

Data Analysis of UEFA European Championship 2024

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Abstract

The UEFA Euro 2024 tournament just finished, and it was an amazing event. It gave me the idea to gather players/match stats and put them into datasets. I cleaned the datasets and uploaded them to PostgreSQL to analyze player performance, award the best players of the tournament, and more. I love the sport, and being able to watch the tournament was an exciting experience. Combining my passion for data analytics and soccer (football) will be a great experience.

Objectives

I formulated questions to guide the analysis of the Euro 2024 tournament.

The five rewards for UEFA Euro 2024 that will be given:

- Top Scorers (Golden Boot)
- Top Assists
- Best Goalkeeper (Golden Gloves)
- Player of the Tournament
- Young Player of the Tournament

Key Analytical Inquiries

- How many matches have each referee officiated? List the referees who have officiated the most and least number of matches.
- Which venues have hosted the most matches during the tournament? List the top five venues by the number of matches.
- Which players have played every minute of every game for their team, and what is their total playing time?
- What is the conversion rate (goals per shot taken) for different shots (e.g., header, volley, direct free kick)? List the shot types with the highest conversion rates.
- Which players have won the most penalties for their teams, and how many have been successfully converted into goals?
- Which player received the most yellow and red cards, and which team had the most?

Variables

This section provides an explanation of each column for the tables in my project and will serve as a valuable reference when reviewing the tables or SQL code. Additionally, I will provide a detailed explanation of the SQL code in the data analysis section, ensuring clarity.

Player Advanced Goalkeeping Table

- **Rk:** Rank
- **Player:** Player's name
- **Pos:** Position
- **Squad:** Team or club name
- **Age:** The player's age
- **Born:** Birth year
- **90s:** Minutes played in 90-minute intervals
- **GA:** Goals Against
- **PKA:** Penalty Kick Allowed
- **FK:** Free Kicks Goals Against
- **CK:** Corner Kicks Goals Against
- **OG:** Own Goals scored against goalkeeper
- **PSxG:** Post-Shot Expected Goals
- **PSxG/SoT:** Post-Shot Expected Goals per Shot on Target
- **PSxG+/-:** Difference between PSxG and actual goals allowed
- **/90:** Per 90 minutes
- **Cmp:** Completed passes
- **Att:** Attempted passes
- **Cmp%:** Pass Completion Percentage
- **Att_(GK):** Goal Kick Attempts
- **Thr:** Throws attempted
- **Launch%:** Percentage of passes that were launched
- **AvgLen:** Average pass Length
- **Att1:** Goal Kicks
- **Launch%1:** Percentage of Goal Kicks that were launched
- **AvgLen1:** Average Length of Goal Kicks
- **Opp:** Crosses faced
- **Stp:** Crosses stopped
- **Stp%:** Crosses stopped percentage
- **OPA:** Defensive actions outside penalty area
- **OPA/90:** Defensive actions outside of penalty area per 90 minutes
- **AvgDist:** Average Distance of Defensive Actions

Squad Defensive Actions Table

- **RK:** Rank to identify the player number
- **Player:** Player's name
- **Pos:** Position
- **Squad:** Team or club name
- **Age:** The player's age
- **Born:** Birth year
- **90s:** Minutes played in 90-minute intervals
- **Tkl:** Tackles
- **TklW:** Tackles Won
- **Def_3rd:** Tackles in the Defensive Third
- **Mid_3rd:** Tackles in the Middle Third
- **Att_3rd:** Tackles in the Attacking Third
- **Tkl1:** Dribblers Tackles
- **Att:** Dribbles Challenged
- **Tkl%:** % of dribblers tackled
- **Lost:** Challenges Lost
- **Blocks:** Blocks
- **Sh:** Shots Blocked
- **Pass:** Passes Blocked
- **Int:** Interceptions
- **Tkl+Int:** Tackles + Interceptions
- **Clr:** Clearances
- **Err:** Errors

Player Goal and Shot Creation

- **Rk:** Rank to identify the player number
- **Player:** Player's name
- **Pos:** Position
- **Squad:** Team or club name
- **Age:** The player's age
- **Born:** Birth year
- **90s:** Minutes played in 90-minute intervals
- **SCA:** Shot Creating Actions
- **SCA90:** Shot Creating Actions per 90 minutes
- **PassLive:** SCA from live ball pass
- **PassDead:** SCA from dead ball pass
- **TO:** SCA from take-ons
- **Sh:** SCA from shots
- **Fld:** SCA from fouls drawn
- **Def:** SCA from defensive actions
- **GCA:** Goal Creating Actions
- **GCA90:** Goal Creating Actions per 90 minutes
- **PassLive1:** GCA from live ball pass
- **PassDead1:** GCA from dead ball pass
- **TO1:** GCA from take-ons
- **Sh1:** GCA from shots
- **Fld1:** GCA from fouls drawn
- **Def1:** GCA from defensive actions

Player Goalkeeping

- **Rk:** Rank
- **Player:** Player's name
- **Pos:** Position
- **Squad:** Team or club name
- **Age:** The player's age
- **Born:** Birth year
- **MP:** Matches Played
- **Starts:** Matches Started
- **Mins:** Minutes Played
- **90s:** 90-minute segments played
- **GA:** Goals Against
- **GA90:** Goals Against per 90 minutes
- **SoTA:** Shots on Target Against
- **Saves:** Saves
- **Saves%:** Saves percentage
- **W:** Wins
- **D:** Draws
- **L:** Losses
- **CS:** Clean Sheets
- **CS%:** Clean Sheet Percentage
- **Pkatt:** Penalty Kicks Attempted
- **PKA:** Penalty Kicks Allowed
- **PKsv:** Penalty Kicks Saved
- **PKm:** Penalty Kicks Missed
- **Saves%1:** Save percentage (Penalty Kicks)

Player Miscellaneous Stats

- **Rk:** Rank or position in a list
- **Player:** Name of the player
- **Pos:** Position of the player (e.g., Forward, Midfielder, Defender, Goalkeeper)
- **Squad:** The team or club the player is a part of
- **Age:** The age of the player
- **Born:** Year of birth or full birthdate of the player
- **90s:** Number of full 90-minute matches played or the equivalent in minutes
- **CrdY:** Yellow cards received
- **CrdR:** Red cards received
- **2CrdY:** Second yellow cards received, leading to a red card
- **Fls:** Fouls committed
- **Fld:** Fouls drawn (committed against the player)
- **Off:** Offsides committed
- **Crs:** Crosses completed
- **Int:** Interceptions made
- **TklW:** Tackles won
- **PKwon:** Penalty kicks won
- **PKcon:** Penalty kicks conceded
- **OG:** Own goals scored
- **Recov:** Recoveries made
- **Won:** Aerial duels or challenges won
- **Lost:** Aerial duels or challenges lost
- **Won%:** Percentage of aerial duels or challenges won

Player Pass Types

- **Rk:** Rank or position in a list
- **Player:** Name of the player
- **Pos:** Position of the player (e.g., Forward, Midfielder, Defender, Goalkeeper)
- **Squad:** The team or club the player is a part of
- **Age:** The age of the player
- **Born:** Year of birth or full birthdate of the player
- **90s:** Number of full 90-minute matches played or the equivalent in minutes
- **Att:** Attempts (pass attempts)
- **Live:** Live-ball passes
- **Dead:** Dead-ball passes
- **FK:** Free kick passes
- **TB:** Through balls
- **Sw:** Switches of play
- **Crs:** Crosses completed
- **TI:** Throw-ins
- **CK:** Corner kicks
- **In:** In-swinging corners
- **Out:** Out-swinging corners
- **Str:** Straight corners
- **Cmp:** Completed passes
- **Off:** Offsides committed
- **Blocks:** Passes blocked

Player Passing

- **Rk:** Rank or position in a list
- **Player:** Name of the player
- **Pos:** Position of the player (e.g., Forward, Midfielder, Defender, Goalkeeper)
- **Squad:** The team or club the player is a part of
- **Age:** The age of the player
- **Born:** Year of birth or full birthdate of the player
- **90s:** Number of full 90-minute matches played or the equivalent in minutes
- **Cmp:** Completed passes
- **Att:** Attempted passes
- **Cmp%:** Pass completion percentage
- **TotDist:** Total distance of passes
- **PrgDist:** Progressive distance of passes
- **Cmp1:** Completed short passes
- **Att1:** Attempted short passes
- **Cmp%1:** Short pass completion percentage
- **Cmp2:** Completed medium passes
- **Att2:** Attempted medium passes
- **Cmp%2:** Medium pass completion percentage
- **Cmp3:** Completed long passes
- **Att3:** Attempted long passes
- **Cmp%3:** Long pass completion percentage
- **Ast:** Assists
- **xAG:** Expected assists generated
- **xA:** Expected assists
- **A-xAG:** Difference between actual assists and expected assists generated
- **KP:** Key passes
- **1/3:** Passes leading to a shot attempt in the final third
- **PPA:** Passes into the penalty area
- **CrsPA:** Crosses into the penalty area
- **PrgP:** Progressive passes

Player Standard Stats

- **Rk:** Rank or position in a list
- **Player:** Name of the player
- **Pos:** Position of the player (e.g., Forward, Midfielder, Defender, Goalkeeper)
- **Squad:** The team or club the player is a part of
- **Age:** The age of the player
- **Born:** Year of birth or full birthdate of the player
- **MP:** Matches played
- **Starts:** Matches started
- **Min:** Minutes played
- **90s:** Number of full 90-minute matches played or the equivalent in minutes
- **Gls:** Goals scored
- **Ast:** Assists
- **G+A:** Goals plus assists
- **G-PK:** Non-penalty goals
- **PK:** Penalties scored
- **PKatt:** Penalty attempts
- **CrdY:** Yellow cards received
- **CrdR:** Red cards received
- **xG:** Expected goals
- **npxG:** Non-penalty expected goals
- **xAG:** Expected assists
- **npxG+xAG:** Non-penalty expected goals plus expected assists
- **PrgC:** Progressive carries
- **PrgP:** Progressive passes
- **PrgR:** Progressive passes received
- **Gls1:** Goals scored per 90 minutes
- **Ast1:** Assists per 90 minutes
- **G+A1:** Goals plus assists per 90 minutes
- **G-PK1:** Non-penalty goals per 90 minutes
- **G+A-PK:** Goals plus assists minus penalties scored per 90 minutes
- **xG1:** Expected goals per 90 minutes
- **xAG1:** Expected assists per 90 minutes
- **xG+xAG:** Expected goals plus expected assists per 90 minutes
- **npxG1:** Non-penalty expected goals per 90 minutes
- **npxG+xAG1:** Non-penalty expected goals plus expected assists per 90 minutes

Player Playing Time

- **Rk:** Rank or position in a list
- **Player:** Name of the player
- **Pos:** Position of the player (e.g., Forward, Midfielder, Defender, Goalkeeper)
- **Squad:** The team or club the player is a part of
- **Age:** The age of the player
- **Born:** Year of birth or full birthdate of the player
- **MP:** Matches played
- **Min:** Minutes played
- **Mn/MP:** Minutes per match played
- **Min%:** Percentage of available minutes played
- **90s:** 90-minute segments played
- **Starts:** Matches started
- **Mn/Start:** Minutes per start
- **Compl:** Completed matches
- **Subs:** Substitution appearances
- **Mn/Sub:** Minutes per substitution
- **unSub:** Matches played without substitution
- **PPM:** Points per match
- **onG:** Goals scored while on the field
- **onGA:** Goals allowed while on the field
- **+/-:** Plus-minus rating (goals scored minus goals conceded while on the field)
- **+/-90:** Plus-minus rating per 90 minutes
- **On-Off:** Difference in team performance with the player on the field versus off
- **onxG:** Expected goals while on the field
- **onxGA:** Expected goals allowed while on the field
- **xG+/-:** Expected goals difference (onxG minus onxGA)
- **xG+/-90:** Expected goals difference per 90 minutes
- **On-Off1:** Difference in expected goals performance with the player on the field versus off

