and choose a yellow background. We click OK.

We now see the following window:
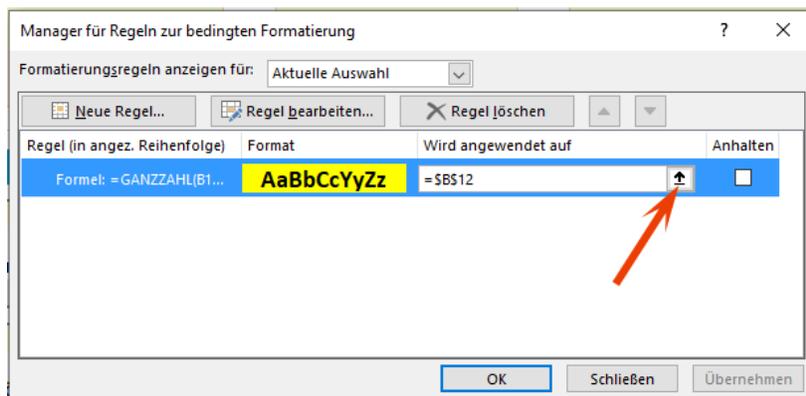
Clicking on the black up arrow opens an address window with the list of all addresses to which the rule is applied.
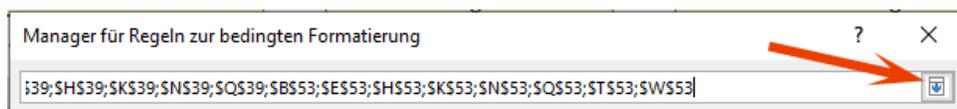
In the schedule, we now click on all other date fields of the group phase and the knockout round while holding down the CTRL key. Then we click on the down arrow in the address window and complete the process by clicking OK.

The conditional formatting of the input fields for the match results requires three formulas:

Cell **B14**:   =AND(B12<TODAY(),B14="")
The conditional formatting is extended to all **left-hand** input fields of the group stage and the knockout round, i.e. E14, H14, etc.

Cell **C14**:   =AND(B12<TODAY(),C14="")
The conditional formatting is extended to all **right-hand** input fields of the group stage and the round of 16, i.e. F14, I14, etc.

Cell **E65**:   =AND(C63<TODAY(),E65="")
Extension to all **right** input fields of the remaining knockout matches (quarter finals, semi finals and final).

With the help of the **data validation** we prevent nonsensical entries for the match results.

We mark all input fields and select in the menu Data → Data Tools → Data validation.
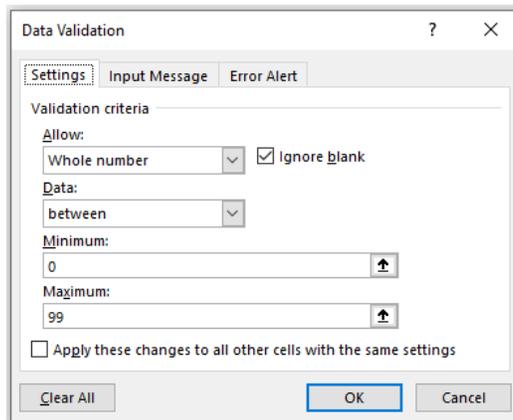
We only allow whole numbers between 0 and 99.

The current status of the schedule can be found in the file named "**EURO_Tut_5.xlsx**".

6   Fair play

In the event that two teams are tied at the end of the group stage in terms of the number of points, the goal difference and the number of goals scored and their direct encounter also ended in a draw, the fair play score or the European Qualifiers ranking will decide on the better placement.

In this case, it is sufficient if you enter a bonus point on the beneficiary team, which then brings this team to the better position. Alternatively, you can also enter negative values.

On a new worksheet with the name "**FairPlay**" we enable this entry of a bonus point.

	A	B	C	D	E	F	G
1							
2				**Fair play**			
3			If the fair-play ranking decides the better position in the group for two teams, a "1" is entered here for the better team.				
4							
5		**Group A**	**Bonus**		**Group D**	**Bonus**	
6		Turkey	0		England	0	
7		Italy	0		Croatia	0	
8		Wales	0		Scotland	0	
9		Switzerland	0		Czechia	0	
10							
11		**Group B**	**Bonus**		**Group E**	**Bonus**	
12		Denmark	0		Spain	0	
13		Finland	0		Sweden	0	
14		Belgium	0		Poland	0	
15		Russia	0		Slovakia	0	
16							
17		**Group C**	**Bonus**		**Group F**	**Bonus**	
18		Netherlands	0		Hungary	0	
19		Ukraine	0		Portugal	0	
20		Austria	0		France	0	
21		North Macedonia	0		Germany	0	
22							

Cell **B2**:   **=Language!$E$86**
Cell **B3**:   **=Language!$E$139**

In the cells to the left of the headings - i.e. in **A5**, **A11**, **A17**, **D5**, **D11** and **D17** - we enter the letter of the relevant group and hide it using the custom formatting "**;;;**" (three semicolons).

Cell **B5**:   **=Language!$E$93&" "&A5**
Cell **C5**:   **=Language!$E$124**

Cell **B6**:   **=VLOOKUP(A5&"1",Groups!$B$7:$D$35,3,0)**
Cell **B7**:   **=VLOOKUP(A5&"2",Groups!$B$7:$D$35,3,0)**
Cell **B8**:   **=VLOOKUP(A5&"3",Groups!$B$7:$D$35,3,0)**
Cell **B9**:   **=VLOOKUP(A5&"4",Groups!$B$7:$D$35,3,0)**

The last four formulas read the four team names from the "Groups" worksheet.

We enter zeros in the cells **C6** to **C9**.

Now we select the range **B5:C9** and copy it five times to the positions B11, B17, E5, E11 and E17.

The current status of the schedule can be found in the file named "**EURO_Tut_6.xlsx**".

7　Calculation of the group tables

The aim is to display the current status of the group table in range **B3:C6** on our schedule and to automatically enter the order of the teams in the final table **B46:B49**.

We create a new worksheet and call it "**GrpA**". It will look like this:

	Match		Score	Points	Pen. shoot	valid			Points	GD	For	Against	Wins	Coefficient	Dir. Comp. (3)	Dir. Comp. (2)	Dir. Comp. (4.3)	Dir. Comp. (4.3.2)	Dir. Comp. (4.2)	Fair play	match count > 0	Pts/GD/For	Penalty	Ranking
Group A																								
Turkey	-	Italy	0 - 3	0　3		1	1.	Turkey	0	-7	1	8	0	43.010,0000864	0	0	0	0	0	0	WAHR	43.010	0	14
Wales	-	Switzerland	1 - 1	1　1		1	2.	Italy	9	5	5	0	3	90.055.053,0000983	0	0	0	0	0	0	WAHR	90.055.050	0	2
Turkey	-	Wales	0 - 2	0　3		1	3.	Wales	4	1	3	2	1	40.151.031,0000812	0	1	0	0	0	0	WAHR	40.051.030	0	19
Italy	-	Switzerland	1 - 0	3　0		1	4.	Switzerland	4	1	4	3	1	40.151.041,0000911	0	1	0	0	0	0	WAHR	40.051.040	0	9
Switzerland	-	Turkey	3 - 1	3　0	:	1																		
Italy	-	Wales	1 - 0	3　0	:	1																		

	Sum: 6						Sorted list	Points	GD	For	Against	wins	Coefficient		Red point	Penalty (?)	DC(2) ?	DC(4.2) ?	DC(3.2) ?	DC(4.3.2) ?	All Dir.C. (2)	Penalty
																For showing direct comparisons of 2 on sheet "Direct comparisons"					
					1.	Italy	9	5	5	0	3	90.055.053,0000983		0	0	FALSCH	FALSCH	FALSCH	FALSCH		
					2.	Switzerland	4	1	4	3	1	40.151.041,0000911			0	WAHR	FALSCH	FALSCH	FALSCH	1	
					3.	Wales	4	1	3	2	1	40.151.031,0000812				WAHR	FALSCH	FALSCH	FALSCH	1	
					4.	Turkey	0	-7	1	8	0	43.010,0000864				FALSCH	FALSCH	FALSCH	FALSCH		

Direct Comparison of 2

	Tur	Ita	Wal	Swi	DC(2)	DC(4.2)		Points	GD	For	Against	Pts/GD/For	Rank Col. V	DC(3)	DC(3.2)	Results of direct encounters		DC(4.3)	DC(4.3.2)
Turkey		0	0	1			1. Turkey	0	-5	0	5	45.000	1	0		0	0		0
Italy	3		1	1			2. Italy	6	4	4	0	60.054.040	3	0		3		1	0
Wales	2	0		1	1		3. Wales	3	1	2	1	30.051.020	2	0			2	0	0
Switzerland	3	0	1		1		Switzerland												

							1. Turkey	0	-5	1	6	45.010	1	0		0	1		0
							2. Italy	6	4	4	0	60.054.040	3	0		3		1	0
							3. Switzerland	3	1	3	2	30.051.030	2	0			3	0	0
							Wales												

							1. Turkey	0	-4	1	5	46.010	1	0		0	1		0
							2. Wales	4	2	3	1	40.052.030	2	0		2		1	0
							3. Switzerland	4	2	4	2	40.052.040	3	0			3	1	0
							Italy												

							1. Italy	6	2	2	0	60.052.020	3	0		1	1		0
							2. Wales	1	-1	1	2	10.049.010	1	0	1	0		1	0
							3. Switzerland	1	-1	1	2	10.049.010	1	0	1		0	1	0
							Turkey												

(Headers at upper right of lower section: **Direct Comparison of 3**, **Direct Comparison of 4** FALSCH)

We then create the other worksheets with the names "GrpB", "GrpC", etc. by making **seven copies of the worksheet "GrpA"** and only entering a "B" or a "C" etc. in cell **C1**!

7.1　Transfer of the match results

The match results for Group A can be found on the schedule in columns B and C, those for Group B in columns E and F, etc. On the worksheets "**GrpA**", "**GrpB**", etc., the teams and match results of the correct group should automatically appear in the cells with a yellow background, depending on which letter is entered in cell **C1**.

The formula in cell **B4** could simply be: **=EURO!B13**. But then this formula would only be correct for Group A. Therefore, we will make this formula flexible using the INDEX function.

We enter the following formula in cell **B4**: **=INDEX(EURO!$B$13:$R$40,1,1+(CODE($C$1)-65)*3)** .

The INDEX function has the following syntax:
INDEX(range; row; [column]).
The parameters '**row**' and '**column**' indicate at which point in the specified range a value is picked.

The row indices for the six group matches are 1, 6, 11, 16, 21 and 28. The parameter '**column**' is calculated so that the correct group is accessed in each case.

The function **CODE($C$1)** returns the ASCII code of the letter from cell **C1**, e.g. **67** for a '**C**'. The calculation term **(1+CODE($C$1)-65)*3** calculates the correct column index for the respective group, e.g. **7** for group **C**.

We copy the formula down to cell **B4**, but manually correct the parameter '**row**' in each row:

Cell **B4**:　　**=INDEX(EURO!$B$13:$R$40,1,1+(CODE($C$1)-65)*3)**

Cell **B5**:   =INDEX(EURO!$B$13:$R$40,**6**,1+(CODE($C$1)-65)*3)

Cell **B6**:   =INDEX(EURO!$B$13:$R$40,**11**,1+(CODE($C$1)-65)*3)

Cell **B7**:   =INDEX(EURO!$B$13:$R$40,**16**,1+(CODE($C$1)-65)*3)

Cell **B8**:   =INDEX(EURO!$B$13:$R$40,**21**,1+(CODE($C$1)-65)*3)

Cell **B9**:   =INDEX(EURO!$B$13:$R$40,**28**,1+(CODE($C$1)-65)*3)

The six formulas in the range **D4:D9** are almost identical. Only the parameter '**column**' begins with **„2+(CODE…"**.

So that the number of goals is only taken into account for matches in which both fields for the goals are filled in, the formulas in columns E and G have the form:

Cell **E4**:   =IF(OR(goals1="",goals2=""),"",goals1)

Cell **G4**:   =IF(OR(goals1="",goals2=""),"",goals2)

The formulas are:

Cell **E4**:   =IF(OR(INDEX(EURO!$B$14:$R$41,**1**,1+(CODE($C$1)-65)*3)="",
              INDEX(EURO!$B$14:$R$41,**1**,2+(CODE($C$1)-65)*3)=""),"",
              INDEX(EURO!$B$14:$R$41,**1**,1+(CODE($C$1)-65)*3))

Cell **G4**:   =IF(OR(INDEX(EURO!$B$14:$R$41,**1**,1+(CODE($C$1)-65)*3)="",
              INDEX(EURO!$B$14:$R$41,**1**,2+(CODE($C$1)-65)*3)=""),"",
              INDEX(EURO!$B$14:$R$41,**1**,1+(CODE($C$1)-65)*3))

The red row indices are also adjusted accordingly in cells **E5:E9** and **G5:G9**.

The formulas for recording the penalty shootout also have the same structure:

Cell **J8**:   =IF(OR(INDEX(EURO!$B$36:$R$36,1,1+(CODE($C$1)-65)*3)="",
              INDEX(EURO!$B$36:$R$36,1,2+(CODE($C$1)-65)*3)=""),"",
              INDEX(EURO!$B$36:$R$36,1,1+(CODE($C$1)-65)*3))

Cell **J9**:   =IF(OR(INDEX(EURO!$B$43:$R$43,1,1+(CODE($C$1)-65)*3)="",
              INDEX(EURO!$B$43:$R$43,1,2+(CODE($C$1)-65)*3)=""),"",
              INDEX(EURO!$B$43:$R$43,1,1+(CODE($C$1)-65)*3))

Cell **L8**:   =IF(OR(INDEX(EURO!$B$36:$R$36,1,1+(CODE($C$1)-65)*3)="",
              INDEX(EURO!$B$36:$R$36,1,2+(CODE($C$1)-65)*3)=""),"",
              INDEX(EURO!$B$36:$R$36,1,2+(CODE($C$1)-65)*3))

Cell **L9**:   =IF(OR(INDEX(EURO!$B$43:$R$43,1,1+(CODE($C$1)-65)*3)="",
              INDEX(EURO!$B$43:$R$43,1,2+(CODE($C$1)-65)*3)=""),"",
              INDEX(EURO!$B$43:$R$43,1,2+(CODE($C$1)-65)*3))

Done! - We have transferred the six matches in Group A and the match results to our "**GrpA**" worksheet.

We can now try out the flexibility of these formulas. For example, if we enter the letter "**B**" in cell **Q1**, we immediately see the matches of group B with their results!

7.2   Ranking list - part 1

In cell **M4** we enter the formula **=IF(AND($E4<>"",$G4<>""),1,0)**. Here it is checked whether the match result has been entered in full. The formula is copied down to cell **M9**. In cell **M10** we form the sum of the range **M4:M9**. So we have the number of fully registered matches.

Cell **H4**: **=IF($M4>0,IF($E4>$G4,3,IF($E4=$G4,1,0)),0)**
Cell **I4**: **=IF($M4>0,IF($E4<$G4,3,IF($E4=$G4,1,0)),0)**
The two formulas are copied down.

In the range **H4:H9** 3 points appear if team 1 has won the match, 1 point in the case of a tie and 0 if the match was lost or no match result was entered. Correspondingly, the points scored by team 2 appear in range **I4:I9**.

In the range **O4:AF7** we are now creating a table with the four teams, in which we calculate a rating number for each team that includes all UEFA criteria. **This number in column V will then determine the order of the four teams**.

In column O is the consecutive number from 1 to 4. In column P are the names of the four teams.

