

Database for FIFA World Cup 2022 using python and Mysql

Use case: The FIFA World Cup 2022 is scheduled to take place in Qatar from 20 November to 18 December 2022! You will need to design and develop a database to store data in a relational format for national football teams, football players, head coach managers, staff members, stadiums, groups and football games.

Phase A: ER model

You must design an entity relationship model for the given use case. You will need to identify the appropriate tables and their relationships. You will also need to identify at least two attributes per table. Feel free to improvise when identifying the fields; the more, the better.

Base your cardinality design on logical arguments while at the same time considering the following requirements:

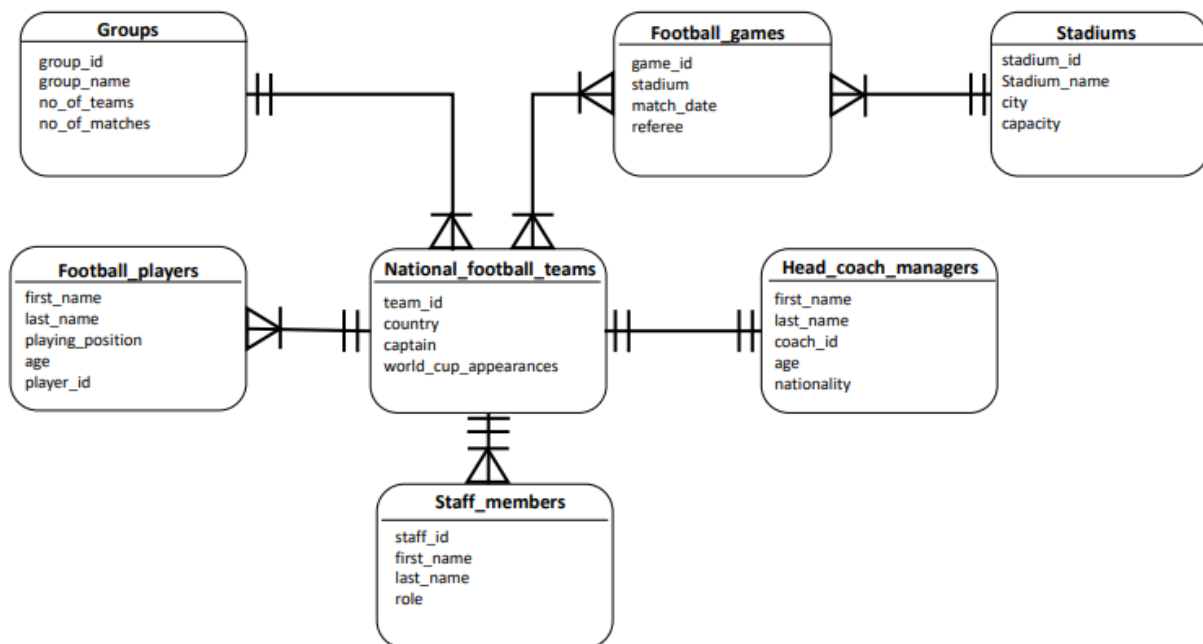
- Each national team might have several players.
- Each national team has only one head coach manager, but it can have multiple staff members.
- Players, head coach manager and staff are associated only with their national team.
- During the tournament, each football stadium can host multiple games. However, each game is already planned for a specific football stadium.
- Each group can have multiple teams, and each team participates only in one group.
- Each team can play many football games.

Task 1

Design an ER model to include the following:

- a) Entities according to the use case.
- b) Relationships between entities
- c) Cardinality of relationships
- d) Attributes (at least four per entity) and their data types.
- e) An ER diagram in your preferred format.

ER diagram



Attribute data types



Phase B: Database creation

You will need to provide the scripts to create the database model in SQL. Consider the following:

- Make sure that you identify the appropriate relationships using primary and foreign keys.
- Make sure you identify the appropriate constraints when linking the tables.

Task 2

Provide the SQL scripts for creating the database and at least four use case tables. Provide your solutions in a report with all the scripts.