Player Possession

- **Rk:** Rank
- **Player:** Player's name
- **Pos:** Position
- **Squad:** Team or club name
- **Age:** The player's age
- **Born:** Birth year
- **90s:** Number of 90-minute segments played
- **Touches:** Total number of touches
- **Def_Pen:** Touches in the defensive penalty area
- **Def_3rd:** Touches in the defensive third
- **Mid_3rd:** Touches in the middle third
- **Att_3rd:** Touches in the attacking third
- **Att_Pen:** Touches in the attacking penalty area
- **Live:** Live-ball touches
- **Att:** Total Take on attempted dribbles
- **Succ:** Take on Successful dribbles
- **Succ%:** Take on Percentage of successful dribbles
- **Tkld:** Number of times tackled Take on
- **Tkld%:** Percentage of tackles Take on
- **Carries:** Total number of carries
- **TotDist:** Total distance covered while carrying the ball
- **PrgDist:** Progressive distance (distance covered moving towards the opponent's goal)
- **PrgC:** Progressive carries (carries that move the ball towards the opponent's goal at least 10 yards)
- **1/3 :** Carries into final third
- **CPA:** Carries into the penalty area
- **Mis:** Number of miscontrols
- **Dis:** Number of dispossessions
- **Rec:** Passes received
- **PrgR:** Progressive passes received

Scores & Fixtures

- **Round:** The round of the tournament or competition
- **Match_Week_Number:** The week number within the competition
- **Day:** The day of the week the match took place
- **Date:** The date of the match
- **Time (German Time):** The time of the match in German time
- **Home:** The home team
- **Score:** The final score of the match
- **Away:** The away team
- **Attendance:** The number of spectators present at the match
- **Venue:** The location or stadium where the match was played
- **Referee:** The match referee

Player Shooting

- **Rk:** Rank
- **Player:** Player's name
- **Pos:** Position
- **Squad:** Team or club name
- **Age:** The player's age
- **Born:** Birth year
- **90s:** Number of 90-minute segments played
- **Gls:** Goals scored
- **Sh:** Total shots taken
- **SoT:** Shots on target
- **SoT%:** Percentage of shots on target
- **Sh/90:** Shots per 90 minutes
- **SoT/90:** Shots on target per 90 minutes
- **G/Sh:** Goals per shot
- **G/SoT:** Goals per shot on target
- **Dist:** Average distance from goal for shots
- **FK:** Goals from free-kicks
- **PK:** Penalty kicks scored
- **PKatt:** Penalty kick attempts
- **xG:** Expected goals
- **npxG:** Non-penalty expected goals
- **npxG/Sh:** Non-penalty expected goals per shot
- **G-xG:** Goals minus expected goals
- **np:** Non-penalty goals minus expected goals

Data Cleaning

In this section, I will explain what I did to obtain the datasets and how I cleaned them for use. I will also demonstrate my knowledge of data cleaning in Excel. To scrape the data from websites, I used two different browser extensions. Initially, I intended to do it manually, but it was beyond my skill level. I first tried using Instant Data Scraper and realized that cleaning the datasets would require a lot of work. So, I searched for another extension that would simplify the process and found NoCoding Data Scraper - Easy Web Scraping. My teacher always emphasized the importance of letting the programs do the work for you.

Clean the first(euro_2024_results) table where I remove columns I don't need and change the column names.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Round	right	left 2	left 3	left href 2	venuetime	localtime	right 2	right href	f1	right 3	center	center href	right 4	i+2	left 4	left href 3	right 5	left 5	left 6	left 7	left href 4
2	Group stag	1 Fri	#####	https://fbref.	21:00 (14:00)	Germany	https://fbref.de	2.1 1a€*1		2.1 1a€*1	https://fbref.c	0 sct			Scotland	https://fbref.	65,052 Allianz Are Clä@ment Match Rep https://fb				
3	Group stage	1.3 Sat	#####	https://fbref.	15:00 (08:00)	Hungary	https://fbref.hu	2.3 1a€*3		2.3 1a€*3	https://fbref.c	1 ch			Switzerland	https://fbref.	41,676 RheinEnerStavo Vin Match Rep https://fb				
4	Group stag	2 Olympiastadion Croatia	#####	https://fbref.	18:00 (11:00)	Spain	https://fbref.es	2.1 3a€*0		2.1 3a€*0	https://fbref.c	1 hr			Match Rep	https://fbref.	68,844 Michael Oliver Sat				
5	Group stag	1.5 Signal Iduna Albania	#####	https://fbref.	21:00 (14:00)	Italy	https://fbref.it	0.5 2a€*1		0.5 2a€*1	https://fbref.c	1 al			Match Rep	https://fbref.	60,512 Felix Zwayer Sat				
6	Group stag	1.3 Sun	#####	https://fbref.	15:00 (08:00)	Poland	https://fbref.pl	1.4 1a€*2		1.4 1a€*2	https://fbref.c	1 nl			Netherlands	https://fbref.	48,117 Volksparks Artur Soarrt Match Rep https://fb				
7	Group stag	1.1 MHPArena Denmark	#####	https://fbref.	18:00 (11:00)	Slovenia	https://fbref.si	1.7 1a€*1		1.7 1a€*1	https://fbref.c	1 dk			Match Rep	https://fbref.	54,000 Sandro Schärer Sun				
8	Group stag	0.2 Veltins-Are England	#####	https://fbref.	21:00 (14:00)	Serbia	https://fbref.rs	0.5 0a€*1		0.5 0a€*1	https://fbref.c	1 eng			Match Rep	https://fbref.	48,953 Daniele Orsato Sun				
9	Group stag	1.1 Mon	#####	https://fbref.	15:00 (08:00)	Romania	https://fbref.ro	0.7 3a€*0		0.7 3a€*0	https://fbref.c	1 ua			Ukraine	https://fbref.	61,591 Allianz Are Glenn Nyb Match Rep https://fb				
10	Group stag	1.6 Deutsche I Slovakia	#####	https://fbref.	18:00 (11:00)	Belgium	https://fbref.be	0.6 0a€*1		0.6 0a€*1	https://fbref.c	1 sk			Match Rep	https://fbref.	45,181 Halil Ümit Meler Mon				
11	Group stag	0.8 Merkur Spi France	#####	https://fbref.	21:00 (14:00)	Austria	https://fbref.at	2 0a€*1		2 0a€*1	https://fbref.c	1 fr			Match Rep	https://fbref.	46,425 Jesé's Gil Mon				
12	Group stag	3 Tue	#####	https://fbref.	18:00 (11:00)	TÄrkkiye	https://fbref.tr	1.4 3a€*1		1.4 3a€*1	https://fbref.c	1 ge			Georgia	https://fbref.	59,127 Signal Iduna Facundo T Match Rep https://fb				
13	Group stag	1.9 Red Bull Ar Czechia	#####	https://fbref.	21:00 (14:00)	Portugal	https://fbref.pt	0.4 2a€*1		0.4 2a€*1	https://fbref.c	1 cz			Match Rep	https://fbref.	38,421 Marco Guidi Tue				
14	Group stag	2 Wed	#####	https://fbref.	15:00 (08:00)	Croatia	https://fbref.hr	2.6 2a€*2		2.6 2a€*2	https://fbref.c	46,784 al			Albania	https://fbref.	1.5 Volksparks FranÅois Match Rep https://fb				
15	Group stag	1.4 MHPArena Hungary	#####	https://fbref.	18:00 (11:00)	Germany	https://fbref.de	1.2 2a€*0		1.2 2a€*0	https://fbref.c	2 hu			Match Rep	https://fbref.	54,000 Danny Makkelie Wed				
16	Group stag	0.7 RheinEner Switzerland	#####	https://fbref.	21:00 (14:00)	Scotland	https://fbref.sc	1.1 1a€*1		1.1 1a€*1	https://fbref.c	2 ch			Match Rep	https://fbref.	42,711 Ivan Kraljiklak Wed				
17	Group stag	1.4 Thu	#####	https://fbref.	15:00 (08:00)	Slovenia	https://fbref.si	1.6 1a€*1		1.6 1a€*1	https://fbref.c	2 rs			Serbia	https://fbref.	63,028 Allianz Are István Kov Match Rep https://fb				
18	Group stag	0.8 Deutsche I England	#####	https://fbref.	18:00 (11:00)	Denmark	https://fbref.dk	0.9 1a€*1		0.9 1a€*1	https://fbref.c	2 eng			Match Rep	https://fbref.	46,177 Artur Soares Dias Thu				
19	Group stag	2 Veltins-Are Italy	#####	https://fbref.	21:00 (14:00)	Spain	https://fbref.es	0.2 1a€*0		0.2 1a€*0	https://fbref.c	2 it			Match Rep	https://fbref.	49,528 Slovko Vinâl Thu				
20	Group stag	0.8 Fri	#####	https://fbref.	15:00 (08:00)	Slovakia	https://fbref.sk	1.5 1a€*2		1.5 1a€*2	https://fbref.c	2 ua			Ukraine	https://fbref.	43,910 Merkur Spi Michael Ol Match Rep https://fb				
21	Group stag	1.6 Olympiastadion Austria	#####	https://fbref.	18:00 (11:00)	Poland	https://fbref.pl	2.1 1a€*3		2.1 1a€*3	https://fbref.c	2 at			Match Rep	https://fbref.	69,455 Halil Ümit Meler Fri				
22	Group stag	0.5 Red Bull Ar France	#####	https://fbref.	21:00 (14:00)	Netherlands	https://fbref.nl	1.4 0a€*0		1.4 0a€*0	https://fbref.c	2 fr			Match Rep	https://fbref.	38,531 Anthony Taylor Fri				
23	Group stag	1.1 Sat	#####	https://fbref.	15:00 (08:00)	Georgia	https://fbref.ge	3 1a€*1		3 1a€*1	https://fbref.c	2 cz			Czechia	https://fbref.	46,524 Volksparks Daniel Siet Match Rep https://fb				
24	Group stag	0.7 Signal Iduna Portugal	#####	https://fbref.	18:00 (11:00)	TÄrkkiye	https://fbref.tr	1.9 0a€*3		1.9 0a€*3	https://fbref.c	2 pt			Match Rep	https://fbref.	61,047 Felix Zwayer Sat				
25	Group stag	1.7 RheinEner Romania	#####	https://fbref.	21:00 (14:00)	Belgium	https://fbref.be	0.9 2a€*0		0.9 2a€*0	https://fbref.c	2 ro			Match Rep	https://fbref.	42,535 Symon Marciniaia Sat				
26	Group stag	3 Sun	#####	https://fbref.	21:00 (14:00)	Scotland	https://fbref.sc	0.2 0a€*1		0.2 0a€*1	https://fbref.c	54,000 hu			Hungary	https://fbref.	1.2 MHPArena Facundo T Match Rep https://fb				
27	Group stag	0.6 Deutsche I Germany	#####	https://fbref.	21:00 (14:00)	Switzerland	https://fbref.ch	1.6 1a€*1		1.6 1a€*1	https://fbref.c	3 de			Match Rep	https://fbref.	46,685 Daniele Orsato Sun				
28	Group stag	1 Mon	#####	https://fbref.	21:00 (14:00)	Croatia	https://fbref.hr	0.9 1a€*1		0.9 1a€*1	https://fbref.c	3 it			Italy	https://fbref.	38,322 Red Bull Ar Danny Mak Match Rep https://fb				