In cell **P4** we enter the formula **=VLOOKUP($Q$1&ROW($A1),Groups!$B$7:$D$35,3,0)** and copy it down to cell **P7**.
The first parameter of the function VLOOKUP is the expression **$Q$1 & ROW($A1).** This expression resolves to "A1" because there is an "A" in **$Q$1** and **ROW($A1)** returns a "1". The function VLOOKUP looks on the worksheet 'Groups' to see which country name can be found under "A1". It then looks in cell **P5** for "A2" and so on.

Cell **Q4** should contain the number of points that the first team has achieved. To do this, we add all the points in column H if the team concerned is in column B: **SUMIF($B$4:$B$9,P4,$H$4:$H$9)**.
In addition, all points in column I are added if the team in question is in column D:
SUMIF($D$4:$D$9,P4,$I$4:$I$9)

 The formula in **Q4** is therefore:
=SUMIF($B$4:$B$9,P4,$H$4:$H$9)+SUMIF($D$4:$D$9,P4,$I$4:$I$9)
The formula can be copied down to **Q7**.

In cell **R4** we enter the formula for the **goal difference**: **=S4-T4** . This can also be copied downwards.

For the **goals scored** in column S and the **goals conceded** in column T, formulas with the same structure as for the number of points are used.
Cell **S4**:   **=SUMIF($B$4:$B$9,$P4,$E$4:$E$9)+SUMIF($D$4:$D$9,$P4,$G$4:$G$9)**
Cell T**4**:   **=SUMIF($B$4:$B$9,$P4,$G$4:$G$9)+SUMIF($D$4:$D$9,$P4,$E$4:$E$9)**

The **number of matches won** is determined in column U.
In cell **U4** we enter the following formula:

Cell **U4**:   **=COUNTIFS($B$4:$B$9,$P4,$H$4:$H$9,"=3")+ COUNTIFS ($D$4:$D$9,$P4,$I$4:$I$9,"=3")**

The number of times a "3" is entered in columns H and I is counted for each team.

In the columns W, X, Y, Z and AA the **direct comparisons** should be taken into account. The formulas for this need preparation and will be discussed later (see Chapters 7.5, 7.6 and 7.7).

Column AB:

Column AB should contain the **bonus points** from the "FairPlay" worksheet. The formula in cell **AB4** is:
=SUMIFS(FairPlayPoints1,FairPlayTeams1,$P4)+SUMIFS(FairPlayPoints2,FairPlayTeams2,$P4)

We define the four variables FairPlayPoints1, FairPlayTeams1, FairPlayPoints2 and FairPlayTeams2 in the Name Manager of Excel (menu Formulas → Name Manager) as follows:

FairPlayPoints1:   **FairPlay!$C$6:$C$21**
FairPlayTeams1:   **FairPlay!$B$6:$B$21**
FairPlayPoints2:   **FairPlay!$F$6:$F$21**
FairPlayTeams2:   **FairPlay!$E$6:$E$21**

In columns C and F on the worksheet "FairPlay", all numbers are added up if the respective team name is to the left.

Column AC:

In the AC column, it should be displayed for each team whether **a match result has already been entered** for the team in question (TRUE) or not yet (FALSE). If a team has played at least one match, the score and the number of goals conceded cannot both be zero. Therefore the formula in **AC4** is:
=(Q4+T4>0)
This formula is copied down.

Column AD:

In the AD column, we calculate a **ranking number** for each team, taking into account only points, goal difference and goals scored. The formula in cell **AD4** is:
=$Q4*FactorPts+(GDzero+$R4)*FactorGD+$S4*FactorFor

Cells Y11 and Y12:

In order to take the **penalty shootout** results into account, we must first check whether the conditions for a penalty shootout in either of the last two group matches are even met. Cell **Y11** should contain a "1" if these conditions for the penultimate group match are met, otherwise a "0". In cell **Y12** there should be a "1" if these conditions for the last group match are met, otherwise a "0".

To do this, enter the following formula in cell **Y11**:
=IF(AND(VLOOKUP($B$8,$P$4:$AD$7,15,0)=VLOOKUP($D$8,$P$4:$AD$7,15,0),$E$8=$G$8, COUNTIF($Q$4:$Q$7,VLOOKUP($B$8,$P$4:$Q$7,2,0))=2,SUMIF($B$4:$B$9,$B$8,$M$4:$M$9)+ SUMIF($D$4:$D$9,$B$8,$M$4:$M$9)=3,SUMIF($B$4:$B$9,$D$8,$M$4:$M$9)+ SUMIF($D$4:$D$9,$D$8,$M$4:$M$9)=3),1,0)

This formula has the following structure:
=IF(AND(Condition1, Condition 2, Condition 3, Condition 4),1,0)

The four conditions have the following meaning:

Condition 1: **VLOOKUP($B$8,$P$4:$AD$7,15,0)=VLOOKUP($D$8,$P$4:$AD$7,15,0)**

The two VLOOKUP functions look in column 15 - which is column AD - to see if the two teams are tied in points, goal difference and goals scored.

Condition 2: **$E$8=$G$8**

The group match in question must end in a draw.

Condition 3: **COUNTIF($Q$4:$Q$7,VLOOKUP($B$8,$P$4:$Q$7,2,0))=2**

No other team may have the same number of points. In other words, the number of points that the two teams have must occur exactly twice.

The VLOOKUP function determines the number of points of one of the two teams. The COUNTIF function then counts how often this number occurs in the range **$Q$4:$Q$7**.

Condition 4: **SUMIF($B$4:$B$9,$B$8,$M$4:$M$9)+ SUMIF($D$4:$D$9,$B$8,$M$4:$M$9)=3**

Here we check whether exactly three games have been entered for the first team.

Condition 5: **SUMIF($B$4:$B$9,$D$8,$M$4:$M$9)+ SUMIF($D$4:$D$9,$D$8,$M$4:$M$9)=3**

Here we check whether exactly three games have been entered for the second team.

We enter a corresponding formula in cell **Y12**:

=IF(AND(VLOOKUP($B$9,$P$4:$AD$7,15,0)=VLOOKUP($D$9,$P$4:$AD$7,15,0),$E$9=$G$9, COUNTIF($Q$4:$Q$7,VLOOKUP($B$9,$P$4:$Q$7,2,0))=2,SUMIF($B$4:$B$9,$B$9,$M$4:$M$9)+ SUMIF($D$4:$D$9,$B$9,$M$4:$M$9)=3,SUMIF($B$4:$B$9,$D$9,$M$4:$M$9)+ SUMIF($D$4:$D$9,$D$9,$M$4:$M$9)=3),1,0)

Using the results in cells **Y11** and **Y12**, we can set up conditional formatting for the "Penalty Shootout" labels in cells **B35** and **B42** on the EURO worksheet. If all the conditions for a penalty shootout are met, they appear in red text.

Column AE:

We now enter the following formula in cell **AE4**:

=IF(OR(AND($Y$11>0,OR(AND($B$8=$P4,$J$8>$L$8),AND($D$8=$P4,$J$8<$L$8))),AND($Y$12>0,OR(AND($B$9=$P4,$J$9>$L$9),AND($D$9=$P4,$J$9<$L$9)))),1,0)

Cell **AE4** shall have a "1" if the team concerned has won a penalty shootout and all conditions for a penalty shootout have been met. Otherwise there should be a "0" in cell **AE4**.

Structure of the formula:

=IF(OR(Penalty shootout won in match 5, Penalty shootout won in match 6)),1,0)

The part "**Penalty shootout won in match 5**" consists of:

AND($Y$11>0,OR(AND($B$8=$P4,$J$8>$L$8),AND($D$8=$P4,$J$8<$L$8)))

Two conditions must be met here:

1. **$Y$11>0**

2. **OR(AND($B$8=$P4,$J$8>$L$8),AND($D$8=$P4,$J$8<$L$8))**

The **1st condition** (**$Y$11>0**) says:

All requirements for a penalty shootout in the 5th group match are met.

The **2nd condition** says:

The team in question (e.g. Turkey) is entered in cell **B8** (**$B$8=$P4**) and won the penalty shootout (**$J$8>$L$8**)

OR

the team in question (e.g. Turkey) is entered in cell **D8** (**$D$8=$P4**) and won the penalty shootout (**$J$8<$L$8**).

The part "**Penalty shootout won in the 6th match**" is structured in the same way.

The formula in cell **AE4** is copied down.

Column AF:

The **ranking in the final ranking list of the European Qualifiers** should be transferred to column AF. Column D on the 'Language' sheet contains the ranking numbers for each team. That these ranks are there in ascending order is just cosmetic. They may also be arranged differently, since they are searched for using the INDEX and MATCH functions.

In cell AF4 we enter the following formula:
=INDEX(Language!$D$5:$D$59,MATCH($P4,Language!$E$5:$E$59,0),1)

The **MATCH($P4,Language!$E$5:$E$59,0)** expression returns the team's relative position in the list of all teams (column E). The INDEX function then returns the associated rank.

7.3   The Factors sheet

The sorting of the four teams into the correct ranking is done according to the following principle: In column V of the "GrpA" worksheet there is a "**ranking number**" for each team, which decides on the rank. The team with the largest number comes first.

This number is created in the following way:
The number of points achieved in column Q has the highest priority. This number of points is therefore multiplied by a very large factor. We take the number 10000000. The direct comparisons of three teams in column W (see chapter 7.5) has the second highest priority. It is multiplied by the lower factor 1000000 and added. The direct comparisons of two teams in column X have the third highest priority. They are multiplied by a factor of 100000 and also added. The factors for the remaining criteria (goal difference, goals scored etc.) have smaller factors: 1000, 10, etc.

We store these factors on a separate worksheet called "**Factors**". There are no formulas here, just texts and numbers. It looks like this:

	A	B	C	D	E	F
1			**Factors**			
2						
3		**Factors**	**Category**			
4		10000000	Points			
5		1000000	direct Comp. 3			
6		100000	direct Comp. 2			
7		1000	Goal difference	50	Goal difference zero	
8		10	Goals scored			
9		1	Penalty shootout			
10		0,1	direct Comp. 4.3			
11		0,01	direct Comp. 4.2			
12		0,001	Wins			
13		0,0001	Fair play			
14		0,000001	Ranking			
15		0,0000001	Row			
16						

The individual factors in cells **B4** to **B15** are given the following variable names in the Name Manager:

B4:   FactorPts   (factor points)

B5:   FactorDirC3   (factor direct comparison of 3 teams)

B6:   FactorDirC2   (factor direct comparison of 2 teams)

B7:   FactorGD   (factor goal difference)

B8:   FactorFor   (factor goals scored)

B9:   FactorPenalty   (factor penalty)

B10:   FactorDirC43   (factor direct comparison of 3 teams if 4 teams are tied in points)

B11:   FactorDirC42   (factor direct comparison of 2 teams if 4 teams are tied in points)

B12:   FactorWins   (factor wins)

B13:   FactorFairPlay   (factor fair play)

B14:   FactorRank   (factor ranking)

B15:   FactorRow   (factor row)

Thus, instead of **Factors!$B$4** , we can simply write **FactorPts** in the formulas. The formulas will then be easier to read.

7.4   Ranking list - part 2

The formulas in **W4, X4, Y4, Z4,** and **AA4** will be discussed later (see Chapters 7.5 and 7.6).

In cell **V4** we enter the following formula:

=$Q4*FactorPts+(GDzero+$R4)*FactorGD+$S4*FactorFor+$U4*FactorWins+$W4*FactorDirC3+$X4*FactorDirC2+$Y4*FactorDirC43+$Z4*FactorDirC42+$AA4*FactorDirC42+$AB4*FactorFairPlay+$AE4*FactorPenalty+(1

00-$AF4)*($M$10>0)*FactorRank

GDzero is added to the goal difference **$R4** so that this value cannot become negative. This formula is still incomplete and will be expanded.

This gives us a complex ranking that takes all of UEFA's criteria into account with the right priority.

Explanation of the last expression: **(100-$AF4)*($M$10>0)*FactorRank**
The number **100-$AF4** increases as the team's **$AF4** rank decreases. The team with the rank number 1 has the highest possible factor 99. The factor **($M$10>0)** becomes 0 (= FALSE) if M10 = 0, ie if no match result has been entered yet. In this case, the teams should appear in their original order and not in the order of the qualifiers ranking.

Using the calculated ranks in the range **V4:V7**, we can now sort the group table. The team with the highest ranking should come first. In the range **O11:V14** we will generate a **sorted list of the four teams**.

We enter the following formula in cell **V11**:
=LARGE($V$4:$V$7,ROW(A1))
and copy it down to **V14**.

The formula **=LARGE(Range,1)** returns the largest value of range,
the formula **=LARGE(Range,2)** the second largest,
the formula **=LARGE(Range,3)** the third largest,
the formula **=LARGE(Range,4)** the fourth largest.

In order to be able to simply copy the first formula in **V14** downwards, the numbers 1, 2, 3 and 4 are generated automatically. The expression **ROW(A1)** returns the row number of **A1**, ie 1.
When copying down, it becomes **ROW(A2)**, **ROW(A3)**, **ROW(A4)**, so the numbers 2, 3 and 4 are generated.

In range **O11:V14** we now want to create the same group table as in range **O4:V7**, only this time sorted. To do this, the first step is to search for the ranking number of cell **V11** in range **V4:V7**. For example, if it is found in cell **V5**, all values to the left of cell **V5** (the values of cells **P5:U5**) are copied down to cells **P11:U11**.

The VLOOKUP function is not suitable here because it can only find values to the right of the lookup column. In this case, a combination of the INDEX and MATCH functions helps.

 First we enter the current number in cells **O11** to **O14**. In cell **P11** we enter the following formula:
=INDEX(P$4:P$7,MATCH($V11,$V$4:$V$7,0))

The dollar sign in front of the "P" is missing because the formula is to be copied to the right. Then "P" becomes "Q" and so on.

Explanation of the formula:
The formula **=INDEX(P$4:P$7,3)** would return the third value from the range **P$4:P$7**, i.e. the content of cell **P6**. The "3" is now replaced by the expression **MATCH($V11,$V$4:$V$7,0)**. The MATCH function returns the correct number because it searches for the content of **$V11** in the range **$V$4:$V$7** and returns the relative position of the value found. The third parameter of the MATCH function is a zero. This means that the function is looking for an exact match.

The formula in **P11** is copied to the right and down to **U14** and the sorted group table is ready!

However, the sorted group table still has one error:

For example, if the second and third team have the same ranking, the MATCH function will only find the position of the second team, but no longer the position of the third team. The table then shows the name of the second team twice with their values, the third team is missing. So we have to avoid having two or more ranks equal. For example, if all four are the same because no match results have yet been entered, the first team appears four times in the sorted list. Instead, the four teams should appear in their original order. We achieve this by adding the row number multiplied by the factor FactorRow (= 0.00000001) to the ranking number.

The final formula in cell **V4** is then:

=$Q4*FactorPts+(GDzero+$R4)*FactorGD+$S4*FactorFor+$U4*FactorWins+$W4*FactorDirC3+$X4*FactorDirC2+$Y4*FactorDirC43+$Z4*FactorDirC42+$AA4*FactorDirC42+$AB4*FactorFairPlay+$AE4*FactorPenalty+(100-$AF4)*($M$10>0)*FactorRank+(8-ROW())*FactorRow

The **ROW()** function returns the row number of the cell in which the formula is located. The expression **8-ROW()** generates the number 4 for **V4**, the number 3 for **V5**, the number 2 for V**6** and the number 1 for V**7**. Thus, if all teams are equal, the team in line 4 appears at the top, the team in line 5 appears in the second position, and so on.