- Creating the fifa worldcup database

```
mysql> SHOW DATABASES;
```

```
mysql> CREATE DATABASE FIFA_World_Cup_2022;
```

```
mysql> USE FIFA_World_Cup_2022;
```

- Creating worldcup_groups table

```
mysql> CREATE TABLE worldcup_groups(
```

```
    -> group_id VARCHAR(20),
```

```
    -> group_name VARCHAR(20),
```

```
    -> no_of_teams INT(2),
```

```
    -> no_of_matches INT(2),
```

```
    -> PRIMARY KEY(group_id)
```

```
    -> );
```

- Creating football_games table

```
mysql> CREATE TABLE football_games(
```

```
    -> game_id VARCHAR(20),
```

```
    -> stadium VARCHAR(30),
```

```
    -> match_date DATETIME(6),
```

```
    -> referee VARCHAR(30),
```

```
    -> match_name VARCHAR(40),
```

```
    -> PRIMARY KEY(game_id)
```

```
    -> );
```

- Creating stadiums table

```
mysql> CREATE TABLE stadiums(  
  -> stadium_id VARCHAR(20),  
  -> Stadium_name VARCHAR(30),  
  -> city VARCHAR(30),  
  -> capacity INT(6),  
  -> PRIMARY KEY(stadium_id)  
  -> );
```

- Creating staff_members table

```
mysql> CREATE TABLE staff_members(  
  -> staff_id VARCHAR(20),  
  -> first_name VARCHAR(20),  
  -> last_name VARCHAR(20),  
  -> role VARCHAR(30),  
  -> PRIMARY KEY(staff_id)  
  -> );
```

- Creating football_players table

```
mysql> CREATE TABLE football_players(  
  -> first_name VARCHAR(20),  
  -> last_name VARCHAR(20),  
  -> playing_position VARCHAR(3),  
  -> age INT(2),  
  -> player_id VARCHAR(20),  
  -> PRIMARY KEY(player_id)  
  -> );
```

- Creating national_football_teams table

```
mysql> CREATE TABLE national_football_teams(  
  -> team_id VARCHAR(20),  
  -> country VARCHAR(20),  
  -> captain VARCHAR(30),
```

```
-> world_cup_appearances INT(2),  
-> PRIMARY KEY(team_id)  
-> );
```

- Creating head_coach_managers table

```
mysql> CREATE TABLE head_coach_managers(  
-> first_name VARCHAR(20),  
-> last_name VARCHAR(20),  
-> coach_id VARCHAR(20),  
-> age INT(2),  
-> nationality VARCHAR(30),  
-> PRIMARY KEY(coach_id)  
-> );
```

- Creating assigned_teamcoach table

```
mysql> CREATE TABLE assigned_teamcoach(  
team_id VARCHAR(20),  
coach_id VARCHAR(20),  
PRIMARY KEY(team_id,coach_id),  
CONSTRAINT FK1 FOREIGN KEY (team_id) REFERENCES national_football_teams(team_id),  
CONSTRAINT FK2 FOREIGN KEY (coach_id) REFERENCES head_coach_managers(coach_id)  
);
```

- Creating assigned_team_group table

```
mysql> CREATE TABLE assigned_team_group(  
-> team_id VARCHAR(20),  
-> group_id VARCHAR(20),  
-> tournament_stage VARCHAR(30),  
-> PRIMARY KEY(team_id,group_id,tournament_stage),  
-> CONSTRAINT FK3 FOREIGN KEY (team_id) REFERENCES national_football_teams(team_id),  
-> CONSTRAINT FK4 FOREIGN KEY (group_id) REFERENCES worldcup_groups(group_id)  
-> );
```

- Creating match_venue table

```
mysql> CREATE TABLE match_venue(  
  game_id VARCHAR(20),  
  stadium_id VARCHAR(20),  
  PRIMARY KEY(game_id,stadium_id),  
  CONSTRAINT FK5 FOREIGN KEY(game_id) REFERENCES football_games(game_id),  
  CONSTRAINT FK6 FOREIGN KEY(stadium_id) REFERENCES stadiums(stadium_id)  
);
```

- Creating team_staff_members table

```
mysql> CREATE TABLE team_staff_members(  
  staff_id VARCHAR(20),  
  team_id VARCHAR(20),  
  PRIMARY KEY (staff_id,team_id),  
  CONSTRAINT FK7 FOREIGN KEY (staff_id) REFERENCES staff_members(staff_id),  
  CONSTRAINT FK8 FOREIGN KEY (team_id) REFERENCES national_football_teams(team_id)  
);
```

- Creating team_players table

```
mysql> CREATE TABLE team_players(  
  -> player_id VARCHAR(20),  
  -> team_id VARCHAR(20),  
  -> PRIMARY KEY(player_id,team_id),  
  -> CONSTRAINT FK9 FOREIGN KEY(player_id) REFERENCES football_players(player_id),  
  -> CONSTRAINT FK10 FOREIGN KEY(team_id) REFERENCES national_football_teams(team_id)  
  -> );
```

Task 3

Provide the SQL scripts for inserting data into the database tables. You should insert at least five records per table.