A	B	C	D	E	F	G	H	I	J
Round	Match_Week_Numb	Day	Date	Time	Military Time	Home	Expected_Goals_A	Score	Expected_Goals_A
2	Group stage	1 Fri	6/14/2024	21:00 (14:00)	Germany		2.1 5a€*1		
3	Group stage	1.3 Sat	6/15/2024	15:00 (08:00)	Hungary		2.3 1a€*3		
4	Group stage	2 Olympiastadion Berlin (Neutral Site)	Croatia	18:00 (11:00)	Spain		2.1 3a€*0		
5	Group stage	1.5 Signal Iduna Park (Neutral Site)	Albania	21:00 (14:00)	Italy		0.5 2a€*1		
6	Group stage	1.3 Sun	6/16/2024	15:00 (08:00)	Poland		1.4 1a€*2		
7	Group stage	1.1 MHPArena (Neutral Site)	Denmark	18:00 (11:00)	Slovenia		1.7 1a€*1		
8	Group stage	0.2 Veltins-Arena (Neutral Site)	England	21:00 (14:00)	Serbia		0.5 0a€*1		
9	Group stage	1.1 Mon	6/17/2024	15:00 (08:00)	Romania		0.7 3a€*0		
10	Group stage	1.6 Deutsche Bank Park (Neutral Site)	Slovakia	18:00 (11:00)	Belgium		0.6 0a€*1		
11	Group stage	0.8 Merkur Spielarena (Neutral Site)	France	21:00 (14:00)	Austria		2 0a€*1		
12	Group stage	3 Tue	6/18/2024	18:00 (11:00)	TÄrkkiye		1.4 3a€*1		
13	Group stage	1.9 Red Bull Arena (Neutral Site)	Czechia	21:00 (14:00)	Portugal		0.4 2a€*1		
14	Group stage	2 Wed	6/19/2024	15:00 (08:00)	Croatia		2.6 2a€*2		
15	Group stage	1.4 MHPArena (Neutral Site)	Hungary	18:00 (11:00)	Germany		1.2 2a€*0		
16	Group stage	0.7 RheinEnergieSTADION (Neutral Site)	Switzerland	21:00 (14:00)	Scotland		1.1 1a€*1		
17	Group stage	1.4 Thu	6/20/2024	15:00 (08:00)	Slovenia		1.6 1a€*1		
18	Group stage	0.8 Deutsche Bank Park (Neutral Site)	England	18:00 (11:00)	Denmark		0.9 1a€*1		
19	Group stage	2 Veltins-Arena (Neutral Site)	Italy	21:00 (14:00)	Spain		0.2 1a€*0		
20	Group stage	0.8 Fri	6/21/2024	15:00 (08:00)	Slovakia		1.5 1a€*2		
21	Group stage	1.6 Olympiastadion Berlin (Neutral Site)	Austria	18:00 (11:00)	Poland		2.1 1a€*3		
22	Group stage	0.5 Red Bull Arena (Neutral Site)	France	21:00 (14:00)	Netherlands		1.4 0a€*0		
23	Group stage	1.1 Sat	6/22/2024	15:00 (08:00)	Georgia		3 1a€*1		
24	Group stage	0.7 Signal Iduna Park (Neutral Site)	Portugal	18:00 (11:00)	TÄrkkiye		1.9 0a€*3		
25	Group stage	1.7 RheinEnergieSTADION (Neutral Site)	Romania	21:00 (14:00)	Belgium		0.9 2a€*0		
26	Group stage	3 Sun	6/23/2024	21:00 (14:00)	Scotland		0.2 0a€*1		
27	Group stage	0.6 Deutsche Bank Park (Neutral Site)	Germany	21:00 (14:00)	Switzerland		1.6 1a€*1		
28	Group stage	1 Mon	6/24/2024	21:00 (14:00)	Croatia		0.9 1a€*1		

Next, I will remove info from some rows or columns.

Replace 5a€*1 to 5-1 for the score.

	E	F	G	H	I	J	K	L	M	N
1	Time	Military Time	Home	Expected Goals	Score	Expected Goals Away	Away	Attendance	Venue	Referee
2	21:00 (14:00)	Germany	2.1 5a6*1	0 Scotland	65,052 Allianz Arena (Neutral Site)	Clement Turpin				
3	15:00 (08:00)	Hungary	1.3 1a6*3	1 Switzerland	41,676 RheinEnergieSTADION (Neutral Site)	Slavko Vincic				
4	18:00 (11:00)	Spain	2.3a6*0	1 Match Report	68,844 Olympiastadion Berlin (Neutral Site)	Michael Oliver				
5	21:00 (14:00)	Italy	1.5 2a6*1	1 Match Report	60,512 Signal Iduna Park (Neutral Site)	Felix Zwayer				
6	15:00 (08:00)	Poland	1.3 1a6*2	1 Netherlands	48,117 Volksparkstadion (Neutral Site)	Artur Soares Dias				
7	18:00 (11:00)	Slovenia	1.1 1a6*1	1 Match Report	54,000 MHPArena (Neutral Site)	Sandro Scherer				
8	21:00 (14:00)	Serbia	0.5 0a6*1	1 Match Report	48,953 Veltins-Arena (Neutral Site)	Daniele Orsato				
9	15:00 (08:00)	Romania	0.7 3a6*0	1 Ukraine	61,591 Allianz Arena (Neutral Site)	Glenn Nyberg				
10	18:00 (11:00)	Belgium	0.6 0a6*1	1 Match Report	45,181 Deutsche Bank Park (Neutral Site)	Halil Umut Meler				
11	21:00 (14:00)	Austria	2 0a6*1	1 Match Report	46,425 Merkur Spielarena (Neutral Site)	Jesus Gil				
12	18:00 (11:00)	Turkiye	1.4 3a6*1	1 Georgia	59,127 Signal Iduna Park (Neutral Site)	Facundo Tello				
13	21:00 (14:00)	Portugal	0.4 2a6*1	1 Match Report	38,421 Red Bull Arena (Neutral Site)	Marco Guida				
14	15:00 (08:00)	Croatia	2.6 2a6*2	46,784 Albania	1.5 Volksparkstadion (Neutral Site)	Francois Letexier				
15	18:00 (11:00)	Germany	1.2 2a6*0	2 Match Report	54,000 MHPArena (Neutral Site)	Danny Makkelie				
16	21:00 (14:00)	Scotland	1.1 1a6*1	2 Match Report	42,711 RheinEnergieSTADION (Neutral Site)	Ivan Krizlak				
17	15:00 (08:00)	Slovenia	1.6 1a6*1	2 Serbia	63,028 Allianz Arena (Neutral Site)	Istvan Kovacs				
18	18:00 (11:00)	Denmark	0.9 1a6*1	2 Match Report	46,177 Deutsche Bank Park (Neutral Site)	Artur Soares Dias				
19	21:00 (14:00)	Spain	0.2 1a6*0	2 Match Report	49,528 Veltins-Arena (Neutral Site)	Slavko Vincic				
20	15:00 (08:00)	Slovakia	1.5 1a6*2	2 Ukraine	43,910 Merkur Spielarena (Neutral Site)	Michael Oliver				
21	18:00 (11:00)	Poland	2.1 1a6*3	2 Match Report	69,455 Olympiastadion Berlin (Neutral Site)	Halil Umut Meler				
22	21:00 (14:00)	Netherlands	1.4 0a6*0	2 Match Report	38,531 Red Bull Arena (Neutral Site)	Anthony Taylor				
23	15:00 (08:00)	Georgia	3 1a6*1	2 Czechia	46,524 Volksparkstadion (Neutral Site)	Daniel Siebert				
24	18:00 (11:00)	Turkiye	1.9 0a6*3	2 Match Report	61,047 Signal Iduna Park (Neutral Site)	Felix Zwayer				
25	21:00 (14:00)	Belgium	0.9 2a6*0	2 Match Report	42,535 RheinEnergieSTADION (Neutral Site)	Szymon Marciniak				
26	21:00 (14:00)	Scotland	0.2 0a6*1	54,000 Hungary	1.2 MHPArena (Neutral Site)	Facundo Tello				
27	21:00 (14:00)	Switzerland	1.6 1a6*1	3 Match Report	46,685 Deutsche Bank Park (Neutral Site)	Daniele Orsato				
28	21:00 (14:00)	Croatia	0.9 1a6*1	3 Italy	38,322 Red Bull Arena (Neutral Site)	Danny Makkelie				
29	21:00 (14:00)	Albania	1.5 0a6*1	3 Match Report	46,586 Merkur Spielarena (Neutral Site)	Glenn Nyberg				