7.5   Direct comparison of three teams

In contrast to the FIFA World Cup, direct comparisons of two or three teams are much more common. This is because this is the case at the European Championships if the teams involved have the same number of points. At the FIFA World Cup, on the other hand, a direct comparison is only carried out if the teams involved have the same number of points, the same goal difference and the same number of goals scored. This is less common, but still occasionally occurs.

One of the reasons why direct comparisons are so important at the UEFA European Championship is that they take precedence over goal difference and the number of goals scored.

In order to carry out a direct comparison of three teams, we create four group tables with three teams each, in which only the matches are taken into account that these three teams have played against each other.

		Points	GD	For	Against		Pts/GD/For	Rank Col. V
1.	Turkey	0	-5	0	5		45.000	1
2.	Italy	6	4	4	0		60.054.040	3
3.	Wales	3	1	2	1		30.051.020	2
	Switzerland							

For the team names we enter the following formulas:

Cell **P18**:   =$P$4
Cell **P19**:   =$P$5
Cell **P20**:   =$P$6
Cell **P21**:   =$P$7

In cell **Q18** we enter the following formula:
=SUMIFS($H$4:$H$9,$B$4:$B$9,$P18,$D$4:$D$9,"<>"&$P$21)

+SUMIFS($I$4:$I$9,$B$4:$B$9,"<>"&$P$21,$D$4:$D$9,$P18)

Parameters of the function SUMIFS:

$H$4:$H$9 **Sum range**: the range in which the numbers are added under certain conditions

$B$4:$B$9 **Criteria range 1**: the range that is checked for criterion 1

$P18 **Criterion 1**: the content of **$P18** is checked for agreement in criteria range 1

$D$4:$D$9 **Criteria range 2**: the range that is checked for criterion 2

"<>"&$P$21 **Criterion 2**: in Criteria range 2 we check whether the content of **$P18** is not the same as the content of **$P$21**

The second function SUMIFS in the formula has the same structure. The points scored for each of the three teams are added up if they were not scored against the fourth team in cell **P21**.

The formulas in **S18** and **T18** work on the same principle:

Cell **S18**:

=SUMIFS($E$4:$E$9,$B$4:$B$9,$P18,$D$4:$D$9,"<>"&$P$21)
+SUMIFS($G$4:$G$9,$B$4:$B$9,"<>"&$P$21,$D$4:$D$9,$P18)

Cell **T18**:

=SUMIFS($G$4:$G$9,$B$4:$B$9,$P18,$D$4:$D$9,"<>"&$P$21)
+SUMIFS($E$4:$E$9,$B$4:$B$9,"<>"&$P$21,$D$4:$D$9,$P18)

Cell **R18**:   **=S18-T18**
Cell **V18**:   **=Q18*FactorPts+(GDzero+R18)*FactorGD+S18*FactorFor**

In a direct comparison, the points achieved, the goal difference and the goals scored are compared with each other. Cell V18 therefore contains a rating number for direct comparison.

The formulas from **Q18** to **V18** are now copied down to line 20.

In column W we now generate a ranking number for each of the three teams.
Cell **W18**:   **=RANK(V18,V$18:V$20,1)**

The RANK function determines the rank of the number in **V18** within the range **V$18:V$20**. The third parameter, the "1", means that the largest number gets the lowest rank, ie rank 3.

The rank number in cell **W18** is now transferred to cell **X18** if that team is tied with second and third teams but not fourth. Otherwise, a zero is entered in cell **X18**. This ensures that the rank determined in cell **W18** is only taken into account if the requirement for a direct comparison is met.
Cell **X18**:   **=IF(AND($Q$4=$Q$5,$Q$4=$Q$6,$Q$4<>$Q$7),W18,0)**

In cell **W4**, all the numbers in the range **X18:X35** are added up if the team name 'Turkey' is in the P column. The following formula does this:
Cell **W4**:   **=SUMIFS($X$18:$X$35,$P$18:$P$35,$P4)**
Since each team in the range **X18:X35** can only be involved once in a direct comparison of three teams, cell **W4** contains the rank of the direct comparison or a zero.
The formula in cell **W4** is copied down to cell **W7**.

We select the range **Q18:X18** and copy the formulas down to rows 19 and 20.

The rest of the formulas in range **P18:X35** look very similar:

Group 2

Cell **P23**:   =$P$4
Cell **P24**:   =$P$5
Cell **P25**:   =$P$7
Cell **P26**:   =$P$6

Cell **Q23**:
=SUMIFS($H$4:$H$9,$B$4:$B$9,$P23,$D$4:$D$9,"<>"&$P$26)
+SUMIFS($I$4:$I$9,$B$4:$B$9,"<>"&$P$26,$D$4:$D$9,$P23)

Cell **R23**:   =S23-T23

Cell **S23**:
=SUMIFS($E$4:$E$9,$B$4:$B$9,$P23,$D$4:$D$9,"<>"&$P$26)
+SUMIFS($G$4:$G$9,$B$4:$B$9,"<>"&$P$26,$D$4:$D$9,$P23)

Cell **T23**:
=SUMIFS($G$4:$G$9,$B$4:$B$9,$P23,$D$4:$D$9,"<>"&$P$26)
+SUMIFS($E$4:$E$9,$B$4:$B$9,"<>"&$P$26,$D$4:$D$9,$P23)

Cell **V23**:   =Q23*FactorPts+(GDzero+R23)*FactorGD+S23*FactorFor

Cell **W23**:   =RANK(V23,V$23:V$25,1)

Cell **X23**:   =IF(AND($Q$4=$Q$5,$Q$4=$Q$7,$Q$4<>$Q$6),W23,0)

Group 3

Cell **P28**:   =$P$4
Cell **P29**:   =$P$6
Cell **P30**:   =$P$7
Cell **P31**:   =$P$5

Cell **Q28**:
=SUMIFS($H$4:$H$9,$B$4:$B$9,$P28,$D$4:$D$9,"<>"&$P$31)
+SUMIFS($I$4:$I$9,$B$4:$B$9,"<>"&$P$31,$D$4:$D$9,$P28)

Cell **R28**:   =S28-T28

Cell **S28**:
=SUMIFS($E$4:$E$9,$B$4:$B$9,$P28,$D$4:$D$9,"<>"&$P$31)
+SUMIFS($G$4:$G$9,$B$4:$B$9,"<>"&$P$31,$D$4:$D$9,$P28)

Cell **T28**:
=SUMIFS($G$4:$G$9,$B$4:$B$9,$P28,$D$4:$D$9,"<>"&$P$31)

+SUMIFS($E$4:$E$9,$B$4:$B$9,"<>"&$P$31,$D$4:$D$9,$P28)

Cell **V28**:   **=Q28*FactorPts+(GDzero+R28)*FactorGD+S28*FactorFor**

Cell **W28**:   **=RANK.GLEICH(V28,V$28:V$30,1)**

Cell **X28**:   **=IF(AND($Q$4=$Q$6,$Q$4=$Q$7,$Q$4<>$Q$5),W28,0)**

Group 4

Cell **P33**:   **=$P$5**
Cell **P34**:   **=$P$6**
Cell **P35**:   **=$P$7**
Cell **P36**:   **=$P$4**

Cell **Q33**:
=SUMIFS($H$4:$H$9,$B$4:$B$9,$P33,$D$4:$D$9,"<>"&$P$36)
+SUMIFS($I$4:$I$9,$B$4:$B$9,"<>"&$P$36,$D$4:$D$9,$P33)

Cell **R33**:   **=S33-T33**

Cell **S33**:
=SUMIFS($E$4:$E$9,$B$4:$B$9,$P33,$D$4:$D$9,"<>"&$P$36)
+SUMIFS($G$4:$G$9,$B$4:$B$9,"<>"&$P$36,$D$4:$D$9,$P33)

Cell **T33**:
=SUMIFS($G$4:$G$9,$B$4:$B$9,$P33,$D$4:$D$9,"<>"&$P$36)
+SUMIFS($E$4:$E$9,$B$4:$B$9,"<>"&$P$36,$D$4:$D$9,$P33)

Cell **V33**:   **=Q33*FactorPts+(GDzero+R33)*FactorGD+S33*FactorFor**

Cell **W33**:   **=RANK(V33,V$33:V$35,1)**

Cell **X33**:   **=IF(AND($Q$5=$Q$6,$Q$5=$Q$7,$Q$5<>$Q$4),W33,0)**

We enter the following formula in cell **W4**:
=SUMIFS($X$18:$X$35,$P$18:$P$35,$P4)

That means:
In the range **X18:X35** all numbers that belong to the first team (**$P4**) are added. So if a direct comparison is made for this team, a number greater than zero will appear in cell **W4**. This number is multiplied by the factor **FactorDirC3** and taken into account in the formula for the rank number (in cell **V4**) (see Chapter 7.4).

We copy the formula in **W4** down to **W7**.

This is not the end of the direct comparison of three teams, because it can happen that two of the three teams are still not distinguishable. In this case, another direct comparison of these two teams takes place.

Special case:

Additional direct comparison of two teams

In order to simplify the formulas in this case, we copy the match results of direct matches into the range **AA18:AC35**. For example, cells **AA18** and **AA19** contain the result of the Turkey-Italy match, cells **AB18** and **AB20** contain the result of the Turkey-Wales match, and so on.

The match results are copied from the range **E4:G9**. Cell **AA18** has the formula **=$I$18**, cell **AA19** has the formula **=$H$19**, and so on.

In cell **Y18** we enter the following formula:
=IF(AND(V18=V19,V18<>V20),IF(AA18>AA19,3,IF(AA18=AA19,1,0)),IF(AND(V18=V20,V18<>V19),IF(AB18>AB20,3,IF(AB18=AB20,1,0)),""))

In the outer IF function **IF(AND(V18=V19,V18<>V20),<Yes>,<No>)** it is first checked whether the team in line 18 (Turkey) is tied on points with the team in line 19 (Italy) but not tied with team in row 20 (Wales).

If **<Yes>**:
The expression **IF(AA18>AA19,3,IF(AA18=AA19,1,0))** means that the score is entered as 3, 1 or 0 depending on the match result.

If **<No>**:
The expression **IF(AND(V18=V20,V18<>V19),IF(AB18>AB20,3,IF(AB18=AB20,1,0)),"")** checks whether the team in line 18 (Turkey) is tied with the team in row 20 (Wales) but not tied with the team in row 19 (Italy). If so, the score 3, 1, or 0 is entered depending on the match result, if no, the cell is empty.

Conclusion:
If there is a head-to-head comparison of the team in row 18 with either of the other two, cell **Y18** contains the score of the head-to-head (3, 1, or 0).

The formulas in the remaining cells of column Y read accordingly:

Cell **Y19**:
=IF(AND(V19=V18,V19<>V20),IF(AA19>AA18,3,IF(AA19=AA18,1,0)),IF(AND(V19=V20,V19<>V18),IF(AC19>AC20,3,IF(AC19=AC20,1,0)),""))

Cell **Y20**:
=IF(AND(V20=V18,V20<>V19),IF(AB20>AB18,3,IF(AB20=AB18,1,0)),IF(AND(V20=V19,V20<>V18),IF(AC20>AC19,3,IF(AC20=AC19,1,0)),""))

Cell **Y23**:
=IF(AND(V23=V24,V23<>V25),IF(AA23>AA24,3,IF(AA23=AA24,1,0)),IF(AND(V23=V25,V23<>V24),IF(AB23>AB25,3,IF(AB23=AB25,1,0)),""))

Cell **Y24**:
=IF(AND(V24=V23,V24<>V25),IF(AA24>AA23,3,IF(AA24=AA23,1,0)),IF(AND(V24=V25,V24<>V23),IF(AC24>AC25,3,IF(AC24=AC25,1,0)),""))

Cell **Y25**:
=IF(AND(V25=V23,V25<>V24),IF(AB25>AB23,3,IF(AB25=AB23,1,0)),IF(AND(V25=V24,V25<>V23),IF(AC25>AC24,3,IF(AC25=AC24,1,0)),""))

Cell **Y28**:

=IF(AND(V28=V29,V28<>V30),IF(AA28>AA29,3,IF(AA28=AA29,1,0)),IF(AND(V28=V30,V28<>V29),IF(AB28>AB30,3,IF(AB28=AB30,1,0)),""))

Cell **Y29**:
=IF(AND(V29=V28,V29<>V30),IF(AA29>AA28,3,IF(AA29=AA28,1,0)),IF(AND(V29=V30,V29<>V28),IF(AC29>AC30,3,IF(AC29=AC30,1,0)),""))

Cell **Y30**:
=IF(AND(V30=V28,V30<>V29),IF(AB30>AB28,3,IF(AB30=AB28,1,0)),IF(AND(V30=V29,V30<>V28),IF(AC30>AC29,3,IF(AC30=AC29,1,0)),""))

Cell **Y33**:
=IF(AND(V33=V34,V33<>V35),IF(AA33>AA34,3,IF(AA33=AA34,1,0)),IF(AND(V33=V35,V33<>V34),IF(AB33>AB35,3,IF(AB33=AB35,1,0)),""))

Cell **Y34**:
=IF(AND(V34=V33,V34<>V35),IF(AA34>AA33,3,IF(AA34=AA33,1,0)),IF(AND(V34=V35,V34<>V33),IF(AC34>AC35,3,IF(AC34=AC35,1,0)),""))

Cell **Y35**:
=IF(AND(V35=V33,V35<>V34),IF(AB35>AB33,3,IF(AB35=AB33,1,0)),IF(AND(V35=V34,V35<>V33),IF(AC35>AC34,3,IF(AC35=AC34,1,0)),""))

However, the scores in column Y should only be taken into account if there is already a direct comparison of the three teams, i.e. if column X contains a value greater than zero. Therefore we enter the formula **=IF(X18>0,Y18,"")** in cell **Z18** and copy it down to cell **Z35**.

Column Z therefore contains the scores of the direct comparison of the team in question with another if the team in question is involved in a direct comparison of three teams at the same time.

The results in the range **Z18:Z35** are taken into account in the formulas in the range **X4:X7** (see Section 7.6). The formulas in the **X4:X7** range also take into account direct comparisons between two teams in cases where there is no direct comparison between three teams. These cases we consider in the next chapter.

7.6   Direct comparison of two teams

In order to take into account the direct comparison of two teams, we first create a small table with the results of the direct encounters in range **E17:K21**.

We transfer the team names to cells **E18** to E**21** with the formulas **=$P$4**, **=$P$5**, **=$P$6** and **=$P$7**. We connect cells **E18:G18**, **E19:G19**, **E20:G20** and **E21:G21** respectively. The full names must be here! The first three letters of the team names are sufficient for the labeling in cells **H17** to K**17** above:

Cell **H17**:   **=LEFT($P$4,3)**

Correspondingly in the other cells.

The number of goals scored by team 1 against team 2 should be in cell **I18**. Cell **H19** then shows the number of goals that team 2 scored against team 1. We enter the following formula in **I18**:

=SUMIFS($E$4:$E$9,$B$4:$B$9,$P$4,$D$4:$D$9,$P$5)
+SUMIFS($G$4:$G$9,$B$4:$B$9,$P$5,$D$4:$D$9,$P$4)

In the range **$E$4:$E$9**, the numbers are added if team 1 is on the left and team 2 is on the right. In the range **$G$4:$G$9**, the numbers are added if team 2 is on the left and team 1 is on the right. This way we get exactly the number of goals that team 1 scored against team 2.