- Adding data to worldcup_groups table

```
mysql> INSERT INTO worldcup_groups VALUES
```

```
-> ('g1','Group A','4','6'),
```

```
-> ('g2','Group B','4','6'),
```

```
-> ('g3','Group C','4','6'),
```

```
-> ('g4','Group D','4','6'),
```

```
-> ('g5','Group E','4','6'),
```

- Adding data to stadiums table

```
mysql> INSERT INTO stadiums VALUES
```

```
-> ('s1','Lusail Stadium','Lusail','88966'),
```

```
-> ('s2','Al Bayt Stadium','Al Khor','68895'),
```

```
-> ('s3','Khalifa International Stadium','Al Rayyan','45857'),
```

```
-> ('s4','Ahmad bin Ali Stadium','Al Rayyan','45032'),
```

```
-> ('s5','Education City Stadium','Al Rayyan','44667'),
```

```
-> ('s6','Al Thumama Stadium','Doha','44400'),
```

```
-> ('s7','Stadium 974','Doha','44089'),
```

```
-> ('s8','Al Janoub Stadium','Al Wakrah','44325');
```

- Adding data to national_football_teams table

```
mysql> INSERT INTO national_football_teams VALUES
```

```
-> ('t1','Netherlands','Virgil van Dijk','11'),
```

```
-> ('t2','Senegal','Kalidou Koulibaly','3'),
```

```
-> ('t3','Ecuador','Enner Valencia','4'),
```

```
-> ('t4','Qatar','Hassan Al-Haydos','1'),
```

```
-> ('t5','England','Harry Kane','16'),
```

```
-> ('t6','United States','Tyler Adams','11'),
```

```
-> ('t7','Iran','Ehsan Hajsafi','6'),
```

```
-> ('t8','Wales','Aaron Ramsey','2'),
```

```
-> ('t9','Argentina','Lionel Messi','18'),  
-> ('t10','Poland','Robert Lewandowski','9');
```

- Adding data to INTO head_coach_managers table

```
mysql> INSERT INTO head_coach_managers
```

```
-> VALUES  
  
-> ('Ronald','Koeman','c1','59','Dutch'),  
-> ('Aliou','Cissé','c2','46','Senegalese'),  
-> ('Félix','Sánchez','c3','47','Spanish'),  
-> ('Carlos','Queiroz','c4','70','Portuguese'),  
-> ('Gareth','Southgate','c5','52','English'),  
-> ('Anthony','Hudson','c6','42','English-American'),  
-> ('Amir','Ghalenoei','c7','59','Iranian'),  
-> ('Rob','Page','c8','48','Welsh'),  
-> ('Lionel','Scaloni','c9','44','Argentine'),  
-> ('Fernando','Santos','c10','68','Portuguese');
```

- Adding data to INTO football_players table

```
INSERT INTO football_players VALUES
```

```
-> ('Remko','Pasveer','GK','39','p1'),  
-> ('Jurriën','Timber','DF','21','p2'),  
-> ('Matthijs','de Ligt','DF','23','p3'),  
-> ('Virgil van','Dijk','DF','31','p4'),  
-> ('Frenkie','de Jong','MF','25','p5'),  
-> ('Cody','Gakpo','FW','23','p6'),  
-> ('Seny','Dieng','GK','27','p7'),  
-> ('Kalidou','Koulibaly','DF','31','p8'),  
-> ('Formose','Mendy','DF','21','p9'),  
-> ('Idrissa','Gueye','MF','33','p10'),  
-> ('Nampalys','Mendy','MF','30','p11'),  
-> ('Nicolas','Jackson','FW','21','p12'),  
-> ('Hernán','Galíndez','GK','35','p13'),  
-> ('Piero','Hincapié','DF','20','p14'),  
-> ('Robert','Arboleda','DF','31','p15'),
```