Also, I checked for duplicates and changed the date and this should be the final table version.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Round	Match	Week Number	Day	Date	Time	Time 2	Home	Score	Away	Attendance	Venue	Referee			
2	Group stage	1 Fri	2024-06-14	21:00 (14:00)	Germany	5-1	Scotland	65,052 Allianz Arena (Neutral Site)	Clement Turpin							
3	Group stage	1 Sat	2024-06-15	15:00 (08:00)	Hungary	1-3	Switzerland	41,676 RheinEnergieSTADION (Neutral Site)	Slavko Vincic							
4	Group stage	1 Sat	2024-06-15	18:00 (11:00)	Spain	3-0	Croatia	68,844 Olympiastadion Berlin (Neutral Site)	Michael Oliver							
5	Group stage	1 Sat	2024-06-15	21:00 (14:00)	Italy	2-1	Albania	60,512 Signal Iduna Park (Neutral Site)	Felix Zwayer							
6	Group stage	1 Sun	2024-06-16	15:00 (08:00)	Poland	1-2	Netherlands	48,117 Volksparkstadion (Neutral Site)	Artur Soares Dias							
7	Group stage	1 Sun	2024-06-16	18:00 (11:00)	Slovenia	1-1	Denmark	54,000 MHPArena (Neutral Site)	Sandro Scherer							
8	Group stage	1 Sun	2024-06-16	21:00 (14:00)	Serbia	0-1	England	48,953 Veltins-Arena (Neutral Site)	Daniele Orsato							
9	Group stage	1 Mon	2024-06-17	15:00 (08:00)	Romania	3-0	Ukraine	61,591 Allianz Arena (Neutral Site)	Glenn Nyberg							
10	Group stage	1 Mon	2024-06-17	18:00 (11:00)	Belgium	0-1	Slovakia	45,181 Deutsche Bank Park (Neutral Site)	Halil Umut Meler							
11	Group stage	1 Mon	2024-06-17	21:00 (14:00)	Austria	0-1	France	46,425 Merkur Spielarena (Neutral Site)	Jesus Gil							
12	Group stage	1 Tue	2024-06-18	18:00 (11:00)	Turkiye	3-1	Georgia	59,127 Signal Iduna Park (Neutral Site)	Facundo Tello							
13	Group stage	1 Tue	2024-06-18	21:00 (14:00)	Portugal	2-1	Czechia	38,421 Red Bull Arena (Neutral Site)	Marco Guida							
14	Group stage	2 Wed	2024-06-19	15:00 (08:00)	Croatia	2-2	Albania	46,784 Volksparkstadion (Neutral Site)	Francois Letexier							
15	Group stage	2 Wed	2024-06-19	18:00 (11:00)	Germany	2-0	Hungary	54,000 MHPArena (Neutral Site)	Danny Makkelie							
16	Group stage	2 Wed	2024-06-19	21:00 (14:00)	Scotland	1-1	Switzerland	42,711 RheinEnergieSTADION (Neutral Site)	Ivan Krizlak							
17	Group stage	2 Thu	2024-06-20	15:00 (08:00)	Slovenia	1-1	Serbia	63,028 Allianz Arena (Neutral Site)	Istvan Kovacs							
18	Group stage	2 Thu	2024-06-20	18:00 (11:00)	Denmark	0-1	England	46,177 Deutsche Bank Park (Neutral Site)	Artur Soares Dias							
19	Group stage	2 Thu	2024-06-20	21:00 (14:00)	Spain	1-0	Italy	49,528 Veltins-Arena (Neutral Site)	Slavko Vincic							
20	Group stage	2 Fri	2024-06-21	15:00 (08:00)	Slovakia	1-2	Ukraine	43,910 Merkur Spielarena (Neutral Site)	Michael Oliver							
21	Group stage	2 Fri	2024-06-21	18:00 (11:00)	Poland	1-3	Austria	69,455 Olympiastadion Berlin (Neutral Site)	Halil Umut Meler							
22	Group stage	2 Fri	2024-06-21	21:00 (14:00)	Netherlands	0-0	France	38,531 Red Bull Arena (Neutral Site)	Anthony Taylor							
23	Group stage	2 Sat	2024-06-22	15:00 (08:00)	Georgia	1-1	Czechia	46,524 Volksparkstadion (Neutral Site)	Daniel Siebert							
24	Group stage	2 Sat	2024-06-22	18:00 (11:00)	Turkiye	0-3	Portugal	61,047 Signal Iduna Park (Neutral Site)	Felix Zwayer							
25	Group stage	2 Sat	2024-06-22	21:00 (14:00)	Belgium	2-0	Romania	42,535 RheinEnergieSTADION (Neutral Site)	Szymon Marciniak							
26	Group stage	3 Sun	2024-06-23	21:00 (14:00)	Scotland	0-1	Hungary	54,000 MHPArena (Neutral Site)	Facundo Tello							
27	Group stage	3 Sun	2024-06-23	21:00 (14:00)	Switzerland	1-1	Germany	46,685 Deutsche Bank Park (Neutral Site)	Daniele Orsato							
28	Group stage	3 Mon	2024-06-24	21:00 (14:00)	Croatia	1-1	Italy	38,322 Red Bull Arena (Neutral Site)	Danny Makkelie							

The next table I will work on is euro_2024_goalkeeping. This is the raw table.

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
1	left	- left href - f-1	- left 2	- left href 2	- center 2	- center 3	- right 3	- right 4	- right 5	- right 6	- right 7	- right 8	- right 9	- right 10	- right 11	- right 12	- right 13	- right 14	- right 15	- right 16	- right 17	- right 18	
2	Altay BayA	https://fbref.26-088	TÅrkjye	https://fbref.26-088	1998	1	1	90	1	3	3	3	1	0	0	0	1	0	0	0	0	0	0
3	Koen Cast	https://fbref.be	Belgium	https://fbref.32-016	1992	4	4	360	4	2	1	0.5	14	1	0	13	0	2	0				
4	Diogo Cost	https://fbref.pt	Portugal	https://fbref.24-296	1999	5	5	510	5.7	3	2	0.53	14	2	0	11	0	1	1	1	1		
5	Gianluig Di	https://fbref.it	Italy	https://fbref.25-137	1999	4	4	360	4	5	1	1.25	17	1	0	12	0	2	1	0			
6	Marián DÁ	https://fbref.sk	Slovakia	https://fbref.35-178	1989	4	4	390	4.3	5	1	1.15	16	1	0	11	0	2	1	1	1		
7	PÄster Gu	https://fbref.hu	Hungary	https://fbref.34-066	1990	3	3	270	3	5	1	1.67	14	2	0	9	0	1	0	0	0	0	33
8	Angus Gun	https://fbref.sch	Scotland	https://fbref.28-171	1996	3	3	270	3	7	1	2.33	19	2	0	12	0	1	1	1	0		
9	Meni GÅer	https://fbref.tr	TÅrkjye	https://fbref.35-132	1989	4	4	360	4	5	3	1.25	19	1	0	15	0					0	0
10	Matej Kova	https://fbref.cz	Czechia	https://fbref.24-055	2000	1	36	0.4	2	1	2.5	1	0				0	0	0	0	0	0	
11	Dominik L	https://fbref.hr	Croatia	https://fbref.29-184	1995	3	3	270	3	6	2	2	15	1	0	9	0					0	0
12	Andriy Lun	https://fbref.ua	Ukraine	https://fbref.25-151	1999	1	1	90	1	3	3	5	2	0	0	1	0					0	0
13	Mike Maigi	https://fbref.fr	France	https://fbref.29-008	1995	6	6	570	6.3	3	2	0.47	18	3	0	15	0	1	1	1	1		
14	Giorgi Mani	https://fbref.ge	Georgia	https://fbref.23-286	2000	4	4	360	4	8	1	2	38	1	0	30	0	2	0				
15	Manuel Ne	https://fbref.de	Germany	https://fbref.38-106	1986	5	5	480	5.3	4	3	0.75	14	1	0	11	0	1	0				
16	Florin NIE	https://fbref.ro	Romania	https://fbref.37-008	1987	4	4	360	4	6	1	1.5	21	1	0	15	0	2	0				
17	Jan Obák	https://fbref.si	Slovenia	https://fbref.31-186	1993	4	4	390	4.3	2	4	0.46	17	2	0	14	0	50	1	0			
18	Patrick Pei	https://fbref.27-191	Austria	https://fbref.27-191	1997	4	4	360	4	6	2	1.5	11	2	0	6	0					0	0
19	Jordan Pic	https://fbref.eng	England	https://fbref.30-126	1994	6	6	600	6.7	4	3	0.6	17	3	0	13	0	2	0	0	0	33	
20	Predrag R	https://fbref.rs	Serbia	https://fbref.28-254	1995	3	3	270	3	2	2	0.67	10	1	0	8	0	1	0	0	0	33	
21	David Raya	https://fbref.es	Spain	https://fbref.28-300	1995	1	1	90	1	0	100	4	4	0	0	1	0						
22	Kasper Scl	https://fbref.dk	Denmark	https://fbref.37-249	1986	4	4	360	4	4	3	1	16	1	0	12	0	1	1	0	2		
23	Ural Simå	https://fbref.es	Spain	https://fbref.27-030	1997	5	5	480	5.3	3	5	0.56	14	2	0	11	0	40	1	0			
24	Aukasz Sk	https://fbref.pl	Poland	https://fbref.33-067	1991	1	1	90	1	1	1	8	7	0	0	1	0	0	1	0			
25	Yann Somr	https://fbref.ch	Switzerland	https://fbref.35-207	1988	5	5	480	5.3	4	2	0.75	12	3	0	8	0	1	0	0			
26	JindÅich	https://fbref.cz	Czechia	https://fbref.28-075	1996	3	3	234	2.6	4	1	1.54	12	2	0	9	0	1	1	0			
27	Thomas St	https://fbref.al	Albania	https://fbref.29-114	1995	3	3	270	3	5	1	1.67	17	2	0	13	0						
28	Wojciech	https://fbref.pl	Poland	https://fbref.34-084	1990	2	2	180	2	5	2	2.5	13	1	0	8	0	0	1	0			

First, I will change the name of the columns to get rid of the table. Fill missing info like GK to all in the third column, and use ctrl h to replace names if not spelled right like the squad names, etc.

For the e column, I will create a new column and use the function =LEFT([@[center 2]],2) to get a whole number for the age.

While working on the table I was getting an error.

	F	G	H	I	J	K	L	M	N	O	P	R	S	T	U	V	W	X	Y	Z	AA	AB	
1	o	Age	Born	Matches	Starts	Minutes	90s	GA	GA90	GA91	SoTA	Saves	Save%	W	D	L	CS	CS%	PkAtt	PkA	PkSv	Pkm	Save%
2	3	26	1998	1	1	90	1	3	▲ -3.00	3.00	3	1	0.0	0	0	1	0	0.0	0	0	0	0	
3	6	32	1992	4	4	360	4.0	2	0.50	0.50	14	13	65.7	1	1	2	2	50.0	0	0	0	0.0	
4	6	24	1999	5	5	510	5.7	3	0.53	0.53	14	11	85.7	2	2	1	3	60.0	1	1	0	100.0	
5	7	25	1999	4	4	360	4.0	5	1.25	1.25	17	12	70.6	1	1	2	0	0.0	1	0	1	0.0	
6	5	35	1989	4	4	390	4.3	5	1.15	1.15	16	11	75.0	1	1	2	1	25.0	1	1	0	0.0	
7	5	34	1990	3	3	270	3.0	5	1.67	1.67	14	9	64.3	1	0	2	1	33.3	0	0	0	0.0	
8	1	28	1996	3	3	270	3.0	7	2.33	2.33	19	12	68.4	0	1	2	0	0.0	1	1	0	0.0	
9	2	35	1989	4	4	360	4.0	5	1.25	1.25	19	15	73.7	3	0	1	0	0.0	0	0	0	0.0	
10	5	24	2000	1	36	0.4	0.4	1	2.50	2.50	2	1	50.0	0	0	0	0	0.0	0	0	0	0.0	
11	4	29	1995	3	3	270	3.0	6	2.00	2.00	15	9	60.0	0	2	1	0	0.0	0	0	0	0.0	
12	1	25	1999	1	1	90	1.0	3	3.00	3.00	5	2	40.0	0	0	1	0	0.0	0	0	0	0.0	
13	8	29	1995	6	6	570	6.3	3	0.47	0.47	18	15	88.9	2	3	1	4	66.7	1	1	0	0.0	
14	5	23	2000	4	4	360	4.0	8	2.00	2.00	38	30	78.9	1	1	2	1	25.0	0	0	0	0.0	
15	5	38	1986	5	5	480	5.3	4	0.75	0.75	14	11	71.4	3	1	1	2	40.0	0	0	0	0.0	
16	3	37	1987	4	4	360	4.0	6	1.50	1.50	21	15	71.4	1	1	2	1	25.0	0	0	0	0.0	
17	6	31	1993	4	4	390	4.3	2	0.46	0.46	17	14	88.2	0	4	0	2	50.0	1	0	1	100.0	
18	1	27	1997	4	4	360	4.0	6	1.50	1.50	11	6	45.5	2	0	2	0	0.0	0	0	0	0.0	
19	6	30	1994	6	6	600	6.7	4	0.60	0.60	17	13	76.5	3	3	0	2	33.3	0	0	0	0.0	
20	4	28	1995	3	3	270	3.0	2	0.67	0.67	10	8	80.0	0	2	1	1	33.3	0	0	0	0.0	
21	0	28	1995	1	1	90	1.0	0	0.00	0.00	4	4	100.0	1	0	0	1	100.0	0	0	0	0.0	
22	9	37	1986	4	4	360	4.0	4	1.00	1.00	16	12	81.3	0	3	1	1	25.0	1	1	0	0.0	
23	0	27	1997	5	5	480	5.3	3	0.56	0.56	14	11	78.6	5	0	0	2	40.0	1	0	1	100.0	
24	7	33	1991	1	1	90	1.0	1	1.00	1.00	8	7	100.0	0	1	0	0	0.0	1	1	0	0.0	
25	7	35	1988	5	5	480	5.3	4	0.75	0.75	12	8	66.7	2	3	0	1	20.0	0	0	0	0.0	
26	5	28	1996	3	3	234	2.6	4	1.54	1.54	12	9	75.0	0	1	2	0	0.0	1	1	0	0.0	

To fix the data, I used the TRIM function. I created a new column, applied the function, and then copied the results back to the original column. However, the TRIM function didn't work for all cases. To address this, I copied the cleaned data, used "Paste Special," selected "Add," and clicked "Done." This process successfully resolved the issues.