The rest of the formulas work in the same way. They are:

Cell **G18**:   **=SUMIFS($E$4:$E$9,$B$4:$B$9,$P$4,$D$4:$D$9,$P$6)**
                     +SUMIFS($G$4:$G$9,$B$4:$B$9,$P$6,$D$4:$D$9,$P$4)

Cell **H18**:   **=SUMIFS($E$4:$E$9,$B$4:$B$9,$P$4,$D$4:$D$9,$P$7)**
                     +SUMIFS($G$4:$G$9,$B$4:$B$9,$P$7,$D$4:$D$9,$P$4)

Cell **E19**:   **=SUMIFS($E$4:$E$9,$B$4:$B$9,$P$5,$D$4:$D$9,$P$4)**
                     +SUMIFS($G$4:$G$9,$B$4:$B$9,$P$4,$D$4:$D$9,$P$5)

Cell **G19**:   **=SUMIFS($E$4:$E$9,$B$4:$B$9,$P$5,$D$4:$D$9,$P$6)**
                     +SUMIFS($G$4:$G$9,$B$4:$B$9,$P$6,$D$4:$D$9,$P$5)

Cell **H19**:   =SUMIFS($E$4:$E$9,$B$4:$B$9,$P$5,$D$4:$D$9,$P$7)
                  +SUMIFS($G$4:$G$9,$B$4:$B$9,$P$7,$D$4:$D$9,$P$5)

Cell **E20**:   =SUMIFS($E$4:$E$9,$B$4:$B$9,$P$6,$D$4:$D$9,$P$4)
                  +SUMIFS($G$4:$G$9,$B$4:$B$9,$P$4,$D$4:$D$9,$P$6)

 Cell **F20**:   =SUMIFS($E$4:$E$9,$B$4:$B$9,$P$6,$D$4:$D$9,$P$5)
                  +SUMIFS($G$4:$G$9,$B$4:$B$9,$P$5,$D$4:$D$9,$P$6)

Cell **H20**:   =SUMIFS($E$4:$E$9,$B$4:$B$9,$P$6,$D$4:$D$9,$P$7)
                  +SUMIFS($G$4:$G$9,$B$4:$B$9,$P$7,$D$4:$D$9,$P$6)

Cell **E21**:   =SUMIFS($E$4:$E$9,$B$4:$B$9,$P$7,$D$4:$D$9,$P$4)
                  +SUMIFS($G$4:$G$9,$B$4:$B$9,$P$4,$D$4:$D$9,$P$7)

Cell **F21**:   =SUMIFS($E$4:$E$9,$B$4:$B$9,$P$7,$D$4:$D$9,$P$5)
                  +SUMIFS($G$4:$G$9,$B$4:$B$9,$P$5,$D$4:$D$9,$P$7)

Cell **G21**:   =SUMIFS($E$4:$E$9,$B$4:$B$9,$P$7,$D$4:$D$9,$P$6)
                  +SUMIFS($G$4:$G$9,$B$4:$B$9,$P$6,$D$4:$D$9,$P$7)

A direct comparison of two teams takes place when both teams have the same number of points.

In the range **L18:L21**, a team is now given a 3 (three points) if it has won a direct comparison. If there is a tie in the direct comparison, it receives a 1 (one point), and if it lost in the direct comparison, it receives a 0 (zero points). Otherwise these cells remain empty.
To do this, we enter the following formula in cell **L18**:

=IF(AND($Q$4=$Q$5,$Q$4<>$Q$6,$Q$4<>$Q$7),IF(I18>H19,3,IF(I18=H19,1,0)),
IF(AND($Q$4=$Q$6,$Q$4<>$Q$5,$Q$4<>$Q$7),IF(J18>H20,3,IF(J18=H20,1,0)),
IF(AND($Q$4=$Q$7,$Q$4<>$Q$5,$Q$4<>$Q$6),IF(K18>H21,3,IF(K18=H21,1,0)),"")))

The first IF function means: If team 1 is tied with team 2 in points, but otherwise with no other team (**$Q$4=$Q$5,$Q$4<>$Q$6,$Q$4<>$Q$7**), then it gets 3 points for a win against team 2 (**I18>H19**), 1 point for a draw (**I18=H19**) and 0 points for a defeat.

The second and third IF functions test whether a direct comparison of team 1 with team 3 or team 4 takes place.

The formulas for cells **L19**, **L20** and **L21** are accordingly:

Cell **L19**:
=IF(AND($Q$5=$Q$4,$Q$5<>$Q$6,$Q$5<>$Q$7),IF(H19>I18,3,IF(H19=I18,1,0)),
IF(AND($Q$5=$Q$6,$Q$5<>$Q$4,$Q$5<>$Q$7),IF(J19>I20,3,IF(J19=I20,1,0)),
IF(AND($Q$5=$Q$7,$Q$5<>$Q$4,$Q$5<>$Q$6),IF(K19>I21,3,IF(K19=I21,1,0)),"")))

Cell **L20**:
=IF(AND($Q$6=$Q$4,$Q$6<>$Q$5,$Q$6<>$Q$7),IF(H20>J18,3,IF(H20=J18,1,0)),
IF(AND($Q$6=$Q$5,$Q$6<>$Q$4,$Q$6<>$Q$7),IF(I20>J19,3,IF(I20=J19,1,0)),
IF(AND($Q$6=$Q$7,$Q$6<>$Q$4,$Q$6<>$Q$5),IF(K20>J21,3,IF(K20=J21,1,0)),"")))

Cell **L21**:
=IF(AND($Q$7=$Q$4,$Q$7<>$Q$5,$Q$7<>$Q$6),IF(H21>K18,3,IF(H21=K18,1,0)),
IF(AND($Q$7=$Q$5,$Q$7<>$Q$4,$Q$7<>$Q$6),IF(I21>K19,3,IF(I21=K19,1,0)),
IF(AND($Q$7=$Q$6,$Q$7<>$Q$4,$Q$7<>$Q$5),IF(J21>K20,3,IF(J21=K20,1,0)),"")))

In cell **X4** we enter the formula
=IF($L18="",0,$L18)+SUMIFS($Z$18:$Z$35,$P$18:$P$35,$P4)
and copy this formula down to **X7**.

The first addend **IF($L18="",0,$L18)** contains the number of points from a direct comparison of two teams, the second addend **SUMIFS($Z$18:$Z$35,$P$18:$P$35, $P4)** the number of points from the direct comparison with another team, if a direct comparison of three teams takes place at the same time. (Only one of the two addends can be greater than zero.)

The number in cell **X4** is multiplied by the factor **FactorDirC2** and taken into account in the formula for the ranking number in cell **V4**.

7.7   Direct comparison of all four teams

If all four teams have the same number of points, the four teams are first ranked according to the criteria of a direct comparison (points, goal difference and number of goals scored). Various special cases can occur:

1.   One or two further direct comparisons of two teams may be required.
2.   Another direct comparison of three teams may be required.
3.   Another direct comparison of three teams may be required and within this comparison another direct comparison of two teams.

We first consider **point 1**:
Additional direct comparison of two teams

In cell **AF16** we enter the following formula:
=AND($Q$4=$Q$5,$Q$4=$Q$6,$Q$4=$Q$7)
This is a simple test to see if all four teams are tied. As a result, the cell contains the value TRUE or the value FALSE.

In cell **M18** we enter the following formula:
=IF($AF$16,IF(AND($AD$4=$AD$5,$AD$4<>$AD$6,$AD$4<>$AD$7),IF(I18>H19,3,IF(I18=H19,1,0)),IF(AND($AD$4<>$AD$5,$AD$4=$AD$6,$AD$4<>$AD$7),IF(J18>H20,3,IF(J18=H20,1,0)),IF(AND($AD$4<>$AD$5,$AD$4<>$AD$6,$AD$4=$AD$7),IF(K18>H21,3,IF(K18=H21,1,0)),""))),"")

To remember:
Cells **AD4:AD7** contain rating numbers, which only contain the number of points, the goal difference and the number of goals scored (see Chapter 7.2).

The formula in cell **M18** starts with **IF($AF$16,...)**. That means: If all four teams are equal on points, then...

The expression **IF(AND($AD$4=$AD$5,$AD$4<>$AD$6,$AD$4<>$AD$7),...)** checks if team 1 matches team 2

in score, goal difference and goals scored agrees, but matches no other team....

If so, a direct comparison of Team 1 and Team 2 is due:
IF(I18>H19,3,IF(I18=H19,1,0))
3 points, 1 point or 0 points are entered in cell **M18**.

If not, it is checked whether a direct comparison of team 1 with team 3 or team 4 is necessary. If necessary, the corresponding number of points from the direct comparison is also entered in cell **M18** in these cases.

The formulas in the cells below read accordingly:

Cell **M19**:
=IF($AF$16,IF(AND($AD$5=$AD$4,$AD$5<>$AD$6,$AD$5<>$AD$7),IF(H19>I18,3,IF(H19=I18,1,0)),IF(AND($AD$5<>$AD$4,$AD$5=$AD$6,$AD$5<>$AD$7),IF(J19>I20,3,IF(J19=I20,1,0)),IF(AND($AD$5<>$AD$4,$AD$5<>$AD$6,$AD$5=$AD$7),IF(K19>I21,3,IF(K19=I21,1,0)),"")),"")

Cell **M20**:
=IF($AF$16,IF(AND($AD$6=$AD$4,$AD$6<>$AD$5,$AD$6<>$AD$7),IF(H20>J18,3,IF(H20=J18,1,0)),IF(AND($AD$6<>$AD$4,$AD$6=$AD$5,$AD$6<>$AD$7),IF(I20>J19,3,IF(I20=J19,1,0)),IF(AND($AD$6<>$AD$4,$AD$6<>$AD$5,$AD$6=$AD$7),IF(K20>J21,3,IF(K20=J21,1,0)),"")),"")

Cell **M21**:
=IF($AF$16,IF(AND($AD$7=$AD$4,$AD$7<>$AD$5,$AD$7<>$AD$6),IF(H21>K18,3,IF(H21=K18,1,0)),IF(AND($AD$7<>$AD$4,$AD$7=$AD$5,$AD$7<>$AD$6),IF(I21>K19,3,IF(I21=K19,1,0)),IF(AND($AD$7<>$AD$4,$AD$7<>$AD$5,$AD$7=$AD$6),IF(J21>K20,3,IF(J21=K20,1,0)),"")),"")

In cell **AA4** we enter the formula **=IF($M18="",0,$M18)** and copy it down to cell **AA7**. The scores from the range **M18:M21** are transferred to cells **AA4:AA7** for consideration in the final scores in range **V4:V7**.

We now consider **point 2**:
Additional direct comparison of three teams

In cell **AD18** we enter the following formula:
=IF(AND($AF$16,$AD$4=$AD$5,$AD$4=$AD$6,$AD$4<>$AD$7),W18,0)

When all four teams are equal on points (**$AF$16**) and the top three have the same goal difference and number of goals scored (**$AD$4=$AD$5,$AD$4=$AD$6,$AD$4<>$AD$7**), the rank number from the direct comparison of the three teams concerned (see Chapter 7.5) is copied into cell **AD18**. Otherwise a zero is entered.

The formula is copied down to cell **AD20**.

The range **AD23:AD25** now contains the formulas in the event that all four teams are tied and teams 1, 2 and 4 are compared directly.

In cell **AD23** we enter the formula
=IF(AND($AF$16,$AD$4=$AD$5,$AD$4=$AD$7,$AD$4<>$AD$6),W23,0)
and copy it down to cell **AD25**.

The rest of the formulas look the same:

In cell **AD28** we enter the formula
=IF(AND($AF$16,$AD$4=$AD$6,$AD$4=$AD$7,$AD$4<>$AD$5),W28,0)
and copy it down to cell **AD30**.

In cell **AD33** we enter the formula
=IF(AND($AF$16,$AD$5=$AD$6,$AD$5=$AD$7,$AD$5<>$AD$4),W33,0)
and copy it down to cell **AD35**.

In order to include these rank numbers (range **AD18:AD35**) in the final rating numbers (range **V4:V7**), in cell **Y4** we enter the formula **=SUMIFS($AD$18:$AD$35,$P$18:$P$35,$P4)** and copy it down to cell **Y7**.

The formula sums all numbers in the range **AD18:AD35** for the first team (team name in cell **P4**). A value greater than zero can occur at most once for this team.

We now consider **point 3**:
Additional direct comparison of three teams plus additional direct comparison of two teams

Such a case can actually exist - see "Appendix: Special case". However, according to my considerations, this additional comparison of two teams should always result in a draw, so that this point 3 does not actually have to be dealt with. But you're often surprised by things you didn't think were possible. Since the additional effort is very low, we also include the formulas for this case to be on the safe side:

In cell **AE18** we enter the following formula:
=IF(AD18>0,Y18,"")

AD18>0 means that the case "four teams with the same number of points and a direct comparison of three teams" has occurred. In this case, the already calculated result of the comparison of two teams is copied from cell **Y18**, otherwise the cell remains empty.

The formula is copied down to cell **AD35**.

In cell **Z4** we enter the formula **=SUMIFS($AE$18:$AE$35,$P$18:$P$35,$P4)** and copy it down to cell **Z7**.

In order to include the results in the three columns of range **Y4:AA7** in the final rating numbers (cells **V4:V7**), we must not use the previous weighting factors for direct comparisons of three or two teams (FactorDirC3 or FactorDirC2). Because if all four teams are equal on points, they are first sorted by goal difference and number of goals scored - that's the first direct comparison, so to speak - and then by the other direct comparisons.

So we have to create new weighting factors that are smaller than the weighting factors of goal difference and number of goals. On the other hand, they must be greater than the fair play weighting factor.
We choose:
FactorDirC43 = 0.01
FactorDirC42 = 0.001

The penalty shootout weighting factor does not compete with this because there is no penalty shootout if all four teams are tied.

7.8   Ranking list - part 3

We now make five copies of the worksheet **GrpA**, which we call **GrpB**, **GrpC**, ..., **GrpF**.
A copy of a worksheet can be created by right-clicking on the name of the worksheet at the bottom, then selecting "Move or copy ..." from the context menu. Don't forget to tick the "Create a copy" box!

On each copy, we only need to change **one cell**: cell **C1**.

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1		Group A																	
2																			
3		Match			Score			Points		Penalties shoot			valid			Points	GD	Forced	Accepted
4	Turkey	-	Italy		0 - 3		0	3					1		1. Turkey	0	-7	1	8
5	Wales	-	Switzerland		1 - 1		1	1					1		2. Italy	9	5	5	0
6	Turkey	-	Wales		0 - 2		0	3					1		3. Wales	4	1	3	2
7	Italy	-	Switzerland		1 - 0		3	0					1		4. Switzerland	4	1	4	3
8	Switzerland	-	Turkey		3 - 1		3	0		:			1						
9	Italy	-	Wales		1 - 0		3	0		:			1						

For group B we enter a "B" here, for group C a "C" and so on.

Our formulas in the ranges **B4:G9**, **J8:L9** and **P4:P7** have the effect that just by changing cell **C1** the whole table is filled with the data of the correct group.

7.9   Group table on the schedule

On the worksheet "**EURO**" we enter the formula **=Language!$E$100** in the cells **C2**, **F2**, **I2**, **L2**, **O2** and **R2**. The spaces in the text **" Pts.   Goals"** ensure the correct position of the headings "Pts." And "Goals".

Cell **B3**: **=GrpA!P11**
This formula is copied down to cell **B6**.

Cell **E3**: **=GrpB!P11**
This formula is copied down to cell **E6**.

We enter the corresponding formulas for the remaining six groups.

To display the points and the goals, we enter the following formula in cell **C3**:
=" "&GrpA!$Q11&"   "&GrpA!$S11&Language!$E$143&GrpA!$T11.
Here, too, the inserted spaces ensure correct positioning.
In **Language!$E$164** there is a separator for the goal difference (colon or minus) surrounded by a space.
This formula is also copied down to cell **C6**.