-> ('José','Cifuentes','MF','23','p16'),
-> ('Romario','Ibarra','MF','28','p17'),
-> ('Michael','Estrada','FW','26','p18'),
-> ('Saad','Al-Sheeb','GK','32','p19'),
-> ('Mohammed','Waad','DF','23','p20'),
-> ('Tarek','Salman','DF','24','p21'),
-> ('Abdulaziz','Hatem','MF','32','p22'),
-> ('Ahmed','Alaaeldin','FW','29','p23'),
-> ('Ali','Assadalla','MF','29','p24'),
-> ('Jordan','Pickford','GK','28','p25'),
-> ('Kyle','Walker','DF','32','p26'),
-> ('Luke','Shaw','DF','27','p27'),
-> ('Jack','Grealish','FW','27','p28'),
-> ('Jordan','Henderson','MF','32','p29'),
-> ('Harry','Kane','FW','29','p30'),
-> ('Matt','Turner','GK','28','p31'),
-> ('Walker','Zimmerman','DF','29','p32'),
-> ('Tyler','Adams','MF','23','p33'),
-> ('Antonee','Robinson','DF','25','p34'),
-> ('Yunus','Musah','MF','19','p35'),
-> ('Giovanni','Reyna','FW','20','p36'),
-> ('Alireza','Beiranvand','GK','30','p37'),
-> ('Sadegh','Moharrami','DF','26','p38'),
-> ('Ehsan','Hajsaifi','DF','32','p39'),
-> ('Mehdi','Taremi','FW','30','p40'),
-> ('Karim','Ansarifard','FW','32','p41'),
-> ('Vahid','Amiri','MF','34','p42'),
-> ('Wayne','Hennessey','GK','35','p43'),
-> ('Ben','Davies','DF','29','p44'),
-> ('Chris','Mepham','DF','25','p45'),
-> ('Brennan','Johnson','FW','21','p46'),
-> ('Aaron','Ramsey','MF','31','p47'),
-> ('Gareth','Bale','FW','33','p48'),

```

-> ('Emiliano','Martínez','GK','30','p49'),
-> ('Germán','Pezzella','DF','31','p50'),
-> ('Rodrigo','De Paul','MF','28','p51'),
-> ('Marcos','Acuña','MF','31','p52'),
-> ('Julián','Álvarez','FW','22','p53'),
-> ('Lionel','Messi','FW','35','p54'),
-> ('Wojciech','Szczęsny','GK','32','p55'),
-> ('Jan','Bednarek','DF','26','p56'),
-> ('Krystian','Bielik','MF','24','p57'),
-> ('Arkadiusz','Milik','FW','28','p58'),
-> ('Damian','Szymański','MF','27','p59'),
-> ('Robert','Lewandowski','FW','34','p60');

```

- Adding data to INTO staff_members table

```
mysql> INSERT INTO staff_members VALUES
```

```

-> ('st1','Ronald','Koeman','Head coach'),
-> ('st2','Patrick','Lodewijks','Goalkeeping coach'),
-> ('st3','Jan','Kluitenberg','Fitness coach'),
-> ('st4','Aliou','Cissé','Head Coach'),
-> ('st5','Régis','Bogaert','Goalkeeping Coach'),
-> ('st6','Djibril','Yattar','Physical Trainer'),
-> ('st7','Félix','Sánchez','Head coach'),
-> ('st8','Jordy','Caicedo','Goalkeeping coach'),
-> ('st9','Juan','Hohberg','Fitness coach'),
-> ('st10','Carlos','Queiroz','Head coach'),
-> ('st11','Maqbool','Al-Khelaifi','Physiotherapist'),
-> ('st12','Mikko','Kujala','Fitness coach'),
-> ('st13','Gareth','Southgate','Head coach'),
-> ('st14','Martyn','Margetson','Goalkeeping Coach'),
-> ('st15','Bryce','Cavanagh','Fitness Coach'),
-> ('st16','Anthony','Hudson','Head coach'),
-> ('st17','Aron','Hyde','Goalkeeper coach'),
-> ('st18','Steve','Tashjian','Head performance expert'),

```

```

-> ('st19','Amir','Ghalenoei','Head coach'),
-> ('st20','Rui','Tavares','Goalkeeping Coach'),
-> ('st21','Alireza','Shahab','Physiotherapist'),
-> ('st22','Rob','Page','Head coach'),
-> ('st23','Tony','Roberts','Goalkeeping coach'),
-> ('st24','Adam','Owen','Fitness coach'),
-> ('st25','Lionel','Scaloni','Head coach'),
-> ('st26','Luis','Martín','Fitness coach'),
-> ('st27','Martín','Tocalli','Goalkeeping coach'),
-> ('st28','Fernando','Santos','Head coach'),
-> ('st29','Andrzej','Dawidziuk','Goalkeeping coach'),
-> ('st30','Grzegorz','Witt','Fitness coach');

```

- Adding data to INTO football_games table

```

mysql> INSERT INTO football_games VALUES
-> ('fg1','Al Thumama Stadium','2022-11-21 19:00:00','Wilton Sampaio','Senegal vs Netherlands'),
-> ('fg2','Al Bayt Stadium','2022-11-20 19:00:00','Daniele Orsato','Qatar vs Ecuador'),
-> ('fg3','Al Bayt Stadium','2022-11-25 22:00:00','Jesús Valenzuela','England vs United States'),
-> ('fg4','Ahmad bin Ali Stadium','2022-11-25 13:00:00','Mario Escobar','Wales vs Iran'),
-> ('fg5','Stadium 974','2022-11-30 22:00:00','Danny Makkelie','Poland vs Argentina');
Query OK, 5 rows affected (0.11 sec)
Records: 5  Duplicates: 0  Warnings: 0