Screenshot of a spreadsheet application showing a context menu over a table. The menu includes options like Paste Special, Paste, All using Source theme, Formulas, Values, Column widths, Formats, Comments and Notes, Values and number formats, All merging conditional formats, Operation, Multiply, Divide, Add, Subtract, Skip blanks, Transpose, and OK/Cancel buttons.

Squad	Age	Co.	Age	Born	Matches	Starts	Minutes	90s	GA	GA90	SoTA	Column	Column	Saves	Save%	W	D	L	CS	CS%	PKatt	PKA	PKsv	PK
Turkey	26-088	26		1998	1	1	90	1.00	3.00	3.00	3			0.0	0	0	1	0	0.0	0	0	0	0	0
Belgium	32-016	32		1992	4	4	360	4.00	2.00	0.50							2	2	50.0	0	0	0	0	0
Portugal	24-296	24		1999	5	5	510	5.70	3.00	0.53							2	0	0.0	1	1	0	0	0
Italy	25-137	25		1999	4	4	360	4.00	5.00	1.25							2	1	25.0	1	1	0	0	0
Slovakia	35-178	35		1989	4	4	390	4.30	5.00	1.15							2	1	33.3	0	0	0	0	0
Hungary	34-066	34		1990	3	3	270	3.00	5.00	1.67							1	0	0.0	0	0	0	0	0
Scotland	28-171	28		1996	3	3	270	3.00	7.00	2.33							1	0	0.0	0	0	0	0	0
Turkey	35-132	35		1989	4	4	360	4.00	5.00	1.25							1	0	0.0	0	0	0	0	0
Czechia	24-055	24		2000	1	36	0.4	0.40	1.00	2.50							0	0	0.0	0	0	0	0	0
Croatia	29-184	29		1995	3	3	270	3.00	6.00	2.00							1	0	0.0	0	0	0	0	0
Ukraine	25-151	25		1999	1	1	90	1.00	3.00	3.00							1	0	0.0	0	0	0	0	0
France	29-008	29		1995	6	6	570	6.30	3.00	0.47							1	4	66.7	1	1	0	0	0
Georgia	23-286	23		2000	4	4	360	4.00	8.00	2.00							2	1	25.0	0	0	0	0	0
Germany	38-106	38		1986	5	5	480	5.30	4.00	0.75							1	2	40.0	0	0	0	0	0
Romania	37-008	37		1987	4	4	360	4.00	6.00	1.50							2	1	25.0	0	0	0	0	0
Slovenia	31-186	31		1993	4	4	390	4.30	2.00	0.46							0	2	50.0	1	1	0	0	0
Austria	27-191	27		1997	4	4	360	4.00	6.00	1.50							2	0	0.0	0	0	0	0	0
England	30-126	30		1994	6	6	600	6.70	4.00	0.60							0	2	33.3	0	0	0	0	0
Serbia	28-254	28		1995	3	3	270	3.00	2.00	0.67							1	1	33.3	0	0	0	0	0
Spain	28-300	28		1995	1	1	90	1.00	0.00	0.00							0	1	100.0	0	0	0	0	0
Denmark	37-249	37		1986	4	4	360	4.00	4.00	1.00							1	1	25.0	1	1	0	0	0
Spain	27-030	27		1997	5	5	480	5.30	3.00	0.56							0	2	40.0	1	0	1	0	0
Poland	33-067	33		1991	1	1	90	1.00	1.00	1.00							1	0	0.0	0	0	0	0	0
Switzerland	35-207	35		1988	5	5	480	5.30	4.00	0.75							8	66.7	2	3	0	1	20.0	0
Czechia	28-075	28		1996	3	3	234	2.60	4.00	1.54							9	75.0	0	1	2	0	0.0	0

Finished table.

Rank	Player	Position	Squad	Age	Completed	Born	Matches Played	Starts	Minutes	90s	GA	GA90	SoTA	Saves	Save%	W	D	L	CS	CS%	
1	Altay Bayindir	GK	Turkey	26-088		1998		1	1	90	1.00	3.00	3	3	1	0.00	0	0.00	0.00	0.00	
2	Koen Casteels	GK	Belgium	32-016		1992		4	4	360	4.00	2.00	0.5	14	13	85.70	1.00	1.00	2.00	2.00	50.
3	Diogo Costa	GK	Portugal	24-296		1999		5	5	510	5.70	3.00	0.53	14	11	85.70	2.00	2.00	1.00	3.00	60.
4	Gianluigi Donnarumma	GK	Italy	25-137		1999		4	4	360	4.00	5.00	1.25	17	12	70.60	1.00	1.00	2.00	0.00	0.
5	Martin Dubravka	GK	Slovakia	35-178		1989		4	4	390	4.30	5.00	1.15	16	11	75.00	1.00	1.00	2.00	1.00	25.
6	Péter Gulácsi	GK	Hungary	34-066		1990		3	3	270	3.00	5.00	1.67	14	9	64.30	1.00	0.00	2.00	1.00	33.
7	Angus Gunn	GK	Scotland	28-171		1996		3	3	270	3.00	7.00	2.33	19	12	68.40	0.00	1.00	2.00	0.00	0.
8	Mert Günök	GK	Turkey	35-132		1989		4	4	360	4.00	6.00	1.50	15	13	73.70	3.00	0.00	1.00	0.00	0.
9	Matej Kovář	GK	Czechia	24-055		2000		1	36	0.4	0.40	1.00	2.5	2	1	50.00	0.00	0.00	0.00	0.00	0.
10	Dominik Livaković	GK	Croatia	29-184		1995		3	3	270	3.00	6.00	1.25	19	15	70.00	0.00	2.00	1.00	0.00	0.
11	Andriy Lunin	GK	Ukraine	25-151		1999		1	1	90	1.00	3.00	3	5	2	40.00	0.00	0.00	1.00	0.00	0.
12	Mike Maignan	GK	France	38-106		1986		6	6	570	6.30	3.00	0.47	18	15	88.90	2.00	3.00	1.00	4.00	66.
13	Giorgi Mamardashvili	GK	Georgia	23-286		2000		4	4	360	4.00	8.00	2	38	30	78.90	1.00	1.00	2.00	1.00	25.
14	Manuel Neuer	GK	Germany	38-106		1986		5	480	5.30	4.00	0.75	14	11	71.40	3.00	1.00	1.00	2.00	40.	
15	Florin Nită	GK	Romania	37-008		1987		4	4	360	4.00	6.00	1.5	21	15	71.40	1.00	1.00	2.00	1.00	25.
16	Jan Oblak	GK	Slovenia	31-186		1993		4	4	390	4.30	2.00	0.46	17	14	68.20	0.00	4.00	0.00	2.00	50.
17	Patrick Pентz	GK	Austria	27-191		1997		4	4	360	4.00	6.00	1.5	11	6	45.50	2.00	0.00	2.00	0.00	0.
18	Jordan Pickford	GK	England	30-126		1994		6	6	600	6.70	4.00	0.6	17	13	76.50	3.00	3.00	0.00	2.00	33.
19	Predrag Rajković	GK	Serbia	28-254		1995		3	3	270	3.00	2.00	0.67	10	8	80.00	0.00	2.00	1.00	1.00	33.
20	David Raya	GK	Spain	28-300		1995		1	1	90	1.00	0.00	0	4	1	100.00	1.00	0.00	0.00	1.00	100.
21	Kasper Schmeichel	GK	Denmark	37-249		1986		4	4	360	4.00	4.00	1	16	12	81.30	0.00	3.00	1.00	1.00	25.
22	Unai Simón	GK	Spain	27-030		1997		5	5	480	5.30	3.00	0.56	14	11	78.60	5.00	0.00	2.00	40.	
23	Łukasz Skórski	GK	Poland	33-067		1991		1	1	90	1.00	1.00	1	8	7	100.00	0.00	1.00	0.00	0.00	0.
24	Yann Sommer	GK	Switzerland	35-207		1988		5	5	480	5.30	4.00	0.75	12	8	66.70	2.00	3.00	0.00	1.00	20.
25	Jindřich Staněk	GK	Czechia	28-075		1996		3	3	234	2.60	4.00	1.54	12	9	75.00	0.00	1.00	2.00	0.00	0.
26	Thomas Strakosha	GK	Albania	29-115		1995		3	3	270	3.00	5.00	1.67	17	13	70.60	0.00	1.00	2.00	0.00	0.
27	Wojciech Szczęsny	GK	Poland	34-084		1990		2	180	2.00	5.00	2.5	13	8	69.20	0.00	2.00	0.00	0.00	0.	

Now I will be working on the next table called euro_2024_advanced_goalkeeping.

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11	Column12	Column13	Column14	Column15	Column16	Column17	Column18
Rk	Player	Player_1_HR	Pos	Squad	Squad.1	Squad.2	Squad_2_HR	Age	Born	90s	GA	PKA	FK	CK	OG	PSxG	PSxG/S
1	Altay Bayindir	tr	Turkey	tr	Turkiye	Turkiye	https://fbre	26-088	1998	1.0	3	0	0	1	1.6	0.54	
2	Koen Casteels	be	Belgium	be	Belgium	Belgium	https://fbre	32-017	1992	4.0	2	0	0	1	2.7	0.20	
3	Diogo Costa	pt	Portugal	pt	Portugal	Portugal	https://fbre	24-296	1999	5.7	3	1	0	0	3.5	0.18	
4	Gianluigi Dc	it	Italy	it	Italy	Italy	https://fbre	25-138	1999	4.0	5	0	0	0	6.0	0.30	
5	Martin Dub	https://fbre	GK	sk Slovakia	sk Slovakia	Slovakia	https://fbre	29-185	1989	4.3	5	1	0	0	5.0	0.25	
6	Péter Gulácsi	hu	Hungary	hu	Hungary	Hungary	https://fbre	34-067	1990	3.0	5	0	0	0	5.4	0.39	
7	Angus Gunn	sct Scotland	Scotland	sct Scotland	Scotland	Scotland	https://fbre	28-172	1996	3.0	7	1	0	0	5.3	0.24	
8	Mert Günök	tr	Turkey	tr	Turkiye	Turkiye	https://fbre	35-133	1989	4.0	5	0	0	2	5.8	0.33	
9	Matej Kovář	cz	Czechia	cz	Czechia	Czechia	https://fbre	24-055	2000	0.4	1	0	0	0	0.4	0.19	
10	Dominik Liv	hr	Croatia	hr	Croatia	Croatia	https://fbre	29-185	1995	3.0	6	0	0	1	6.6	0.44	
11	Andriy Lunin	ua	Ukraine	ua	Ukraine	Ukraine	https://fbre	25-152	1999	1.0	3	0	0	1	1.4	0.32	
12	Mike Maignan	fr	France	fr	France	France	https://fbre	29-009	1995	6.3	3	1	0	0	5.3	0.25	
13	Giorgi Mam	ge	Georgia	ge	Georgia	Georgia	https://fbre	23-287	2000	4.0	8	0	0	1	12.1	0.33	
14	Manuel Neu	de	Germany	de	Germany	Germany	https://fbre	38-107	1986	5.3	4	0	0</				

I changed the columns from general to number and made a whole number to decimal where needed.