In cell **F3** we enter the following formula:
=" "&GrpB!$Q11&"   "&GrpB!$S11&Language!$E$143&GrpB!$T11
We enter the corresponding formulas for the remaining six groups.

In the **Final table** in lines 45 to 49, the fields should remain empty if not all matches in the group in question have been entered.

We enter the following formulas in cells **B45** and **B46**:

Cell B45:   **=Language!$E$106**

Cell B46:   **=IF(GrpA!$M$10=6,GrpA!$P11,"")**

The formula in **B46** is copied down to cell **B49**.

The Final tables of the other groups have corresponding formulas. "GrpA" changes to "GrpB" etc.

The current status of the schedule can be found in the file named "**EURO_Tut_7.xlsx**".

8 Knockout phase

8.1 Calculation of the four best third-placed teams

We create a new worksheet named "**ThirdPlaced**". It will look like this:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1			**Third in the group**														
2																	
3				Pts	GD	GF	GA	Wins	Coefficient	Grp		Fair play	Ranking				
4		1.	Wales	4	1	3	2	1	40.001.031,000081	A		0	81				
5		2.	Finland	3	-2	1	3	1	29.998.011,000080	B		0	80				
6		3.	Ukraine	3	-1	4	5	1	29.999.041,000094	C		0	94				
7		4.	Czechia	4	1	3	2	1	40.001.031,000082	D		0	82				
8		5.	Slovakia	3	-5	2	7	1	29.995.021,000078	E		0	78				
9		6.	Portugal	4	1	7	6	1	40.001.071,000087	F		0	87				
10				Pts	GD	GF	GA	Wins	Coefficient	Grp							
11		1.	Portugal	4	1	7	6	1	40.001.071,000087	F		3	A	4		7 : 6	
12		2.	Czechia	4	1	3	2	1	40.001.031,000082	D		2	C	4		3 : 2	
13		3.	Wales	4	1	3	2	1	40.001.031,000081	A		0	D	4		3 : 2	
14		4.	Ukraine	3	-1	4	5	1	29.999.041,000094	C		1	F	3		4 : 5	
15		5.	Finland	3	-2	1	3	1	29.998.011,000080	B				3		1 : 3	
16		6.	Slovakia	3	-5	2	7	1	29.995.021,000078	E				3		2 : 7	
17																	
18								Group combination:		A C D F							
19																	
20																	
21								Red point:		0							
22																	

All third-placed teams are listed in the **C4:C9** range. For example, cell **C4** has the formula **=GrpA!P$13**.

In the **D4:H9** range, for each team the points achieved, the goal difference, the goals scored, the goals conceded and the number of wins are copied from the worksheets of the respective group. For example, the formula in cell **D4** is **=GrpA!Q$13**.

In cell **L4** we enter the formula
=SUMIFS(FairPlayPoints1,FairPlayTeams1,$C4)+SUMIFS(FairPlayPoints2,FairPlayTeams2,$C4)
and copy it down to cell **L9**.
These formulas determine the fair play ratings for each team.

In cell **M4** we enter the formula
=100-INDEX(Language!$D$5:$D$59,MATCH($C4,Language!$E$5:$E$59,0),1)
and copy it down to cell **M9**.
This should be a number that is higher, the better the rank achieved in the European Qualifiers Ranking. Here it is assumed that the rank numbers in column D of the 'Language' worksheet are correct. They don't have to be sorted.

The **MATCH($C4,Language!$E$5:$E$59,0)** expression returns the position of the team name (**$C4**) in the Language worksheet - for example 19 for Wales. The INDEX function then looks up the rank number to the left of the team name. In this case it is 19 again, because the list is sorted here. For a smaller rank number to result in a larger rating number, the rank number is subtracted from 100.

In cell **I4** we enter the formula
=$D4*FactorPts+$E4*FactorGD+$F4*FactorFor+$H4*FactorWins+$L4*FactorFairPlay+$M4*FactorRank
and copy it down to cell **I9**.

Rating numbers are calculated here, taking into account score, goal difference, goals scored, number of wins, fair play and European Qualifiers Ranking. Based on these rating numbers, a sorted list of the six third-placed teams is now generated in the range **B11:J16**. The sorting follows the same principle as described in Chap. 7.4.

The group letters are also sorted in column J, so that it is known from which groups the four best teams come. In our case these are the groups F, D, A, C.

To sort these four alphabetically, in cell **L11** we enter the formula
=SUM(IF($J$11:$J$14<$J11,1))
and complete the entry with Ctrl-Shift-Enter (Ctrl-Shift-Enter). So that we convert this formula into a so-called array formula. In the edit line it appears in curly brackets. We copy the formula down to cell **L14**.
For each letter, this formula counts how many smaller ones are in the list. For example, this results in the number 3 for the first letter F, because three of the letters are smaller than F. In this way the numbers in the range **L11:L14** say the order in which the letters are to be arranged.

In cell **M11** we enter the formula
=INDEX($J$11:$J$14,MATCH(ROW()-11,$L$11:$L$14,0))
and copy it down to cell **M14**.
This formula sorts the four letters in ascending order. The expression **ROW()-11** produces the four numbers 0, 1, 2 and 3. The expression **MATCH(ROW()-11,$L$11:$L$14,0)** returns the position of these four numbers in the list **L11:L14**. The INDEX function then looks up the appropriate letter from the list **J11:J14**.

The sorted letters are combined into a string in cell **J18** using the formula **=M11&" "&M12&" "&M13&" "&M14**.

The group table in the **N11:Q16** range is actually superfluous. It's just a visual convenience.

The formula in cell **J21** is discussed at the end of →Chapter 9.1.
It is: **=IF(AND(TRUNC($I$14,4)=TRUNC($I$15,4),Distinctness!$G$13>0),1,0)**

We create a new worksheet named "**AssignThird**".

There is no formula on this worksheet. We simply transfer the table for allocation of third-placed teams in the round of 16 provided by UEFA. It is important to ensure that there is exactly one space between each letter in column C. Because then we can use conditional formatting to color highlight the current group combination.

The formula for the conditional formatting in line 8 is:
=$C8=ThirdPlaced!$J$18
This formatting can be transferred to the other lines with "Format painter".

The worksheet **'Distinctness'** will only be discussed in chapter 9.2. In this chapter, however, we need the reference to cell **G13**. Therefore, we now create a worksheet called 'Distinctness' and enter the following formula in cell **G13**:

=GrpA!$M$10+GrpB!$M$10+GrpC!$M$10+GrpD!$M$10+GrpE!$M$10+GrpF!$M$10

The formula returns the total number of all fully entered match results of the group stage.

The constellation of the third-placed should be displayed in the range **T45:Y49** on the '**EURO**' worksheet. Cells **T45** and **U45** are merged. Here we enter the formula **=Language!$E$126**.

In cell **T46** we enter the formula **=IF(Distinctness!$G$13>0,ThirdPlaced!$C11,"")** and copy it down to cell **T49**. The four qualified third-placed appear here – but only after at least one group match has taken place (**Distinctness!$G$13>0**).

The two unqualified teams are shown in cells **W48** and **W49**.
Cell **W48**:   **=IF(Distinctness!$G$13>0,ThirdPlaced!$C15,"")**
Cell **W49**:   **=IF(Distinctness!$G$13>0,ThirdPlaced!$C16,"")**

To display the points and the goals we enter the formula
=IF(Distinctness!$G$13>0,"   "&ThirdPlaced!$D11&"   "&ThirdPlaced!$F11&Language!$E$143 &ThirdPlaced!$G11,"")
in cell **U46** and copy it down to cell **U49**.

Cell **X48**:
=IF(Distinctness!$G$13>0,"   "&ThirdPlaced!$D15&"   "&ThirdPlaced!$F15&Language!$E$143 &ThirdPlaced!$G15,"")
Cell **X49**:
=IF(Distinctness!$G$13>0,"   "&ThirdPlaced!$D16&"   "&ThirdPlaced!$F16&Language!$E$143 &ThirdPlaced!$G16,"")

Formulas for group membership:
Cell **V46**:   **=IF(Distinctness!$G$13>0,ThirdPlaced!$J11,"")**
The formula is copied down to cell **V49**.
Cell **Y48**:   **=IF(Distinctness!$G$13>0,ThirdPlaced!$J15,"")**
The formula is copied down to cell **Y49**.

Cells **W46** and **X46** are merged. With the formula **=IF(Distinctness!$G$13>0,ThirdPlaced!$J18,"")** the current group combination is displayed here.

8.2   Round of 16

We have prepared all match data for the group stage to such an extent that we only need to enter the number of the match in the top left next to each match box on the "EURO" worksheet. The match data is then automatically taken from the "Matches" sheet.

We will also apply this principle in the Round of 16.

There will be an exception for the other matches in the knockout phase (quarter-finals, semi-finals, finals): **The team names for the individual encounters are not prepared on the "Matches" sheet.**

Actually, it would be best to use this principle for all matches up to the final. But from the quarter-finals onwards, the team names depend on entries on the "EURO" worksheet. We would need difficult-to-read formulas with unnecessary computational effort to first generate the team names on the "Matches" sheet and then transfer them to the "EURO" sheet.

On the "Matches" worksheet in cells **C41** and **D41**, we see that match number 37 is match **2A** against **2B**. The corresponding team names should now appear in columns I and J - but not statically, but depending on the entries in columns C and D - just like in the group matches.

To do this, we create a small auxiliary table in the range **M41:N56**. It has the following entries:

	M	N
41	1A	=EURO!$B$46
42	2A	=EURO!$B$47
43	1B	=EURO!$E$46
44	2B	=EURO!$E$47
45	1C	=EURO!$H$46
46	2C	=EURO!$H$47
47	1D	=EURO!$K$46
48	2D	=EURO!$K$47
49	1E	=EURO!$N$46
50	2E	=EURO!$N$47
51	1F	=EURO!$Q$46
52	2F	=EURO!$Q$47
53	3A/D/E/F	*1
54	3D/E/F	*2
55	3A/B/C/D	*3
56	3A/B/C	*4

The team name for **1A** is in cell **EURO!$B$46**, the team name for **2A** is in cell **EURO!$B$47**, and so on.

The last four formulas are:

*1:
=IF(Distinctness!$G$13>0,VLOOKUP(VLOOKUP(ThirdPlaced!$J$18,AssignThird!$C$8:$G$22,2,0), CHOOSE({1,2},ThirdPlaced!$J$4:$J$9,ThirdPlaced!$C$4:$C$9),2,0),"")

*2:
=IF(Distinctness!$G$13>0,VLOOKUP(VLOOKUP(ThirdPlaced!$J$18,AssignThird!$C$8:$G$22,3,0), CHOOSE({1,2},ThirdPlaced!$J$4:$J$9,ThirdPlaced!$C$4:$C$9),2,0),"")

*3:
=IF(Distinctness!$G$13>0,VLOOKUP(VLOOKUP(ThirdPlaced!$J$18,AssignThird!$C$8:$G$22,4,0), CHOOSE({1,2},ThirdPlaced!$J$4:$J$9,ThirdPlaced!$C$4:$C$9),2,0),"")

*4:

=IF(Distinctness!$G$13>0,VLOOKUP(VLOOKUP(ThirdPlaced!$J$18,AssignThird!$C$8:$G$22,5,0), CHOOSE({1,2},ThirdPlaced!$J$4:$J$9,ThirdPlaced!$C$4:$C$9),2,0),"")

These four formulas differ only in a single number (red writing).

The expression **IF(Distinctness!$G$13>0,…)** queries whether at least one match result of the group stage has been entered. If not, nothing should initially be entered here for the third-placed teams.

Otherwise, a nested VLOOKUP is performed:

VLOOKUP(VLOOKUP(ThirdPlaced!$J$18,AssignThird!$C$8:$G$22,2,0), CHOOSE({1,2},ThirdPlaced!$J$4:$J$9,ThirdPlaced!$C$4:$C$9),2,0)

The inner expression **VLOOKUP(ThirdPlaced!$J$18,AssignThird!$C$8:$G$22,2,0**) reads the current group combination (e.g. A C D F) from the cell **ThirdPlaced!$J$18** and looks on the worksheet 'AssignThird' to see which letter is in column D - here e.g. the letter F.

For the outer VLOOKUP function,
the expression **CHOOSE({1,2},ThirdPlaced!$J$4:$J$9,ThirdPlaced!$C$4:$C$9)** produces a search array composed of two columns: **ThirdPlaced!$J$4:$J$9** and **ThirdPlaced!$C$4:$C$9**. In column I the letter F is searched and in column C the name 'Portugal' is found.

If the red **2** in the formula now becomes a **3**, the inner VLOOKUP function finds the letter D on sheet 'AssignThird', and the outer VLOOKUP function finds the name 'Czechia' on sheet 'ThirdPlaced'.

In cell **I41** we enter the formula **=VLOOKUP(C41,$M$41:$N$56,2,0)** and copy it down and to the right over the whole range **I41:J48**. The team names of the Round of 16 matches now appear.

 The headings "**Round of 16 - 1**", "**Round of 16 - 2**", etc. are not officially given. We choose them according to the chronological order of the Round of 16 matches. However, the headings can just as well be numbered from left to right.
To make it as easy as possible to adapt the chronological order to future European championship tournaments, we enter the numbers from 1 to 8 in the desired order in cells **K41** to **K48**. The rest will be done by formulas.

At the European championship 2020/2021, Match No. **37** (Round of 16 Match **2A-2B**) is first, it gets the number 1.
Match No. **38** (Round of 16 Match **1A**-**2C**) is second, it gets the number 2.
Match No. **39** (Round of 16 Match **1C**-**3D/E/F**) will be the third, it gets the number 3.
In this way, the chronological order is 1, 2, 3, 4, 5, 6, 7, 8.
The numbering of the matches (37 - 44) corresponds to the chronological order. This does not always have to be the case.

Now we fill the match plan with the dates of the Round of 16.

On the "**EURO**" worksheet, we enter the formula
=VLOOKUP(VLOOKUP(A52,Matches!$B$41:$K$48,10,0),Language!$D$108:$E$115,2,0) in cell **B51**.

The inner VLOOKUP function **VLOOKUP(A52,Matches!$B$41:$K$48,10,0)** takes the match number "41" in cell **A52** and then looks up the number for this match in column K on the worksheet 'Matches'. It finds the number "5".

The outer VLOOKUP function now looks on the worksheet 'Language' in the range **$D$108:$E$115** to see which heading belongs to the number "5", and finds there the language-dependent heading for the first Round of sixteen, in English for example "Round of 16 - 5". The idea of translating only the word "Round of 16" and adding a 5 can possibly lead to conflicts with languages where the 5 is not at the end.

We copy the formulas for range **B52:C54** from one of the group matches: for example, mark range **B38:C40**, copy with "Ctrl C", then click on cell **B52** and paste with "**Root -> Insert -> Formulas**".

In cell **B55** we enter: **=Language!$E$125** ("Penalty shoot-out:"). Cells **B56** and **C56** are merged. They get a conditional formatting (font color red) with the formula **=AND(B55=C55,B55<>"",C55<>"")**.

In line 58 we enter the following two formulas:
Cell **B58**:   **=VLOOKUP(A52,Matches!$B$4:$K$58,2,0)**
Cell **C58**:   **=VLOOKUP(A52,Matches!$B$4:$K$58,3,0)**

Now we mark the range **B51:C58** and copy the formulas into the other Round of 16 matches.