```

- Adding data to INTO team_players table

```
mysql> INSERT INTO team_players VALUES
-> ('p1','t1'),
-> ('p2','t1'),
-> ('p3','t1'),
-> ('p4','t1'),
-> ('p5','t1'),
-> ('p6','t1'),
-> ('p7','t2'),
-> ('p8','t2'),
-> ('p9','t2'),
-> ('p10','t2'),
-> ('p11','t2'),
-> ('p12','t2'),
-> ('p13','t3'),
-> ('p14','t3'),
-> ('p15','t3'),
-> ('p16','t3'),
-> ('p17','t3'),
-> ('p18','t3'),
-> ('p19','t4'),
-> ('p20','t4'),
-> ('p21','t4'),
-> ('p22','t4'),
-> ('p23','t4'),
-> ('p24','t4'),
-> ('p25','t5'),
-> ('p26','t5'),
-> ('p27','t5'),
-> ('p28','t5'),
-> ('p29','t5'),
-> ('p30','t5'),
-> ('p31','t6'),
-> ('p32','t6'),
-> ('p33','t6'),
```

```

-> ('p31','t6'),
-> ('p32','t6'),
-> ('p33','t6'),
-> ('p34','t6'),
-> ('p35','t6'),
-> ('p36','t6'),
-> ('p37','t7'),
-> ('p38','t7'),
-> ('p39','t7'),
-> ('p40','t7'),
-> ('p41','t7'),
-> ('p42','t7'),
-> ('p43','t8'),
-> ('p44','t8'),
-> ('p45','t8'),
-> ('p46','t8'),
-> ('p47','t8'),
-> ('p48','t8'),
-> ('p49','t9'),
-> ('p50','t9'),
-> ('p51','t9'),
-> ('p52','t9'),
-> ('p53','t9'),
-> ('p54','t9'),
-> ('p55','t10'),
-> ('p56','t10'),
-> ('p57','t10'),
-> ('p58','t10'),
-> ('p59','t10'),
-> ('p60','t10');
Query OK, 60 rows affected (0.13 sec)
Records: 60  Duplicates: 0  Warnings: 0

```

- Adding data to INTO assigned_team_groups table

```

mysql> INSERT INTO assigned_team_group VALUES
-> ('t1','g1','Group Stage'),
-> ('t2','g1','Group Stage'),
-> ('t3','g2','Group Stage'),
-> ('t4','g2','Group Stage'),
-> ('t5','g3','Group Stage'),
-> ('t6','g3','Group Stage'),
-> ('t7','g4','Group Stage'),
-> ('t8','g4','Group Stage'),
-> ('t9','g5','Group Stage'),
-> ('t10','g5','Group Stage');
Query OK, 10 rows affected (0.12 sec)
Records: 10  Duplicates: 0  Warnings: 0

```

- Adding data to INTO assigned_teamcoach table

```
mysql> INSERT INTO assigned_teamcoach VALUES
-> ('t1','c1'),
-> ('t2','c2'),
-> ('t3','c3'),
-> ('t4','c4'),
-> ('t5','c5'),
-> ('t6','c6'),
-> ('t7','c7'),
-> ('t8','c8'),
-> ('t9','c9'),
-> ('t10','c10');
Query OK, 10 rows affected (0.11 sec)
Records: 10 Duplicates: 0 Warnings: 0
```

- Adding data to INTO team_staff_members table

```
mysql> INSERT INTO team_staff_members VALUES
-> ('st1','t1'),
-> ('st2','t1'),
-> ('st3','t1'),
-> ('st4','t2'),
-> ('st5','t2'),
-> ('st6','t2'),
-> ('st7','t3'),
-> ('st8','t3'),
-> ('st9','t3'),
-> ('st10','t4'),
-> ('st11','t4'),
-> ('st12','t4'),
-> ('st13','t5'),
-> ('st14','t5'),
-> ('st15','t5'),
-> ('st16','t6'),
-> ('st17','t6'),
-> ('st18','t6'),
-> ('st19','t7'),
-> ('st20','t7'),
-> ('st21','t7'),
-> ('st22','t8'),
-> ('st23','t8'),
-> ('st24','t8'),
-> ('st25','t9'),
-> ('st26','t9'),
-> ('st27','t9'),
-> ('st28','t10'),
-> ('st29','t10'),
-> ('st30','t10');
Query OK, 30 rows affected (0.11 sec)
Records: 30 Duplicates: 0 Warnings: 0
```

Phase C: Querying the database

Task 4

Create queries for extracting data. The queries could be customised according to your requirements, e.g. show a football player's first name, last name and date of birth.