	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL
1	/90	Cmp	Att	Cmp%	Att_(GK)	Thr	Launches	AvgLen	Att1	Launch%1	AvgLen1	Opp	Stp	Stp%	#OPA	#OPA/90	AVGDist						
2	0.4	-0.37	3	7	42.9	33	3	21.2	31.2	2	0	7.5	8	2	25	0	0	12.2					
3	1.7	0.43	8	31	25.8	107	19	17.8	27.1	35	34.3	34.7	48	4	8.3	4	1	13.8					
4	0.5	0.11	6	18	33.3	129	29	13.2	27.2	26	3.8	25.6	41	2	4.9	6	1.2	21					
5	2.0	0.49	10	23	43.5	86	16	22.1	26.3	16	25	27.1	41	3	7.3	2	0.5	10.1					
6	0.0	0.01	18	61	29.5	138	20	31.9	30.1	23	73.9	54.7	57	2	3.5	4	1	11.8					
7	0.4	0.14	10	30	33.3	83	17	28.9	31.8	14	42.9	39	43	1	2.3	1	0.33	10.1					
8	1.7	-0.56	28	69	40.6	95	13	51.6	38.1	22	90.9	62.9	45	2	4.4	10	3.33	18					
9	1.8	0.46	15	58	25.9	98	17	42.9	40.8	30	53.3	46.8	73	5	6.8	3	0.75	10.2					
10	0.6	1.55	5	14	35.7	16	2	81.3	48.8	2	50	54.5	2	0	0	0	0	0					
11	0.6	0.20	10	33	30.3	76	20	36.8	32.7	17	29.4	30.1	35	0	0	5	1.67	16.3					
12	1.6	-1.59	0	0	20	6	0	17.5	4	0	20.5	9	0	0	1	1	10						
13	2.3	0.38	8	33	24.2	140	27	21.4	29.7	25	12	26.7	78	3	3.8	10	1.67	15.2					
14	4.1	1.03	18	74	24.3	80	21	53.8	42.9	44	70.5	52.9	106	9	8.5	1	0.25	7					
15	1.9	0.38	9	23	39.1	127	29	15	27.2	18	22.2	23.3	42	2	4.8	2	0.4	15.5					
16	0.2	0.06	35	92	38	101	11	55.4	40	47	76.6	51.8	65	2	3.1	5	1.25	14					
17	3.8	0.94	30	78	38.5	83	10	60.2	43.8	45	62.2	45.9	99	3	3	1	0.25	8.6					
18	0.2	-0.06	18	42	42.9	133	13	27.1	30.1	15	40	39.5	56	3	5.4	5	1.25	16.6					
19	0.4	-0.07	40	98	40.8	225	32	31.6	31.2	40	67.5	52.7	64	1	1.6	4	0.67	18.2					
20	1.1	0.37	13	46	28.3	85	19	47.1	36.6	17	35.3	36.6	34	4	11.8	1	0.33	8.4					
21	0.8	0.84	3	8	37.5	36	10	11.1	23.7	5	80	53.4	9	0	0	1	1	19					
22	2.0	0.50	18	37	48.6	91	13	25.3	30.4	21	66.7	49	37	2	5.4	0	0	8.2					
23	3.4	0.68	24	67	35.8	172	26	27.9	31.3	31	61.3	45.5	69	6	8.7	3	0.6	13.3					
24	2.4	2.40	3	8	37.5	16	5	18.8	29.8	13	38.5	33.9	16	1	6.3	2	2	12.9					
25	0.5	0.11	7	33	21.2	148	25	15.5	25.8	18	55.6	44.9	82	7	8.5	1	0.2	9.1					
26	1.6	0.61	16	41	39	51	8	49	38	24	66.7	51.1	38	3	7.9	0	0	7.7					
27	1.9	0.62	21	47	44.7	62	14	48.4	37	30	56.7	47	49	3	6.1	0	0	5.9					
28	1.0	-0.49	6	28	21.4	53	7	39.6	33.6	13	53.8	43.2	28	0	0	3	1.5	14.3					

I will be fixing the rest of the tables. If any unique problems arise, I will document them and explain how I resolved them. After completing the names, I will proceed to correct the remaining data. To fill in the names for the rest of the tables, I will use a standard stats table, as I had to input this data manually.

I also found a better program for web scraping the tables, which significantly reduced the amount of work required. In the end, this process taught me new skills for cleaning datasets.

With all the tables completed, I will now begin analyzing the data using SQL and PostgreSQL.

**The pictures might not be the final version included in the workbook or CSV file since I used a different web scraping program. However, the data cleaning skills still had to be applied.*

Import into PostgreSQL

In this section, I will explain how I imported the datasets into PostgreSQL. I needed to create a table, and an example of the code will be provided on the next page. After creating the table, I imported the data into it.

Example of code:

```
CREATE TABLE euro_2024_matches (
    "Rk" INT,
    "Player" VARCHAR,
    "Pos" VARCHAR,
    "Squad" VARCHAR,
    "Age" INT,
    "Born" INT,          -- Year of birth
    "90s" NUMERIC,
    "Touches" INT,
    "Def_Pen" INT,
    "Def_3rd" INT,
    "Mid_3rd" INT,
    "Att_3rd" INT,
    "Att_Pen" INT,
    "Live" INT,
    "Att" INT,
    "Succ" INT,
    "Succ_Percentage" NUMERIC, -- Renamed from Succ% to Succ_Percentage
    "Tkld" INT,
    "Tkld_Percentage" NUMERIC, -- Renamed from Tkld% to Tkld_Percentage
    "Carries" INT,
    "TotDist" NUMERIC,
    "PrgDist" NUMERIC,
    "PrgC" INT,
    "3-Jan" INT,
    "CPA" INT,
    "Mis" INT,
    "Dis" INT,
    "Rec" INT,
    "PrgR" INT
);
```

Data Analysis

I will begin analyzing the objectives, and demonstrating my SQL skills.

The 6 rewards for UEFA Euro 2024:

1. **Top Scorers (Golden Boot)**
2. **Top Assists**
3. **Best Goalkeeper (Golden Gloves)**
4. **Player of the Tournament**
5. **Young Player of the Tournament**
6. **Top Scorers (Golden Boot)**

I will analyze the table euro_2024_player_standard_stats to determine the top contenders for the Golden Boot award. Initially, I identified that several players scored 3 goals. To narrow down the top 5 players, I will consider three additional factors: assists, goal contribution consistency, and overall team performance.

Dani Olmo from Spain emerged as the top scorer of the tournament, with 3 goals. Despite other players also scoring 3 goals, Olmo distinguished himself by contributing 2 assists for his national team. This additional contribution, combined with his goal tally, makes him the most impactful player. Therefore, Dani Olmo will be awarded the Golden Boot for his outstanding performance.

CODE:

```
SELECT "Player", "Pos", "Squad", "Gls", "Ast",
       "G+A", "CrdY", "CrdR"
FROM public.euro_2024_player_standard_stats
ORDER BY
       "G+A" DESC
LIMIT 5
```

RESULTS:

	Player text	Pos text	Squad text	Gls bigint	Ast bigint	G+A bigint	CrdY bigint	CrdR bigint
1	Dani Olmo	MF,FW	Spain	3	2	5	1	0
2	Lamine Yamal	FW	Spain	1	4	5	1	0
3	Cody Gakpo	FW	Netherlands	3	1	4	0	0
4	Georges Mikautadze	FW	Georgia	3	1	4	0	0
5	Fabián Ruiz Peña	MF	Spain	2	2	4	1	0

Top Assists

The Top Assist award goes to the player who assisted their teammates in scoring a goal. This assist could be a pass, long pass, cross, and more.

The award for the player who provided the most assists(Ast) goes to Lamine Yamal from Spain, with a total of four assists. His excellent playmaking ability and vision on the field significantly contributed to his team's success.

CODE:

SELECT

```
"Player",
"Ast",
"Gls",
"G+A",
"Pos",
"Squad"
FROM public.euro_2024_player_standard_stats
ORDER BY "Ast" DESC
LIMIT 10
```

RESULTS:

	Player text	Ast bigint	Gls bigint	G+A bigint	Pos text	Squad text
1	Lamine Yamal	4	1	5	FW	Spain
2	Xavi Simons	3	1	4	MF,FW	Netherlands
3	Dani Olmo	2	3	5	MF,FW	Spain
4	Orkun Kökçü	2	0	2	MF	Türkiye
5	Michel Aebischer	2	1	3	DF	Switzerland
6	Fabián Ruiz Peña	2	2	4	MF	Spain
7	Arda Güler	2	1	3	FW,MF	Türkiye
8	Remo Freuler	2	1	3	MF	Switzerland
9	Joshua Kimmich	2	0	2	DF	Germany
10	Dennis Man	2	0	2	MF	Romania

Best Goalkeeper (Golden Gloves)

The best goalkeeper award goes to the goal keeper who stopped goal chances, not letting a goal be scored for a whole game, and more.

Mike Maignan from France had the tournament's most clean sheets (CS), so he was not allowing any goals for the whole match. He will receive the golden glove; the reward for the best goalkeeper in the tournament.

Playing as a goalkeeper is a difficult position because if you don't have your best game, you can affect your entire team's success. Maignan having the most clean sheets is an impressive feat.

CODE:

```
SELECT
    "Player",
    "Pos",
    "Squad",
    "Saves",
    "CS"
FROM public.euro_2024_goalkeeping
ORDER BY
    "CS" DESC, "Saves" DESC
LIMIT 5
```

RESULTS:

	Player character varying	Pos character varying	Squad character varying	Saves integer	CS integer
1	Mike Maignan	GK	France	15	4
2	Diogo Costa	GK	Portugal	11	3
3	Jordan Pickford	GK	England	17	2
4	Bart Verbruggen	GK	Netherlands	17	2
5	Jan Oblak	GK	Slovenia	14	2

Player of the Tournament

Factor I will be using to analyze the best player of the tournament

Goals Scored

Assists

Pass Accuracy

Minutes Played

Tackles and Interceptions

Key Passes

Chances Created

Dribbles Completed and more

I had this idea of using different factors to determine the best player from the tournament. I combined all the important factors into one table but couldn't figure out how to classify the percentage for all the factors. I used ChatGPT to help me get there.

The best player in the tournament was Lamine Yamal, with an overall score of 2.59. I noticed most players from the final and semi-final are on the list.