Explanation of the order of the Round of 16 matches on the match schedule:

Final							51							
1/2-Final				49						50				
1/4-Final		45			46			47			48			
1/8-Final	41		42	40		38	39		37	43		44			
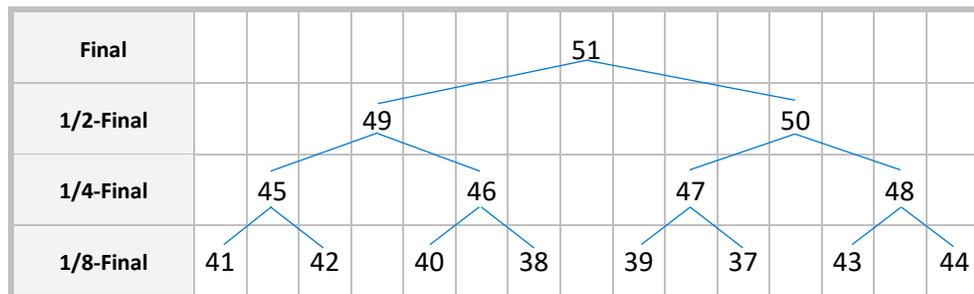
If we follow the matches backwards from the final, we can see in the UEFA plan that in the final, the winner of match 49 will play against the winner of match 50. In match 49, the winner of match 45 plays against the winner of match 46. In match 45, the winner of match 41 plays against the winner of match 42.
This gives us the following order of the Round of 16 matches: 41, 42, 40, 38, 39, 37, 43, 44.

8.3   Quarter-finals, semi-finals and finals

For the quarter-finals we enter the numbers 1, 2, 3, 4 in the cells **K50:K53** of the worksheet **'Matches'**. They result from the chronological order of the quarter-finals. Since the order of the semi-finals and the final is always the same, we enter the corresponding formulas in this case:
Cell **K55**:   **=Language!$E$120**
Cell **K56**:   **=Language!$E$121**
Cell **K58**:   **=Language!$E$123**

On the **'EURO'** worksheet, we enter the following formulas for the first quarter-final match:

Cell **C61**:   **=VLOOKUP(VLOOKUP(B62,Matches!$B$50:$K$53,10,0),Language!$D$116:$E$119,2,0)**

Cell **C62**:   **=VLOOKUP(B62,Matches!$B$4:$K$58,7,0)**

Cell **C63**:   **=VLOOKUP(B62,Matches!$B$4:$K$58,5,0)**

Cell **C66**:   **=Language!$E$125**

Cell **C68**:   **=VLOOKUP(B62,Matches!$B$50:$K$58,2,0)**

Cell **E68**:   **=VLOOKUP(B62,Matches!$B$50:$K$58,3,0)**

We mark the range **C61:E68** and copy it into the boxes of the remaining quarter-final matches and the **first semi-final match**. The formula for the heading is no longer correct in the semi-final and the error "#N/A" (no value available) appears. From the semi-final onwards, we have constant headings with a different formula. In cell **F71** we therefore enter:

Cell **F71**:   **=VLOOKUP(E72,Matches!$B$50:$K$58,10,0)**

We mark the range **F71:H78** and copy it into the boxes of the second semi final and the final.

The cells **C66:E66** are merged and get a conditional formatting for red font colour with the formula **=AND(C65=E65,C65<>"",E65<>"")**, which is extended to all knockout matches from the quarter-finals onwards.

At this point we have the possibility of further optimization:
On the 'EURO' spreadsheet, the **numbers of the matches in the KO round** (round of 16, quarter-finals and semi-finals) can be generated **automatically** using formulas. This has the advantage that once the match plan has been filled out on the 'Matches' spreadsheet, all the matches in the KO round are automatically arranged correctly.

On the 'EURO' spreadsheet, cell **C68** has the content "W41". This means that the first round of 16 match (far left) must be match number 41. We therefore replace the number 41 in cell **A52** with the formula **=RIGHT($C$68,2)*1**.

The last two characters ("41") are truncated from the text "W41". Multiplying by 1 converts the truncated text to the **number** 41. This conversion is necessary because the LOOKUP functions in the range **B51:C58** would not find the text "41" in the Matches worksheet. They would return the error code **#N/A**.

We proceed accordingly with the other match numbers of the KO round. For example, in cell **D52** we enter the formula **=RIGHT($E$68,2)*1**. Cell **H62** then contains the formula **=RIGHT($H$78,2)*1** and cell **E72** contains the formula **=RIGHT($L$88,2)*1**.

Cell **K82** contains the number 51, since the final is always match number 51.

Now only the **team names** are missing.

In cell **C64** we enter the following formula:
=IF(AND(B55<>"",C55<>""),IF(B55>C55,B54,IF(B55<C55,C54,IF(AND(B57<>"",C57<>""),IF(B57>C57,B54, IF(B57<C57,C54,"")),""))),"")

The winner of match 41 is said to be here. The formula consists of six nested **IF** functions. The first **IF** function checks whether the match result is entered completely in cells **B55** and **C55**. If not, no team name is entered. Otherwise: The next two **IF** functions check whether one of the two teams has won. In this case, the winner is entered. Otherwise (draw): Now it is checked whether the result of the penalty shoot-out is complete and no

draw has been entered. Accordingly, the winner or nothing is entered for the team name.

Here are the remaining formulas for the **team names**:

Cell **E64**:

=IF(AND(E55<>"",F55<>""),IF(E55>F55,E54,IF(E55<F55,F54,IF(AND(E57<>"",F57<>""),IF(E57>F57,E54,
IF(E57<F57,F54,"")),""))),"")

Cell **I64**: =IF(AND(H55<>"",I55<>""),IF(H55>I55,H54,IF(H55<I55,I54,IF(AND(H57<>"",I57<>""),IF(H57>I57,H54,
IF(H57<I57,I54,"")),""))),"")

Cell **K64**:

=IF(AND(K55<>"",L55<>""),IF(K55>L55,K54,IF(K55<L55,L54,IF(AND(K57<>"",L57<>""),IF(K57>L57,K54,
IF(K57<L57,L54,"")),""))),"")

Cell **O64**:

=IF(AND(N55<>"",O55<>""),IF(N55>O55,N54,IF(N55<O55,O54,IF(AND(N57<>"",O57<>""),IF(N57>O57,N54,
IF(N57<O57,O54,"")),""))),"")

Cell **Q64**:

=IF(AND(Q55<>"",R55<>""),IF(Q55>R55,Q54,IF(Q55<R55,R54,IF(AND(Q57<>"",R57<>""),IF(Q57>R57,Q54,
IF(Q57<R57,R54,"")),""))),"")

Cell **U64**:

=IF(AND(T55<>"",U55<>""),IF(T55>U55,T54,IF(T55<U55,U54,IF(AND(T57<>"",U57<>""),IF(T57>U57,T54,
IF(T57<U57,U54,"")),""))),"")

Cell **W64**:

=IF(AND(W55<>"",X55<>""),IF(W55>X55,W54,IF(W55<X55,X54,IF(AND(W57<>"",X57<>""),IF(W57>X57,
W54,IF(W57<X57,X54,"")),""))),"")

Cell **F74**:

=IF(AND(C65<>"",E65<>""),IF(C65>E65,C64,IF(C65<E65,E64,IF(AND(C67<>"",E67<>""),IF(C67>E67,C64,
IF(C67<E67,E64,"")),""))),"")

Cell **H74**:

=IF(AND(I65<>"",K65<>""),IF(I65>K65,I64,IF(I65<K65,K64,IF(AND(I67<>"",K67<>""),IF(I67>K67,I64,
IF(I67<K67,K64,"")),""))),"")

Cell **R74**:

=IF(AND(O65<>"",Q65<>""),IF(O65>Q65,O64,IF(O65<Q65,Q64,IF(AND(O67<>"",Q67<>""),IF(O67>Q67,O64,
IF(O67<Q67,Q64,"")),""))),"")

Cell **T74**:

=IF(AND(U65<>"",W65<>""),IF(U65>W65,U64,IF(U65<W65,W64,IF(AND(U67<>"",W67<>""),IF(U67>W67,
U64,IF(U67<W67,W64,"")),""))),"")

Cell **L84**:

=IF(AND(F75<>"",H75<>""),IF(F75>H75,F74,IF(F75<H75,H74,IF(AND(F77<>"",H77<>""),IF(F77>H77,F74,
IF(F77<H77,H74,"")),""))),"")

Cell **N84**:

=IF(AND(R75<>"",T75<>""),IF(R75>T75,R74,IF(R75<T75,T74,IF(AND(R77<>"",T77<>""),IF(R77>T77,R74,
IF(R77<T77,T74,"")),""))),"")

8.4   Notice when entering an invalid match result

A draw is not possible in the knockout phase, as the match will definitely be decided by a penalty shoot-out. If a tie is entered as a match result, a note should appear under the match result.

We merge cells **B59** and **C59** and enter the following formula:
=IF(AND(B55<>"",C55<>"",B55=C55,B57<>"",C57<>"",B57=C57),Language!$E$138,"")
We copy this formula into cells **E59**, **H59**, **K59**, **N59**, **Q59**, **T59** and **W59**.

The note appears when the match result and the penalty shoot-out result have been entered in full, but no winner emerges.

We connect cells **C69**, **D69** and **E69** and fill in the following formula:
=IF(AND(C65<>"",E65<>"",C65=E65,C67<>"",E67<>"",C67=E67),Language!$E$138,"")
We copy this formula into cells **I69**, **O69**, **U69**, **F79**, **R79** and **L89**.

Finally, the announcement of the new world champion:

Cell **R82**:
=Language!$E$107

Cell **R84**:
=IF(AND(L85<>"",N85<>""),IF(L85>N85,L84,IF(L85<N85,N84,IF(AND(L87<>"",N87<>""),IF(L87>N87,L84, IF(L87<N87,N84,"")),""))),"")

The ranges **R82:W83** and **R84:W85** are each merged to one cell.

The match plan is now ready. The rest (chapters 9 and 10) is additional convenience.
The current status of the schedule can be found in the file named "**EURO_Tut_8.xlsx**".

9   Optional: The thing with the red dot

If two or more teams cannot be distinguished at the end of the group stage due to their points, goals and direct comparisons, a decision will be made on the basis of the fair play rating or the rank in the European Qualifiers rankings. The user of this match plan may then have to enter additional bonus points on the "**FairPlay**" worksheet.

So that the occurrence of such a case is clearly recognizable, the affected groups are marked with a red dot. The red dot disappears again when the order has been clarified by entering bonus points.

To make this even more transparent for the user, we also set up an eye-catching red or green message, for example
"Groups with fair play valuation: A, C and F."
or
"The placement has been clarified in all groups."

9.1   The red dot

In cell **X11** on the „GrpA" worksheet we enter the following formula:
=IF(AND(OR(TRUNC($V$11,4)=TRUNC($V$12,4),TRUNC($V$11,4)=TRUNC($V$13,4),TRUNC($V$11,4)=TRUNC($V$14,4),TRUNC($V$12,4)=TRUNC($V$13,4),TRUNC($V$12,4)=TRUNC($V$14,4),TRUNC($V$13,4)=TRUNC($V$14,4)),$M$10>0),1,0)

In detail:

TRUNC($V$11,4) means that the rank number in **V11** (e.g. 90055053,0000983) is reduced to four decimal places. This cuts off the rank in the European Qualifiers rankings and the line number and leaves the ranking number, which contains all UEFA criteria from the number of points to the Fair Play Score.

If we call these abbreviated ranks R1, R2, R3 and R4, then the formula says: If at least two of these rank numbers are the same (R1 = R2 or R1 = R3 or ... R3 = R4) and at least one match result is entered in this group (**$M$10>0**), then a 1 appears in cell **X11**, otherwise a 0.

If there is a 1 in cell **X11**, a red dot should be displayed in the relevant group.
The formula in **GrpA!X11** is now copied into the "GrpB", "GrpC" etc. worksheets.

On the "EURO" worksheet, we merge cells **B8** and **C8**. The red dot should appear here.
Therefore we enter the formula **=IF(GrpA!$X$11>0,"•","")** here.
The dot can first be created in any cell with "Insert → Symbol" and then inserted into the formula with copy and paste.

On the "**EURO**" worksheet, the formula in **B8** is copied to **E8**, **H8** etc.
"GrpA" is changed to "GrpB", "GrpC" etc.

In cell **T44** we enter the formula **=IF(ThirdPlaced!$J$21>0,"•","")**.

For third-placed teams, the order of the top four doesn't matter. All that matters is that the right four teams are in the top four positions. In order to determine whether the situation is unclear or not, it is therefore sufficient to check whether the placements in fourth and fifth place are clearly clarified.

Therefore, the formula in cell **ThirdPlaced!$J$21** is:

=IF(AND(TRUNC($I$14,4)=TRUNC($I$15,4),Distinctness!$G$13>0),1,0)

If the rating numbers in **$I$14** and **$I$15** match in all places up to the fourth decimal place, this means that the teams in 4th place and 5th place are equal in points, goal difference, number of goals scored and number of wins and no different numbers were entered in the fair play rating either. In this case, the last criterion, the position in the European Qualifiers Ranking, would decide and a red dot will be displayed above the list of third-placed teams. The additional condition **Distinctness!$G$13>0** ensures that the red dot only appears if at least one match result has been entered.

9.2   The message

We now fill out the "**Distinctness**" worksheet. It should look like this:

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		**Distinctness of the ranks within the groups**											
2													
3		Group	Distinctness	Number	Not clear	Indicator	Position	Text					
4		A	0	3		0	0				Groups with fair play valuation: B, C and E.		
5		B	1		B	1	1	B,			The placement has been clarified in all groups.		
6		C	1		C	1	2	C and					
7		D	0			0	2						
8		E	1		E	1	3	E					
9		F	0			0	3						
10													
11							Full text:	B, C and E					
12													
13						Number of all games:	36						
14													

In cells **B4** to **B9** we write the letters from A to F.

In cells **C4** to **C9** we enter the formulas **=GrpA!$X$11**, **=GrpB!$X$11**, … , **=GrpF!$X$11**.

This gives us an overview of the groups in which the fair play valuation or the European Qualifiers Rankings will decide. These are all groups for which there is a 1 in column C - in the figure above, groups B, C and E.

In this case, a message should appear on the schedule with the following text:

Groups with fair play valuation: B, C and E.

The first part of the message (groups with fair play valuation:) is a fixed text. The second part (B, C and E.) is variable text that looks different depending on the situation. For example, it can also be: B and E.

To create this second part of the text, we first enter a formula in cell **D4** for the number of groups with fair play valuation: **=COUNTIF($C$4:$C$9,">0")**.

In column E we enter the letter of the group if the group is not clear.

Cell **E4**: **=IF($C4>0,$B4,"")**

The formula is copied down to **E9**.

We enter the following formulas in cells **F4** and **G4**:

Cell **F4**: **=LEN($E4)**

Cell **G4**: **=SUM($F$4:$F4)**

and copy both formulas down to line 9. It is important that there is no dollar sign in front of the last 4 in the expression **$F$4:$F4**. When copying, **$F4** becomes **$F5**, etc.

Side note: Column F is only an auxiliary column to avoid the use of the SUMPRODUCT function, which behaves like an array formula and is therefore more difficult to understand. You could also omit column F and enter the formula = SUMPRODUCT(LEN($E$4:$E4)) in column G.

The numbers in column G now tell us the position of the three ambiguous groups in the list of these groups. The B in line 5 is in the first position. At the 3 in cell **G9** we can see that there are two more ambiguous groups. Therefore, a comma must follow after the B. The D in line 7 is in the second position. At the 3 in cell **G9** we see that this is the penultimate position and must be followed by an "and" after the D. The E in line 8 is in the third position. At the 3 in cell **G9** we can see that this is the last position. Nothing more has to follow the E. The final period is placed by the formula in cell **J4**.

This logic is summarized in the formulas in column H.