4.1 Export data about football players

```
mysql> SELECT * FROM football_players;
```

first_name	last_name	playing_position	age	player_id
Remko	Pasveer	GK	39	p1
Idrissa	Gueye	MF	33	p10
Nampalys	Mendy	MF	30	p11
Nicolas	Jackson	FW	21	p12
Hernán	Galíndez	GK	35	p13
Piero	Hincapié	DF	20	p14
Robert	Arboleda	DF	31	p15
José	Cifuentes	MF	23	p16
Romario	Ibarra	MF	28	p17
Michael	Estrada	FW	26	p18
Saad	Al-Sheeb	GK	32	p19
Jurriën	Timber	DF	21	p2
Mohammed	Waad	DF	23	p20
Tarek	Salman	DF	24	p21
Abdulaziz	Hatem	MF	32	p22
Ahmed	Alaaeldin	FW	29	p23
Ali	Assadalla	MF	29	p24
Jordan	Pickford	GK	28	p25
Kyle	Walker	DF	32	p26
Luke	Shaw	DF	27	p27
Jack	Grealish	FW	27	p28
Jordan	Henderson	MF	32	p29
Matthijs	de Ligt	DF	23	p3
Harry	Kane	FW	29	p30
Matt	Turner	GK	28	p31
Walker	Zimmerman	DF	29	p32
Tyler	Adams	MF	23	p33
Antonee	Robinson	DF	25	p34
Yunus	Musah	MF	19	p35

Giovanni	Reyna	FW	20	p36	
Alireza	Beiranvand	GK	30	p37	
Sadegh	Moharrami	DF	26	p38	
Ehsan	Hajjafari	DF	32	p39	
Virgil van	Dijk	DF	31	p4	
Mehdi	Taremi	FW	30	p40	
Karim	Ansarifard	FW	32	p41	
Vahid	Amiri	MF	34	p42	
Wayne	Hennessey	GK	35	p43	
Ben	Davies	DF	29	p44	
Chris	Mepham	DF	25	p45	
Brennan	Johnson	FW	21	p46	
Aaron	Ramsey	MF	31	p47	
Gareth	Bale	FW	33	p48	
Emiliano	Martínez	GK	30	p49	
Frenkie	de Jong	MF	25	p5	
Germán	Pezzella	DF	31	p50	
Rodrigo	De Paul	MF	28	p51	
Marcos	Acuña	MF	31	p52	
Julián	Álvarez	FW	22	p53	
Lionel	Messi	FW	35	p54	
Wojciech	Szczęsny	GK	32	p55	
Jan	Bednarek	DF	26	p56	
Krystian	Bielik	MF	24	p57	
Arkadiusz	Milik	FW	28	p58	
Damian	Szymański	MF	27	p59	
Cody	Gakpo	FW	23	p6	
Robert	Lewandowski	FW	34	p60	
Seny	Dieng	GK	27	p7	
Kalidou	Koulibaly	DF	31	p8	
Formose	Mendy	DF	21	p9	
+-----+-----+-----+-----+-----+					

4.2 Export data about head coach managers and their associated teams.

```
mysql> SELECT head_coach_managers.first_name , head_coach_managers.last_name, head_coach_managers.nationality, national_football_teams.country AS Team
-> FROM head_coach_managers,national_football_teams,assigned_teamcoach
-> WHERE
-> head_coach_managers.coach_id = assigned_teamcoach.coach_id
-> AND
-> national_football_teams.team_id = assigned_teamcoach.team_id;
```

first_name	last_name	nationality	Team	
+-----+-----+-----+-----+				
Ronald	Koeman	Dutch	Netherlands	
Fernando	Santos	Portuguese	Poland	
Aliou	Cissé	Senegalese	Senegal	
Félix	Sánchez	Spanish	Ecuador	
Carlos	Queiroz	Portuguese	Qatar	
Gareth	Southgate	English	England	
Anthony	Hudson	English-American	United States	
Amir	Ghalenoei	Iranian	Iran	
Rob	Page	Welsh	Wales	
Lionel	Scaloni	Argentine	Argentina	
+-----+-----+-----+-----+				

10 rows in set (0.10 sec)