CODE:

```
SELECT
    stats."Player",
    stats."Squad",
    stats."Pos",
    stats."Min",
    stats."Gls",
    stats."Ast",
    def."Clr",
    def."Tkl_Int",
    def."Sh",
    def."Blocks",
    pass."Cmp",
    contro."Touches",
    contro."Carries",
    contro."TotDist",
    -- Calculate z-score for each attribute and then the composite score
    (
        (stats."Gls" - AVG(stats."Gls") OVER()) / STDDEV(stats."Gls") OVER() * 0.2 +
        (stats."Ast" - AVG(stats."Ast") OVER()) / STDDEV(stats."Ast") OVER() * 0.2 +
        (def."Clr" - AVG(def."Clr") OVER()) / STDDEV(def."Clr") OVER() * 0.1 +
        (def."Tkl_Int" - AVG(def."Tkl_Int") OVER()) / STDDEV(def."Tkl_Int") OVER() * 0.1 +
```

```

(def."Sh" - AVG(def."Sh") OVER()) / STDDEV(def."Sh") OVER() * 0.1 +
(def."Blocks" - AVG(def."Blocks") OVER()) / STDDEV(def."Blocks") OVER() * 0.1 +
(pass."Cmp" - AVG(pass."Cmp") OVER()) / STDDEV(pass."Cmp") OVER() * 0.1 +
(contro."Touches" - AVG(contro."Touches") OVER()) / STDDEV(contro."Touches")
OVER() * 0.05 +
    (contro."Carries" - AVG(contro."Carries") OVER()) / STDDEV(contro."Carries") OVER() *
0.05 +
    (contro."TotDist" - AVG(contro."TotDist") OVER()) / STDDEV(contro."TotDist") OVER() *
0.05
) AS overall_Score
FROM
public.euro_2024_player_standard_stats AS stats
LEFT JOIN
public.euro_2024_defensive_actions AS def
ON
stats."Player" = def."Player"
LEFT JOIN
public.euro_2024_passing AS pass
ON
stats."Player" = pass."Player"
LEFT JOIN
public.euro_2024_possession AS contro
ON
stats."Player" = contro."Player"
ORDER BY
overall_score DESC;
=====
```

RESULTS:

	Player text	Squad text	Pos text	Min bigint	Gls bigint	Ast bigint	Clr integer	Tkl_Int integer	Sh integer	Blocks integer	Cmp integer
1	Lamine Yamal	Spain	FW	503	1	4	2	14	0	6	
2	Fabián Ruiz Peña	Spain	MF	540	2	2	5	13	0	3	
3	Jude Bellingham	England	MF,FW	670	2	1	7	19	1	7	
4	Dani Olmo	Spain	MF,FW	432	3	2	2	6	1	2	
5	Xavi Simons	Netherlands	MF,FW	454	1	3	0	13	0	7	
6	Marc Guehi	England	DF	570	0	1	13	5	6	11	
7	Declan Rice	England	MF	690	0	1	10	27	1	5	
8	Joshua Kimmich	Germany	DF	480	0	2	6	13	2	6	
9	Marc Cucurella	Spain	DF	545	0	1	12	20	4	9	
10	Remo Freuler	Switzerland	MF	456	1	2	10	12	0	8	
11	Cody Gakpo	Netherlands	FW	523	3	1	5	13	0	5	
12	Rodri	Spain	MF	520	1	0	10	15	4	7	
13	Stefan de Vrij	Netherlands	DF	540	1	0	20	14	2	6	
14	Guram Kashia	Georgia	DF	360	0	0	31	8	12	13	
15	Antonio Rüdiger	Germany	DF	480	0	0	20	10	6	10	

<code>ios_ext</code>	<code>Min_bignum</code>	<code>Gls_bignum</code>	<code>Ast_bignum</code>	<code>Cir_integer</code>	<code>Tkl_Int_integer</code>	<code>Sh_integer</code>	<code>Blocks_integer</code>	<code>Cmp_integer</code>	<code>Touches_bignum</code>	<code>Carries_bignum</code>	<code>TotDist_bignum</code>	<code>overall_score_numeric</code>
1 <code>FW</code>	503	1	4	2	14	0	6	158	285	195	1352	2.596749540458279238772
2 <code>MF</code>	540	2	2	5	13	0	3	392	491	327	1710	2.42934378425191376331
3 <code>MF,FW</code>	670	2	1	7	19	1	7	311	443	300	1888	2.277608518967727512147
4 <code>MF,FW</code>	432	3	2	2	6	1	2	151	238	161	961	2.0942493048890604100985
5 <code>MF,FW</code>	454	1	3	0	13	0	7	152	236	159	1012	2.0454080740386916383780
6 <code>DF</code>	570	0	1	13	5	6	11	419	489	303	1388	1.940244671597776395259
7 <code>MF</code>	690	0	1	10	27	1	5	484	604	360	1817	1.929773599090117271581
8 <code>DF</code>	480	0	2	6	13	2	6	363	447	264	1543	1.857446848807794779351
9 <code>DF</code>	545	0	1	12	20	4	9	330	425	248	1139	1.819262140886758785212
10 <code>MF</code>	456	1	2	10	12	0	8	204	276	148	607	1.8002106321056530607185
11 <code>FW</code>	523	3	1	5	13	0	5	93	188	125	897	1.7821862915696835459765
12 <code>MF</code>	520	1	0	10	15	4	7	408	487	305	1517	1.71307858387849114623
13 <code>DF</code>	540	1	0	20	14	2	6	381	465	309	1469	1.635486547822935247523
14 <code>DF</code>	360	0	0	31	8	12	13	93	171	69	286	1.6227165068744159996885
15 <code>DF</code>	480	0	0	20	10	6	10	372	459	283	1205	1.5734329773647009343

Young Player of the Tournament

The reward for the youngest player will go to Lamine Yamal who plays for Spain with an age of 16 years old. He was 16 when he started the tournament and made 17 before the final of Spain vs England.

The ability of this young player is amazing, and it's even more incredible to see him play. I remember when I was 16 and in high school, but this young man is playing in the Euro final. He contributed to the team's success and assisted Williams in scoring a goal to help them win the final.

CODE:

SELECT

```
"Player",
"Pos",
"Squad",
"Age",
"Born"
FROM public.euro_2024_player_standard_stats
ORDER BY "Age" ASC
LIMIT 5
```

RESULTS:

	Player text	Pos text	Squad text	Age bigint	Born bigint
1	Lamine Yamal	FW	Spain	16	2007
2	Leo Sauer	FW	Slovakia	18	2005
3	Arda Güler	FW,MF	Türkiye	18	2005
4	Semih Kılıçsoy	FW	Türkiye	18	2005
5	Kobbie Mainoo	MF	England	18	2005

Which player received the most yellow and red cards, and which team had the most?

*Used the euro_2024_players_standard_stats

A yellow card can be given for a few reasons, such as stopping a player with a foul, grabbing a shirt during a counterattack opportunity, or committing a foul that is not clean. A yellow card is a warning, but a red card is an expulsion. A red card is given automatically if a player receives two yellow cards. Another way to receive a red card is for committing a foul that is dangerous and could cause an injury.

I found three players with three yellow cards, Silvan Widmer, Rodri, and Dani Carvajal. I also have four players who received four red cards but Dani Carvajal has the most infractions and impulsion. The team with the most yellow cards is Turkey and with the most red cards is Czechia.

CODE: Yellow Card

```
SELECT
    "Player",
    "Pos",
    "Squad",
    "CrdY",
    "CrdR"
    FROM public.euro_2024_player_standard_stats
ORDER BY
    "CrdY" DESC
LIMIT 5
```

CODE: Red card

```
SELECT
    "Player",
    "Pos",
    "Squad",
    "CrdY",
    "CrdR"
    FROM public.euro_2024_player_standard_stats
```

```
ORDER BY  
    "CrdR" DESC  
LIMIT 5
```

CODE: Squad with most cards

```
SELECT  
    "Squad",  
    SUM("CrdY") AS Total_Yellow_Cards,  
    SUM("CrdR") AS Total_Red_Cards  
    FROM public.euro_2024_player_standard_stats  
GROUP BY  
    "Squad"  
ORDER BY  
    Total_Yellow_Cards DESC
```

RESULTS 1:

	Player text	Pos text	Squad text	CrdY bigint	CrdR bigint
1	Silvan Widmer	DF	Switzerland	3	0
2	Rodri	MF	Spain	3	0
3	Dani Carvajal	DF	Spain	3	1
4	Robert Andrich	MF	Germany	2	0
5	Samet Akaydin	DF	Turkiye	2	0

RESULTS 2:

	Player text	Pos text	Squad text	CrdY bigint	CrdR bigint
1	Tomáš Chorý	MF	Czechia	0	1
2	Ryan Porteous	DF	Scotland	0	1
3	Antonín Barák	MF	Czechia	2	1
4	Dani Carvajal	DF	Spain	3	1
5	Arlind Ajeti	DF	Albania	0	0

RESULTS_3:

	Squad text	total_yellow_cards numeric	total_red_cards numeric
1	Türkiye	18	0
2	Spain	17	1
3	England	14	0
4	Germany	13	0
5	Austria	12	0
6	Czechia	11	2
7	Slovenia	11	0
8	Netherlands	11	0

Which players have won the most penalties for their teams, and how many have been successfully converted into goals?

The goalkeeper can use his hands inside the penalty area to protect the net. If a player is fouled inside this area, it will result in a penalty, giving the player a chance to score. In the middle of the penalty area is a spot where the ball will be placed. The player will run up and kick the ball to score a goal while the goalkeeper tries to protect the net.

Here, I will include the link to the video: [Penalty Kick from Messi](#)

If you're interested in seeing a penalty, I will include a YouTube link showing a video of a penalty shootout. In the video, you'll see a penalty shootout, which occurs if the teams are still tied after 90 minutes and after an additional 30 minutes of extra time. If the score remains tied, they proceed to a penalty shootout to determine the winner. Outside of a penalty shootout, a foul in the penalty area results in a single penalty kick. [Penalty Shootout](#)

There are only seven players who have penalty chances and have a perfect penalty conversion rate. Only two players scored more than one penalty and that is George Mikautadze and Kai Havertz

CODE:

SELECT

```
"Player",
"Squad",
"Gls",
"PK",
"PKatt",
SUM("PK") AS total_goals,
SUM("PKatt") AS Total_Attempts,
CASE
    WHEN SUM("PKatt") = 0 THEN 0
    ELSE SUM("PK")::float / SUM("PKatt") * 100
END AS Penalty_Conversion_Rate
```

FROM public.euro_2024_player_standard_stats

GROUP BY

```
"Player",
"Squad",
"Gls",
"PK",
```

"PKatt"
ORDER BY
"PK" DESC
LIMIT 10

RESULTS:

	Player text	Squad text	Gls bigint	PK bigint	PKatt bigint	total_goals numeric	total_attempts numeric	penalty_conversion_rate double precision
1	Georges Mikautadze	Georgia	3	2	2	2	2	100
2	Kai Havertz	Germany	2	2	2	2	2	100
3	Harry Kane	England	3	1	1	1	1	100
4	Kylian Mbappé	France	1	1	1	1	1	100
5	Marko Arnautović	Austria	1	1	1	1	1	100
6	Răzvan Marin	Romania	2	1	1	1	1	100
7	Robert Lewandowski	Poland	1	1	1	1	1	100
8	Abdülkerim Bardakçı	Türkiye	0	0	0	0	0	0
9	Adam Buksa	Poland	1	0	0	0	0	0
10	Adam Gnezda Čerin	Slovenia	0	0	0	0	0	0

What is the conversion rate (goals per shot taken) for different types of shots (e.g., header, volley, direct free kick)? List the shot types with the highest conversion rates.