Cell **H4**: **=IF($E4<>"",$E4&IF($G4=$G$9,"",IF($G4<$G$9-1,", ",Language!$E$137)),"")**

The formula is copied down. The expression **Language!$E$137** is the word "and" in the selected language.

 In cell **H11** we put all parts together into one text:

Cell **H11**:   **=$H$4&$H$5&$H$6&$H$7&$H$8&$H$9**

The entire message is then in cell **J4**:   **=Language!$E$135&" "&$H$11&"."**

Formula in cell **J5**:   **=Language!$E$136**

The message in **J5** appears when there is a zero in **D4**.

Line 7 of the "EURO" worksheet is intended for the message. We merge cells **B7:R7** into one cell and center its contents.

In cell **B7** we enter the following formula:

=IF(Distinctness!$G$13=0,"",IF(Distinctness!$D$4>0,Distinctness!$J$4,Distinctness!$J$5))

The first condition **Distinctness!$G$13=0** means that no message appears if no results have yet been entered in the schedule.

Cell **B7** is given a green font. With the help of the conditional formatting, the font color changes to red if there is an unclear order of precedence in one of the groups. The formula for the condition is:

=Distinctness!$D$4>0 .

The current status of the schedule can be found in the file named "**EURO_Tut_9.xlsx**".

10 Optional: Additional overview of the direct comparisons

This overview is intended to show the comparison table of the three teams concerned, when comparing three teams directly, in order to make it clear how the ranking is established in this case. The direct comparison of two teams is also shown in this overview.

We create a new worksheet named "**Direct comparisons**". It should look like this:

			Total			Dir. Conp.(2)		Dir. Comp.(3)					Clear?	Row numbers				Col num	Dir. Comp. (3)			
● **Group A**		Pts	GD	Goals	Wins	Pts	Pen	Pts	GD	Goals	Fair Play/Lot	Not clear							Points	GD	For	Against
1.	Italy	9	5	5 - 0	3					-	0		0	0	0	0	0		0	0	0	0
2.	Switzerland	4	1	4 - 3	1	1				-	0		0	0	0	0	0		0	0	0	0
3.	Wales	4	1	3 - 2	1	1				-	0		0	0	0	0	0		0	0	0	0
4.	Turkey	0	-7	1 - 8	0					-	0		0	0	0	0	0					
														0	0	0	0	0				
● **Group B**		Pts	GD	Goals	Wins	Pts	Pen	Pts	GD	Goals	Fair Play/Lot	Not clear										
1.	Belgium	9	6	7 - 1	3					-	0		0	0	0	0	0		3	2	4	2
2.	Denmark	3	1	5 - 4	1			3	2	4 - 2	0		0	1	0	0	0		3	0	1	1
3.	Finland	3	-2	1 - 3	1			3	0	1 - 1	0		0	2	0	0	0		3	-2	2	4
4.	Russia	3	-5	2 - 7	1			3	-2	2 - 4	0		0	3	0	0	0					
														0	6	0	0	2				
Group C		Pts	GD	Goals	Wins	Pts	Pen	Pts	GD	Goals	Fair Play/Lot	Not clear										
1.	Netherlands	9	2	8 - 2	3					-	0		0	0	0	0	0		0	0	0	0
2.	Austria	6	1	4 - 3	2					-	0		0	0	0	0	0		0	0	0	0
3.	Ukraine	3	-1	4 - 5	1					-	0		0	0	0	0	0		0	0	0	0
4.	North Macedonia	0	-6	2 - 8	0					-	0		0	0	0	0	0					
														0	0	0	0	0				
● **Group D**		Pts	GD	Goals	Wins	Pts	Pen	Pts	GD	Goals	Fair Play/Lot	Not clear										
1.	England	7	2	2 - 0	2					-	0		0	0	0	0	0		0	0	0	0
2.	Croatia	4	1	4 - 3	1	1				-	0		0	0	0	0	0		0	0	0	0
3.	Czechia	4	1	3 - 2	1	1				-	0		0	0	0	0	0		0	0	0	0
4.	Scotland	1	-4	1 - 5	0					-	0		0	0	0	0	0					
														0	0	0	0	0				
Group E		Pts	GD	Goals	Wins	Pts	Pen	Pts	GD	Goals	Fair Play/Lot	Not clear										
1.	Sweden	7	2	4 - 2	2					-	0		0	0	0	0	0		0	0	0	0
2.	Spain	5	5	6 - 1	1					-	0		0	0	0	0	0		0	0	0	0
3.	Slovakia	3	-5	2 - 7	1					-	0		0	0	0	0	0		0	0	0	0
4.	Poland	1	-2	4 - 6	0					-	0		0	0	0	0	0					
														0	0	0	0	0				
● **Group F**		Pts	GD	Goals	Wins	Pts	Pen	Pts	GD	Goals	Fair Play/Lot	Not clear										
1.	France	5	1	4 - 3	1					-	0		0	0	0	0	0		0	0	0	0
2.	Germany	4	1	6 - 5	1	3				-	0		0	0	0	0	0		0	0	0	0
3.	Portugal	4	1	7 - 6	1	0				-	0		0	0	0	0	0		0	0	0	0
4.	Hungary	2	-3	3 - 6	0					-	0		0	0	0	0	0					
														0	0	0	0	0				

Columns A to X are the area visible to the user. Columns Y to AI are hidden.

We will develop the formulas for group A and then copy the entire range **B3:AI9** seven times. In each of these copies we then only need to adapt the formula for the heading (cells **C11**, **C19** etc.) and to replace the character string "GrpA" with "GrpB" or "GrpC" etc. in the formulas by Find/Replace. Therefore, the setting or omission of the dollar signs must be carefully observed here.

10.1 Visible area - part 1

		Group A					Total				Dir. Conp.(2)			Dir. Comp.(3)						
			Pts	GD		Goals			Wins		Pts	Pen		Pts	GD		Goals		Fair Play/Lot	Not clear
	1.	Italy	9	5	5	-	0		3								-		0	
	2.	Switzerland	4	1	4	-	3		1		1						-		0	
	3.	Wales	4	1	3	-	2		1		1						-		0	
	4.	Turkey	0	-7	1	-	8		0								-		0	

		Group B					Total				Dir. Conp.(2)			Dir. Comp.(3)						
			Pts	GD		Goals			Wins		Pts	Pen		Pts	GD		Goals		Fair Play/Lot	Not clear
	1.	Belgium	9	6	7	-	1		3								-		0	
	2.	Denmark	3	1	5	-	4		1					3	2	4	-	2		0	
	3.	Finland	3	-2	1	-	3		1					3	0	1	-	1		0	
	4.	Russia	3	-5	2	-	7		1					3	-2	2	-	4		0	

		Group C					Total				Dir. Conp.(2)			Dir. Comp.(3)						
			Pts	GD		Goals			Wins		Pts	Pen		Pts	GD		Goals		Fair Play/Lot	Not clear
	1.	Netherlands	9	6	8	-	2		3								-		0	
	2.	Austria	6	1	4	-	3		2								-		0	
	3.	Ukraine	3	-1	4	-	5		1								-		0	
	4.	North Macedonia	0	-6	2	-	8		0								-		0	

We start with the heading:

Cell **B1**:   **=Language!$E$85**

The cells **B1** to **W1** are merged.

For the headings in line 3 we enter the following formulas:

Cell **C3**:   **=Language!$E$93&" A"**

Cell **D3**:   **=Language!$E$101**

Cell **J3**:   **=Language!$E$104**

Cell **P3**:   **=Language!$E$105**

For the headings in line 4 we enter the following formulas:

Cell **D4**:   **=Language!$E$95**

Cell **E4**:   **=Language!$E$96**

Cell **F4**:   **=Language!$E$97**

Cell **I4**:   **=Language!$E$98**

Cell **L4**:   **=Language!$E$95**

Cell **M4**:   **=Language!$E$99**

Cell **P4**:   **=Language!$E$95**

Cell **Q4**:   **=Language!$E$96**

Cell **R4**:   **=Language!$E$97**

Cell **V4**:   **=Language!$E$102**

Cell **W4**:   **=Language!$E$103**

We enter the current number in cells **B5** to **B8**. We copy the team names in sorted order from the worksheet "GrpA":

Cell **C5**:   **=GrpA!$P$11**

Cell **C6**:   **=GrpA!$P$12**

Cell **C7**:   **=GrpA!$P$13**

Cell **C8**:   **=GrpA!$P$14**

For example, for later copying of the complete group, it is important that there is a dollar sign in front of the numbers 11, 12, 13 and 14.

 In range **D5:I8** you should first see a copy of the group table:

Cell **D5**:   **=GrpA!$Q$11**

Cell **D6**:   **=GrpA!$Q$12**

Cell **D7**:   **=GrpA!$Q$13**

Cell **D8**:   **=GrpA!$Q$14**

Cell **E5**:   **=GrpA!$R$11**

Cell **E6**:   **=GrpA!$R$12**

Cell **E7**:   **=GrpA!$R$13**

Cell **E8**:   **=GrpA!$R$14**

Cell **F5**:   **=GrpA!$S$11**

Cell **F6**:   **=GrpA!$S$12**

Cell **F7**:   **=GrpA!$S$13**

Cell **F8**:   **=GrpA!$S$14**

Cell **H5**:   **=GrpA!$T$11**

Cell **H6**:   **=GrpA!$T$12**

Cell **H7**:   **=GrpA!$T$13**

Cell **H8**:   **=GrpA!$T$14**

In the range **L5:L8** the points of a direct comparison of two teams should be displayed. If there is no direct comparison between two teams, the fields remain empty.

In order to determine whether there is a direct comparison for the team in question with another team, we first add further formulas to the group tables.

On the "GrpA" worksheet, we enter the formula **=VLOOKUP($P11,$E$18:$M$21,8,0)<>""** in cell **Z11** and copy it down to cell **Z14**. This formula looks in cells **L18:L21** to see if there is a direct comparison between two teams for the team in question. 'TRUE' or 'FALSE' is entered accordingly.

In cell **AA11** we enter the formula **=VLOOKUP($P11,$E$18:$M$21,9,0)<>""** and copy it down to cell **AA14**. The formula looks in cells **M18:M21** to see if there is a direct comparison between two teams for the team in question in the case of four teams tied on points.

In cell **AB11** we enter the formula **=SUMPRODUCT(1*(LEN($Z$18:$Z$35)>0)*($P$18:$P$35=$P11))>0** and copy it down to cell **AB14**. The formula checks whether there is a direct comparison of two teams for the team in question in the case of three teams with the same number of points.

The SUMPRODUCT function runs through the specified ranges **$Z$18:$Z$35** and **$P$18:$P$35** step by step. The expressions

1*(LEN($Z$18)>0)*($P$18=$P11)

1*(LEN($Z$19)>0)*($P$19=$P11)

. . .

1*(LEN($Z$35)>0)*($P$35=$P11)

are therefore calculated and the sum of the individual results is formed.

For example, if cell **Z19** contains a number (3, 1, or 0), the expression **LEN($Z$19)>0** is TRUE (or 1). Since the expression **$P$19=$P11** is also TRUE (both cells contain 'Italy'), the product is 1*TRUE*TRUE = 1. The end result **SUMPRODUCT(. . .)>0** is then also TRUE.

The next formula in cell **AC11** works on the same principle:

=SUMPRODUCT(1*(LEN($AE$18:$AE$35)>0)*($P$18:$P$35=$P11))>0

It checks whether there is a direct comparison of two teams for the team in question in the rare case that all four teams are equal in points and another direct comparison of two teams is carried out within the direct comparison of three teams.

In cell **AD11** we enter the formula

=IF($Z11,VLOOKUP($P11,$E$18:$M$21,8,0),IF($AA11,VLOOKUP($P11,$E$18:$M$21,9,0),IF($AB11,SUMIFS($Z$18:$Z$35,$P$18:$P$35,$P11),IF($AC11, SUMIFS($AE$18:$AE$35,$P$18:$P$35,$P11),""))))

and copy it down to cell **AD14**.

There are four possible cases for a direct comparison of two teams. The formulas in cells **Z11**, **AA11**, **AB11** and **AC11** test for any of these cases. The formula in cell **AD11** now checks whether one of these four cases has occurred. If so, it enters the result of the direct comparison in cell **AD11**.

It starts with **IF($Z11,VLOOKUP($P11,$E$18:$M$21,8,0),…**

So if a direct comparison of two teams is entered in the range **L18:L21**, it copies this value into cell **AD11**. Otherwise, the expression **IF($AA11,VLOOKUP($P11,$E$18:$M$21,9,0),…** will check the next case, and so on.

The results in the range **AD11:AD14** are transferred to the 'Direct comparisons' worksheet. On the sheet '**Direct comparisons**' we enter the formula **=GrpA!$AD$11** in cell **L5** and copy it down to cell **L8**.

Cells **M5:M8** of the 'Direct comparisons' worksheet should show whether a penalty shoot-out in the last group match decided the order of the teams. Here, too, the results are first calculated on the group worksheet and then transferred to cells **M5:M8**.

On the '**GrpA**' worksheet in cell **AE11** we enter the formula

=IF(OR(AND($Y$11>0,OR($B$8=$P11,$D$8=$P11)),AND($Y$12>0,OR($B$9=$P11,$D$9=$P11))),SUMIF($B$8:$B$9,$P11,$J$8:$J$9)+SUMIF($D$8:$D$9,$P11,$L$8:$L$9),"")

and copy it down to cell **AE14**.

The result of the penalty shoot-out is shown here if the team in question is involved.

The formula has the following structure:

=IF(OR(Condition1, Condition2),Result,"")

Condition1:   **AND($Y$11>0,OR($B$8=$P11,$D$8=$P11))**

Condition2:   **AND($Y$12>0,OR($B$9=$P11,$D$9=$P11))**

Result: **SUMIF($B$8:$B$9,$P11,$J$8:$J$9)+SUMIF($D$8:$D$9,$P11,$L$8:$L$9)**

$Y$11>0 means: There will be a penalty shoot-out in the fifth group match (explanation in Chapter 7.2).
OR($B$8=$P11,$D$8=$P11) means: The team in question (**$P11**) is involved.
The SUMIF function adds the numbers in the ranges **J8:J9** and **L8:L9** if the team in question (**$P11**) occurs in range **B8:B9** or **D8:D9**.

On the sheet '**Direct comparisons**' we enter the formula **=GrpA!$AE$11** in cell **M5** and copy it down to cell **M8**. This will show the results of a penalty shootout in the last group match in the **M5:M8** range.

In range **P5:T8**, the group table should be displayed for a direct comparison of three teams. To do this, additional formulas must first be prepared in the hidden area (see Chapter 10.2). We will enter and discuss these formulas later (see Chapter 10.3).

In range **V5:V8** it should be shown whether a bonus for fair play has already been entered:
Cell **V5**:

=SUMIFS(FairPlayPoints1,FairPlayTeams1,$C5)+SUMIFS(FairPlayPoints2,FairPlayTeams2,$C5)
The formula is copied down to cell **V8**.

A red dot should appear in the range **W5:W8** if the positioning for the team in question is not yet clear. We will enter and discuss the formulas for this later (see Chapter 10.3).

10.2 Hidden area

	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
1											
2											
3	Clear?		Row numbers				Col num	Dir. Comp. (3)			
4								Points	GD	For	Against
5	0		0	0	0	0		0	0	0	0
6	0		0	0	0	0		0	0	0	0
7	0		0	0	0	0		0	0	0	0
8	0		0	0	0	0					
9			0	0	0	0	0				
10											
11											
12											
13	0		0	0	0	0		3	2	4	2
14	0		0	1	0	0		3	0	1	1
15	0		0	2	0	0		3	-2	2	4
16	0		0	3	0	0					
17			0	6	0	0	2				
18											
19											
20											
21	0		0	0	0	0		0	0	0	0
22	0		0	0	0	0		0	0	0	0
23	0		0	0	0	0		0	0	0	0
24	0		0	0	0	0					
25			0	0	0	0	0				
26											

In order to show the direct comparisons of three teams, we need a preparation in the hidden area (columns Y to AI).