4.3 Export data to show the group of each team.

```
mysql> SELECT national_football_teams.country AS Team, worldcup_groups.group_name
-> FROM worldcup_groups,national_football_teams,assigned_team_group
-> WHERE
-> worldcup_groups.group_id = assigned_team_group.group_id
-> AND
-> national_football_teams.team_id = assigned_team_group.team_id;
+-----+-----+
| Team      | group_name |
+-----+-----+
| Netherlands | Group A    |
| Senegal     | Group A    |
| Ecuador     | Group B    |
| Qatar       | Group B    |
| England     | Group C    |
| United States | Group C    |
| Iran        | Group D    |
| Wales       | Group D    |
| Poland      | Group E    |
| Argentina   | Group E    |
+-----+-----+
10 rows in set (0.11 sec)
```

4.4 Export data to show the football stadium for each team game.

```
mysql> SELECT football_games.match_name, stadiums.Stadium_name, football_games.referee
-> FROM stadiums,football_games,match_venue
-> WHERE
-> football_games.game_id = match_venue.game_id
-> AND
-> stadiums.stadium_id = match_venue.stadium_id;
+-----+-----+-----+
| match_name          | Stadium_name          | referee          |
+-----+-----+-----+
| Senegal vs Netherlands | Lusail Stadium        | Wilton Sampaio  |
| Qatar vs Ecuador     | Al Bayt Stadium       | Daniele Orsato   |
| England vs United States | Khalifa International Stadium | Jesús Valenzuela |
| Wales vs Iran        | Ahmad bin Ali Stadium | Mario Escobar    |
| Poland vs Argentina   | Education City Stadium | Danny Makkelie   |
+-----+-----+-----+
5 rows in set (0.11 sec)
```

4.5 Export data to count how many staff members are in the database per team

```
mysql> SELECT national_football_teams.country AS Team, COUNT(staff_members.staff_id) AS No_of_staff_members
-> FROM staff_members,national_football_teams,team_staff_members
-> WHERE
-> staff_members.staff_id = team_staff_members.staff_id
-> AND
-> national_football_teams.team_id = team_staff_members.team_id
-> GROUP BY national_football_teams.team_id;
+-----+-----+
| Team      | No_of_staff_members |
+-----+-----+
| Netherlands | 3 |
| Qatar       | 3 |
| England     | 3 |
| United States | 3 |
| Iran        | 3 |
| Wales       | 3 |
| Argentina   | 3 |
| Poland      | 3 |
| Senegal     | 3 |
| Ecuador     | 3 |
+-----+-----+
10 rows in set (0.11 sec)
```

4.6 Export data to find the teams that start with "Eng"

```
mysql> SELECT * FROM national_football_teams
-> WHERE country LIKE 'Eng%';
+-----+-----+-----+-----+
| team_id | country | captain   | world_cup_appearances |
+-----+-----+-----+-----+
| t5      | England | Harry Kane | 16                     |
+-----+-----+-----+-----+
1 row in set (0.10 sec)
```

4.7 Export data to find the staff members per head coach.

```
mysql> SELECT head_coach_managers.first_name, head_coach_managers.last_name, COUNT(staff_members.staff_id)-1 AS no_of_staff_members
-> FROM head_coach_managers, staff_members, assigned_teamcoach, national_football_teams, team_staff_members
-> WHERE
-> national_football_teams.team_id = assigned_teamcoach.team_id
-> AND
-> head_coach_managers.coach_id = assigned_teamcoach.coach_id
-> AND
-> national_football_teams.team_id = team_staff_members.team_id
-> AND
-> staff_members.staff_id = team_staff_members.staff_id
-> AND
-> assigned_teamcoach.team_id = team_staff_members.team_id
-> GROUP BY head_coach_managers.coach_id;
+-----+-----+-----+
| first_name | last_name | no_of_staff_members |
+-----+-----+-----+
| Ronald     | Roeman    | 2                   |
| Fernando   | Santos    | 2                   |
| Aliou      | Cissé     | 2                   |
| Félix      | Sánchez   | 2                   |
| Carlos     | Queiroz   | 2                   |
| Gareth     | Southgate | 2                   |
| Anthony    | Hudson    | 2                   |
| Amir      | Ghalenoei | 2                   |
| Rob        | Page      | 2                   |
| Lionel     | Scaloni    | 2                   |
+-----+-----+-----+
10 rows in set (0.11 sec)
```

4.8 Export data to find the youngest manager.

```
mysql> SELECT MIN(age) AS Youngest_manager FROM head_coach_managers;
+-----+
| Youngest_manager |
+-----+
| 42                |
+-----+
1 row in set (0.11 sec)
```