Even though there were many different ways to score a goal the most popular way Layers scored against the goalkeeper is a shot to goal. The whole tournament no one scored with a free kick. A free kick is where a player gets fouled outside of the goalkeeper's rectangle and they get a chance to see if they can score or create a scoring opportunity from the spot where they got fouled. [Messi's freekick](#) here is a link to see a free kick from YouTube.

CODE:

```
WITH GoalStats AS (
    SELECT
        "Player",
        "Pos",
        "Squad",
        SUM("GA") AS Goals_Allowed,
        SUM("PKA") AS Penalty_Allowed,
        SUM("FK") AS Free_Kick_Allowed,
        SUM("CK") AS Corner_Kick_Allowed,
        SUM("OG") AS Own_Goals,
        SUM("GA" + "PKA" + "FK" + "CK" + "OG") AS Total_Goals
    FROM public.euro_20240_advanced_goalkeeping
    GROUP BY
        "Player",
        "Pos",
        "Squad"
)
SELECT
    "Player",
    "Pos",
    "Squad",
    Goals_Allowed,
    Penalty_Allowed,
    Free_Kick_Allowed,
    Corner_Kick_Allowed,
    Own_Goals,
    Total_Goals,
    CASE
        WHEN Total_Goals = 0 THEN 0
        ELSE Goals_Allowed::FLOAT / Total_Goals
    END AS Goal_Percentage,
    CASE
        WHEN Total_Goals = 0 THEN 0
        ELSE Goals_Allowed::FLOAT / Total_Goals
    END AS Goal_Percentage
```

```

ELSE Penalty_Allowed::FLOAT / Total_Goals
END AS Penalty_Percentage,
CASE
    WHEN Total_Goals = 0 THEN 0
    ELSE Free_Kick_Allowed::FLOAT / Total_Goals
END AS Free_Kick_Percentage,
CASE
    WHEN Total_Goals = 0 THEN 0
    ELSE Corner_Kick_Allowed::FLOAT / Total_Goals
END AS Corner_Kick_Percentage,
CASE
    WHEN Total_Goals = 0 THEN 0
    ELSE Own_Goals::FLOAT / Total_Goals
END AS Own_Goal_Percentage
FROM GoalStats;
=====

RESULTS:

```

	Player character varying	Pos character varying	Squad character varying	goals_allowed bigint	penalty_allowed bigint	free_kick_allowed bigint	corner_kick_allowed bigint	own_goals bigint	total_goals bigint	goal_percent double precision
1	Diogo Costa	GK	Portugal	3	1	0	0	0	4	0.6666666666666666
2	Kasper Schmeichel	GK	Denmark	4	1	0	1	0	6	0.6666666666666666
3	Thomas Strakosha	GK	Albania	5	0	0	1	1	7	0.714285714285714285
4	Jan Oblak	GK	Slovenia	2	0	0	1	0	3	0.6666666666666666
5	Angus Gunn	GK	Scotland	7	1	0	0	0	8	0.8333333333333333
6	Gianluigi Donnarumma	GK	Italy	5	0	0	0	1	6	0.8333333333333333
7	Unai Simón	GK	Spain	4	0	0	0	1	5	0.6666666666666666
8	Andriy Lunin	GK	Ukraine	3	0	0	1	0	4	0.6666666666666666
9	Lukasz Skorupski	GK	Poland	1	1	0	0	0	2	0.5
10	David Raya	GK	Spain	0	0	0	0	0	0	0
11	Martin Dúbravka	GK	Slovakia	5	1	0	0	0	6	0.8333333333333333
12	Patrick Pentz	GK	Austria	6	0	0	3	1	10	0.6666666666666666
13	Florin Nită	GK	Romania	6	0	0	0	0	6	0
14	Péter Gulácsi	GK	Hungary	5	0	0	0	0	5	0
15	Wojciech Szczęsny	GK	Poland	5	1	0	0	0	6	0.8333333333333333
16	Giorgi Mamardashvili	GK	Georgia	8	0	0	1	0	9	0.8888888888888888
17	Jindřich Staněk	GK	Czechia	4	1	0	0	1	6	0.6666666666666666
18	Jordan Pickford	GK	England	6	0	0	0	0	6	0

	owed bigint	corner_kick_allowed bigint	own_goals bigint	total_goals bigint	goal_percentage double precision	penalty_percentage double precision	free_kick_percentage double precision	corner_kick_percentage double precision	own_goal_percentage double precision
1	0	0	0	4	0.75	0.25	0	0	0
2	0	1	0	6	0.6666666666666666	0.1666666666666666	0	0.1666666666666666	0
3	0	1	1	7	0.7142857142857143	0	0	0.14285714285714285	0.14285714285714285
4	0	1	0	3	0.6666666666666666	0	0	0.3333333333333333	0
5	0	0	0	8	0.875	0.125	0	0	0
6	0	0	1	6	0.8333333333333334	0	0	0	0.1666666666666666
7	0	0	1	5	0.8	0	0	0	0.2
8	0	1	0	4	0.75	0	0	0.25	0
9	0	0	0	2	0.5	0.5	0	0	0
10	0	0	0	0	0	0	0	0	0
11	0	0	0	6	0.8333333333333334	0.1666666666666666	0	0	0
12	0	3	1	10	0.6	0	0	0.3	0.1
13	0	0	0	6	1	0	0	0	0
14	0	0	0	5	1	0	0	0	0
15	0	0	0	6	0.8333333333333334	0.1666666666666666	0	0	0
16	0	1	0	9	0.8888888888888888	0	0	0.1111111111111111	0
17	0	0	1	6	0.6666666666666666	0.1666666666666666	0	0	0.1666666666666666
18	0	0	0	6	1	0	0	0	0

Which players have played every minute of every game for their team, and what is their total playing time?

Most of the main players who play in England have played the most minutes. An interesting fact is that England played one more game than Spain and because of that reason it could have affected England with fatigue.

CODE:

SELECT

"Player",
"Pos",
"Squad",
"MP",
"Starts",
"Min"

FROM public.euro_2024_player_standard_stats

ORDER BY

"Min" DESC

LIMIT 10

RESULTS:

	Player text	Pos text	Squad text	MP bigint	Starts bigint	Min bigint
1	John Stones	DF	England	7	7	690
2	Jordan Pickford	GK	England	7	7	690
3	Declan Rice	MF	England	7	7	690
4	Kyle Walker	DF	England	7	7	690
5	Jude Bellingham	MF,FW	England	7	7	670
6	Bukayo Saka	FW,DF	England	7	7	632
7	Phil Foden	FW,MF	England	7	7	617
8	Harry Kane	FW	England	7	7	601
9	Theo Hernández	DF	France	6	6	570
10	Marc Guéhi	DF	England	6	6	570

Which venues have hosted the most matches during the tournament? List the top 5 venues by the number of matches.

The tournament was held in Germany with different stadiums from the country.

CODE:

```
SELECT
    COUNT(venue) AS venue_appearances,
    venue
FROM public.euro_2024_matches
GROUP BY
    venue
ORDER BY
    venue_appearances DESC
LIMIT 5
```

RESULTS:

	venue_appearances bigint	venue character varying
1	6	Allianz Arena (Neutral Site)
2	6	Olympiastadion Berlin (Neutral Site)
3	6	Signal Iduna Park (Neutral Site)
4	5	Merkur Spielarena (Neutral Site)
5	5	RheinEnergieSTADION (Neutral Sit...

How many matches has each referee officiated? List the referees who have officiated the most and least number of matches.

Four referees (refs) appeared the most with four appearances. The ref with the least appearances was one with Jesus Gil.

CODE:

```
SELECT
    COUNT(referee) AS Ref_appearances,
    referee
FROM public.euro_2024_matches
GROUP BY
    referee
ORDER BY
    Ref_appearances DESC
```

RESULTS:

	ref_appearances bigint	referee character varying	Artur Soares Dias
1	4	François Letexier	
2	4	Felix Zwayer	
3	4	Michael Oliver	
4	4	Daniele Orsato	
5	3	Slavko Vinčić	
6	3	Halil Umut Meler	
7	3	Clément Turpin	
8	3	Anthony Taylor	
9	3	Artur Soares Dias	
10	3	Glenn Nyberg	Glenn Nyberg
11	2	Danny Makkelie	Danny Makkelie
12	2	Szymon Marciniak	Szymon Marciniak
13	2	Daniel Siebert	Daniel Siebert
14	2	István Kovács	István Kovács
15	2	Ivan Kružliak	Ivan Kružliak
16	2	Facundo Tello	Facundo Tello
17	2	Marco Guida	Marco Guida
18	2	Sandro Schärer	Sandro Schärer
19	1	Jesús Gil	Jesús Gil

Resources

- **PostgreSQL**

Purpose: To create and manage tables for data analysis.

Tool: CSV to SQL Converter (konbert.com)

- **Web Scraping Tools**

Purpose: To extract data from websites for analysis.

Tools:

- NoCoding Data Scraper - Easy Web Scraping - Microsoft Edge Add-ons
- Instant Data Scraper - Microsoft Edge Add-ons

- **Data Sources for 2024 UEFA Euro**

Purpose: To obtain detailed statistics on player performance and match results.

Sources:

- Player Standard Stats: [UEFA Euro 2024 Player Stats | FBref.com](https://fbref.com/en/statistics/UEFA-Euro-2024-Player-Stats)
- Squad Goalkeeping: [UEFA Euro 2024 Player Stats | FBref.com](https://fbref.com/en/statistics/UEFA-Euro-2024-Squad-Goalkeeping)
- Player Advanced Goalkeeping: [UEFA Euro 2024 Goalkeeper Stats | FBref.com](https://fbref.com/en/statistics/UEFA-Euro-2024-Goalkeeper-Stats)
- Player Shooting: [UEFA Euro 2024 Shooting Stats | FBref.com](https://fbref.com/en/statistics/UEFA-Euro-2024-Shooting)
- Player Passing: [UEFA Euro 2024 Passing Stats | FBref.com](https://fbref.com/en/statistics/UEFA-Euro-2024-Passing)
- Player Pass Types: [UEFA Euro 2024 Passing Stats | FBref.com](https://fbref.com/en/statistics/UEFA-Euro-2024-Pass-Types)
- Player Goal and Shot Creation: [UEFA Euro 2024 Goal and Shot Creation | FBref.com](https://fbref.com/en/statistics/UEFA-Euro-2024-Goal-and-Shot-Creation)
- Player Defensive Actions: [UEFA Euro 2024 Defensive Action Stats | FBref.com](https://fbref.com/en/statistics/UEFA-Euro-2024-Defensive-Actions)
- Player Possession: [UEFA Euro 2024 Possession Stats | FBref.com](https://fbref.com/en/statistics/UEFA-Euro-2024-Possession)
- Player Playing Time: [UEFA Euro 2024 Playing Time | FBref.com](https://fbref.com/en/statistics/UEFA-Euro-2024-Playing-Time)
- Player Miscellaneous Stats: [UEFA Euro 2024 Miscellaneous Stats | FBref.com](https://fbref.com/en/statistics/UEFA-Euro-2024-Miscellaneous)
- Scores & Fixtures: [UEFA Euro 2024 Scores & Fixtures | FBref.com](https://fbref.com/en/statistics/UEFA-Euro-2024-Scores-Fixtures)

- **ChatGPT**

Purpose: Help with formatting, spelling, and creating a few objective questions, help with code ideas.

Source: ChatGPT

- **YouTube Video**

Purpose: Help visualize.

Source: YouTube

- [Penalty Kick from Messi](#)
- [Penalty Shootout](#)
- [Messi's freekick](#)