Four different groups of three are possible in each group. The tables for these four groups of three can be found on the "**GrpA**" worksheet in range **O17:AD36**. If there is no direct comparison between three teams, the X column and the AD column in these four tables are all zeros. Only in the case of a direct comparison of three teams do numbers not equal to zero appear in the X column or in the AD column in one of the four tables. We want to copy exactly this table into the range **AF5:AI7** of our worksheet "**Direct comparisons**".

To do this, we need to know which are the correct line numbers.
We enter the following formula in cell **AA5**:
=IF(VLOOKUP($C5,GrpA!$P$18:$X$21,9,0)+VLOOKUP($C5,GrpA!$P$18:$AD$21,15,0)>0, MATCH($C5,GrpA!$P$18:$P$21,0),0)

The expression **VLOOKUP($C5,GrpA!$P$18:$X$21,9,0)** looks for the relevant team (**$C5**) on the worksheet "GrpA" in column X to see whether there is a zero (not a direct Comparison) or a number greater than zero (direct comparison).
The expression **VLOOKUP($C5,GrpA!$P$18:$AD$21,15,0)** looks up the AD column accordingly.

The expression **MATCH($C5,GrpA!$P$18:$P$21,0),0)** tells us at which position the respective team (**$C5**) is in the range **GrpA!$P$18:$P$21**.

The formula in **AA5** therefore returns the position of the team in question within the first of the four possible groups of three if a direct comparison is available, otherwise a zero.

In the same way, the formulas in cells **AB5**, **AC5** and **AD5** return the team's position in the other three possible groups of three. These formulas are:

Cell **AB5**:

=I(VLOOKUP($C5,GrpA!$P$23:$X$26,9,0)+VLOOKUP($C5,GrpA!$P$23:$AD$26,15,0)>0,
MATCH($C5,GrpA!$P$23:$P$26,0),0)

Cell **AC5**:

=I(VLOOKUP($C5,GrpA!$P$28:$X$31,9,0)+VLOOKUP($C5,GrpA!$P$28:$AD$31,15,0)>0,
MATCH($C5,GrpA!$P$28:$P$31,0),0)

Cell **AD5**:

=I(VLOOKUP($C5,GrpA!$P$33:$X$36,9,0)+VLOOKUP($C5,GrpA!$P$33:$AD$36,15,0)>0,
MATCH($C5,GrpA!$P$33:$P$36,0),0)

We copy the formulas in cells **AA5**, **AB5**, **AC5** and **AD5** down to row 8.

In line 9 we form the sum of the respective column:

Cell **AA9**:   **=SUM(AA5:AA8)**

Cell **AB9**:   **=SUM(AB5:AB8)**

Cell **AC9**:   **=SUM(AC5:AC8)**

Cell **AD9**:   **=SUM(AD5:AD8)**

Those four numbers are then either all zero or one of them is a six.

We enter the following formula in cell **AE9**:

{=MAX(IF($AA9:$AD9>0,COLUMN($AA9:$AD9)-COLUMN(Z$1),0))}

This is a so-called array formula. The curly brackets are not allowed to be entered. But you have to finish entering the formula with **Ctrl-Shift-Enter**. Then the curly brackets are set automatically.

This array formula calculates the four expressions

IF($AA9>0,COLUMN($AA9)-COLUMN(Z$1),0)
IF($AB9>0,COLUMN($AB9)-COLUMN(Z$1),0)
IF($AC9>0,COLUMN($AC9)-COLUMN(Z$1),0)
IF($AD9>0,COLUMN($AD9)-COLUMN(Z$1),0)

and returns the maximum of it.

For example, in the following figure we see a six in cell **AB9**.

	Y	Z	AA	AB	AC	AD	AE
1							
2							
3	Clear?		Row numbers				Col num
4							
5	0		0	0	0	0	
6	0		0	1	0	0	
7	0		0	2	0	0	
8	0		0	3	0	0	
9			0	6	0	0	2
10							

The first, third and fourth expressions result in 0.

Only for the second expression, the condition **$AB9>0** is true, so that the expression **COLUMN($AB9)-COLUMN(Z$1)** is calculated here. This expression gives 28 - 26 = 2. The maximum of the four numbers 0, 0, 2, 0 is then 2.

The number in cell AE9 tells us that in this example, column 2 of the small table contains line numbers greater than 0.

So we know that we can find the positions or the relative row numbers of the teams in column 2 of the small table **AA5:AD8**. We will use this in the formulas in the **P5:T8** range.

We also know that we have to copy the second table from the "GrpA" worksheet from the four tables in range **Q18:T36** to the "Direct comparisons" worksheet. And that's what we're going to do next. We use an array formula here again, this time not in a single cell, but in a range.

To do this, we mark the range **AF5:AI7** on the "Direct comparisons" worksheet and enter the following formula in the editing line above:
=IF($AA9>0,GrpA!$Q$18:$T$20,IF($AB9>0,GrpA!$Q$23:$T$25,IF($AC9>0,GrpA!$Q$28:$T$30, IF($AD9>0,GrpA!$Q$33:$T$35,"0"))))
The entry must be completed with **Ctrl-Shift-Enter**. The formula is then automatically enclosed in curly brackets. The formula causes the second table in our example to be copied to the "Direct comparisons" worksheet.

The formula consists of nested IF functions. If **$AA9>0**, the range **GrpA!$Q$18:$T$20** should be copied. If **$AB9>0**, the range **GrpA!$Q$23:$T$25** should be copied etc. Otherwise "0" is entered everywhere.

With the help of the array formula, we only need to enter a single formula for the entire range
(the so-called array).
The alternative would be to enter a formula of the type
=IF($AA9>0,GrpA!$Q$18,IF($AB9>0,GrpA!$Q$23,IF($AC9>0,GrpA!$Q$28,IF($AD9>0,GrpA!$Q$33,"0"))))
in everyone of the 12 cells.

On the **'Direct comparisons' worksheet**, we want to put a red dot in cells **W5** to W**8** for each team with an unclear rank. In preparation for this, we first create zeros or ones in cells **Y5** to **Y8**. We enter the following formulas in cells **Y5** to **Y8**:

Cell **Y5**:
=IF(AND(OR(TRUNC(GrpA!$V$11,4)=TRUNC(GrpA!$V$12,4),TRUNC(GrpA!$V$11,4)=TRUNC(GrpA!$V$13,4),TRUNC(GrpA!$V$11,4)=TRUNC(GrpA!$V$14,4)),VLOOKUP(GrpA!$P$11,GrpA!$P$4:$AC$7,14,0)),1,0)
Cell **Y6**:
=IF(AND(OR(TRUNC(GrpA!$V$12,4)=TRUNC(GrpA!$V$11,4),TRUNC(GrpA!$V$12,4)=TRUNC(GrpA!$V$13,4),TRUNC(GrpA!$V$12,4)=TRUNC(GrpA!$V$14,4)),VLOOKUP(GrpA!$P$12,GrpA!$P$4:$AC$7,14,0)),1,0)
Cell **Y7**:
=IF(AND(OR(TRUNC(GrpA!$V$13,4)=TRUNC(GrpA!$V$11,4),TRUNC(GrpA!$V$13,4)=TRUNC(GrpA!$V$12,4),TRUNC(GrpA!$V$13,4)=TRUNC(GrpA!$V$14,4)),VLOOKUP(GrpA!$P$13,GrpA!$P$4:$AC$7,14,0)),1,0)
Cell **Y8**:

=IF(AND(OR(TRUNC(GrpA!$V$14,4)=TRUNC(GrpA!$V$11,4),TRUNC(GrpA!$V$14,4)=TRUNC(GrpA!$V$12,4),T RUNC(GrpA!$V$14,4)=TRUNC(GrpA!$V$13,4)),VLOOKUP(GrpA!$P$14,GrpA!$P$4:$AC$7,14,0)),1,0)

If the ranking of the team in question, reduced to four decimal places, matches the reduced ranking of another team, a 1 is entered, otherwise a 0.

The AND function **AND(OR(…),VLOOKUP(GrpA!$P$11,GrpA!$P$4:$AC$7,14,0))** has the effect that a „1" is only entered if at least one match has been entered for the team in question.

The expression **VLOOKUP(GrpA!$P$11,GrpA!$P$4:$AC$7,14,0)**) reads a Boolean value from column AC of the worksheet "GrpA" that indicates whether the number of matches entered for the relevant Crew is greater than zero.

With these formulas, too, it is important that the numbers 11, 12, 13 and 14 are preceded by the dollar sign!

10.3 Visible area - part 2

In cell **W5** we enter the formula **=IF($Y5>0,"•","")** and copy it down to cell **W8**.

The special character can be entered in any cell (Insert → Symbol) and then inserted into the editing line with Copy + Paste.

A red dot appears for the teams with an unclear ranking.

In the range **P5:T8** the table for the direct comparison of three teams should be shown.
In cell **P5** we enter the following formula:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,1,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,1,$AE9),1)))

Explanation of the formula:

IF($AE9=0,"" means: if there is no direct comparison of three teams, nothing is entered.

The INDEX function in the form **INDEX (range, row, column)** returns the content of a cell from the specified range. The relative positions of the cell in this range are entered in the parameters **row** and **column**. For example, the expression **INDEX(C4:H9,2,3)** would return the contents of cell **E5**.

If there is a direct comparison, there is a number greater than zero in cell **AE9** and in the small table **AA5:AD8** one of the four columns contains the row numbers of the three teams involved in the direct comparison. In cell **AE9** is the number of the column in which we can find these line numbers.

The expression **IF(INDEX($AA5:$AD8,1,$AE9)=0** therefore checks whether the line number in the first line is equal to 0. If this is the case, then it is the team that does not take part in the direct comparison, and nothing is entered. Otherwise, the expression **INDEX($AF5:$AI7,INDEX($AA5:$AD8,1,$AE9),1)** is evaluated and the result is returned.

In this expression we have two nested INDEX functions.
The inner INDEX function **INDEX($AA5:$AD8,1,$AE9)** gives us the relative row number of the team in question, the outer INDEX function gives us the score of the team in question from column 1 of table **AF5:AI7**.

If we insert a "2" instead of a "1" for the column number, we get the **goal difference** and with a "3" or a "4"

the **goals**. We use this for the formulas in cells **Q5**, **R5** and **T5**. They are:

Cell **Q5**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,1,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,1,$AE9),2)))

Cell **R5**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,1,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,1,$AE9),3)))

Cell **T5**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,1,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,1,$AE9),4)))

The remaining formulas in table **M5:Q8** all look very similar:

Cell **P6**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,2,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,2,$AE9),1)))

Cell **Q6**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,2,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,2,$AE9),2)))

Cell **R6**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,2,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,2,$AE9),3)))

Cell **T6**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,2,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,2,$AE9),4)))

Cell **P7**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,3,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,3,$AE9),1)))

Cell **Q7**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,3,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,3,$AE9),2)))

Cell **R7**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,3,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,3,$AE9),3)))

Cell **T7**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,3,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,3,$AE9),4)))

Cell **P8**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,4,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,4,$AE9),1)))

Cell **Q8**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,4,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,4,$AE9),2)))

Cell **R8**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,4,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,4,$AE9),3)))

Cell **T8**:

=IF($AE9=0,"",IF(INDEX($AA5:$AD8,4,$AE9)=0,"",INDEX($AF5:$AI7,INDEX($AA5:$AD8,4,$AE9),4)))

A large blue dot should appear to the left of the group name so that the groups in which a direct comparison is carried out are even more visible. In cell **B3** we enter the following formula:

=IF(OR($AE9>0,$L5<>"",$L6<>"",$L7<>""),"●","")

The special character can be entered again in any cell with **Insert** → **Symbol** and then inserted into the editing line with **Copy + Paste**. It may appear as a space in the editing line, but it still works.

We now mark the range **B3:AI9** and copy it with Ctrl C, for example.

Then we click on cell **B11** and paste the copy, for example with Ctrl V.

Important: The new range is still marked!

With **Find and Replace** we change the text „GrpA" to „GrpB" in all formulas of the marked range.

In cell **C11** we change the formula **=Language!$E$93&" B"**.

We create the ranges for the remaining groups in the same way. - **All done!**

The final schedule can be found in the file "**EURO_Tut_final.xlsx**".

11   Adaptation of the schedule for a new European Championship

The schedule is designed in such a way that it can be adapted to the next tournament as easily and user-friendly as possible.

If you want to be precise, update the rank numbers on the 'Language' worksheet in column D according to the new rank order at the end of the qualification phase. No lines need to be swapped! The rank numbers can also be unordered - the main thing is that they are unique. However, you can save yourself this effort, because you can always clarify an unclear order in the group phase by entering a fair play bonus.

The following steps are to be carried out in detail:

11.1   Worksheet 'Language'

Only the venues need to be updated here.

11.2   Local time of the host country

On the 'TimeZone' worksheet in cell L5, the host country time zone is updated. To do this, the sheet protection must be removed and the hidden columns shown.

11.3   Allocation of the teams to the groups

The 'Groups' worksheet is shown. In column C the numbers of the teams assigned to the group in question are entered. For example, the number 14 is entered for team A1 because Turkey is number 14 on the Language worksheet, and so on.

11.4   Match data update

The 'Matches' worksheet is shown. The kick-off times must be updated in column E and the venue numbers in column G.

Should it be necessary to adapt the match numbers to the UEFA schedule, the corresponding changes can be made in column B after the sheet protection has been removed.

11.5   Updating the match numbers on the schedule

The match numbers are now adjusted on the 'EURO' worksheet. It is advisable to arrange the six group matches within each group in chronological order.

That's it! - All these changes are automatically applied to the rest of the worksheets.

Appendix: Special Case 'Direct Comparisons'

Under UEFA rules for qualifying for the round of 16, direct comparisons take precedence over goal difference and number of goals scored. If there are still tied teams left after a direct comparison, the direct comparison will be reapplied to those teams.

This special case shows an example in which after the direct comparison of all four teams, another direct comparison of three teams and then a third direct comparison of two teams takes place.

The match results look like this:

Netherlands	Ukraine	2 : 2
Austria	North Macedonia	1 : 1
Netherlands	Austria	1 : 1
Ukraine	North Macedonia	0 : 0
North Macedonia	Netherlands	1 : 1
Ukraine	Austria	0 : 0

The result is the following group table:

	Pts.	GD	Goals
Netherlands	3	0	4 : 4
Austria	3	0	2 : 2
North Macedonia	3	0	2 : 2
Ukraine	3	0	2 : 2

A direct comparison of all four teams shows: the Netherlands are in first place.
Another direct comparison is made for the other three teams, which only takes into account the matches of these three against each other. The following table is used for this direct comparison:

	Pts.	GD	Goals
Austria	2	0	1 : 1
North Macedonia	2	0	1 : 1
Ukraine	2	0	0 : 0

This puts Ukraine in last place.
Another direct comparison is made for Austria and North Macedonia.

| Austria | North Macedonia | 1 : 1 |

However, this does not lead to a decision, since the direct encounter between these two ended in a draw. Since the number of wins from all group matches is also the same, the fair play rating decides next. In the case of the same fair play rating, the rank in the European Qualifiers rankings then decides. Austria is in 16th place ahead of North Macedonia in 30th place (EURO 2020/2021).