4.9 Export data to find players between 22-30 years old (including 22 and 30)

```
mysql> SELECT * FROM football_players
-> WHERE age>= 22 AND age<=30;
```

first_name	last_name	playing_position	age	player_id
Nampalys	Mendy	MF	30	p11
José	Cifuentes	MF	23	p16
Romario	Ibarra	MF	28	p17
Michael	Estrada	FW	26	p18
Mohammed	Waad	DF	23	p20
Tarek	Salman	DF	24	p21
Ahmed	Alaaeldin	FW	29	p23
Ali	Assadalla	MF	29	p24
Jordan	Pickford	GK	28	p25
Luke	Shaw	DF	27	p27
Jack	Grealish	FW	27	p28
Matthijs	de Ligt	DF	23	p3
Harry	Kane	FW	29	p30
Matt	Turner	GK	28	p31
Walker	Zimmerman	DF	29	p32
Tyler	Adams	MF	23	p33
Antonee	Robinson	DF	25	p34
Alireza	Beiranvand	GK	30	p37
Sadegh	Moharrami	DF	26	p38
Mehdi	Taremi	FW	30	p40
Ben	Davies	DF	29	p44
Chris	Mepham	DF	25	p45
Emiliano	Martínez	GK	30	p49

Nampalys	Mendy	MF	30	p11
José	Cifuentes	MF	23	p16
Romario	Ibarra	MF	28	p17
Michael	Estrada	FW	26	p18
Mohammed	Waad	DF	23	p20
Tarek	Salman	DF	24	p21
Ahmed	Alaaeldin	FW	29	p23
Ali	Assadalla	MF	29	p24
Jordan	Pickford	GK	28	p25
Luke	Shaw	DF	27	p27
Jack	Grealish	FW	27	p28
Matthijs	de Ligt	DF	23	p3
Harry	Kane	FW	29	p30
Matt	Turner	GK	28	p31
Walker	Zimmerman	DF	29	p32
Tyler	Adams	MF	23	p33
Antonee	Robinson	DF	25	p34
Alireza	Beiranvand	GK	30	p37
Sadegh	Moharrami	DF	26	p38
Mehdi	Taremi	FW	30	p40
Ben	Davies	DF	29	p44
Chris	Mepham	DF	25	p45
Emiliano	Martínez	GK	30	p49
Frenkie	de Jong	MF	25	p5
Rodrigo	De Paul	MF	28	p51
Julían	Álvarez	FW	22	p53
Jan	Bednarek	DF	26	p56
Krystian	Bielik	MF	24	p57
Arkadiusz	Milik	FW	28	p58
Damian	Szymański	MF	27	p59
Cody	Gakpo	FW	23	p6
Seny	Dieng	GK	27	p7

32 rows in set (0.10 sec)

4.10 Export data to find the average of age per football team.

```
mysql> SELECT national_football_teams.country AS Team, AVG(football_players.age) AS average_age_per_team
-> FROM football_players,national_football_teams,team_players
-> WHERE
-> football_players.player_id = team_players.player_id
-> AND
-> national_football_teams.team_id = team_players.team_id
-> GROUP BY national_football_teams.country;
```

Team	average_age_per_team
Netherlands	27.0000
Poland	28.5000
Senegal	27.1667
Ecuador	27.1667
Qatar	28.1667
England	29.1667
United States	24.0000
Iran	30.6667
Wales	29.0000
Argentina	29.5000

10 rows in set (0.10 sec)

Phase D: Using Python

Task 5

Python scripts for 4.1 – 4.5 tasks

```
[1]: import mysql.connector
from mysql.connector import Error

[2]: def create_server_connection(host_name, user_name, user_password): #developing a function that creates a new connector
    connection = None
    try:
        connection = mysql.connector.connect(
            host=host_name,
            user=user_name,
            passwd=user_password
        )
        print("MySQL Database connection successful")
    except Error as err:
        print(f"Error: '{err}'")

    return connection

host = "104.154.251.145" # host IP address from the GCP
user = "root"
password = "Nugegoda01" # password

connection = create_server_connection(host, user, password)

MySQL Database connection successful

[3]: !curl ipecho.net/plain #Locating the laptop IP

188.214.14.24
```

```
[4]: def create_db_connection(host_name, user_name, user_password, db_name): #creating a function to connect to the FIFA_World_Cup_2022 database
    connection = None
    try:
        connection = mysql.connector.connect(
            host=host_name,
            user=user_name,
            passwd=user_password,
            database=db_name
        )
        print("MySQL Database connection successful")
    except Error as err:
        print(f"Error: '{err}'")

    return connection
```

```
[5]: host = "104.154.251.145"
    user = "root"
    password = "Nugegoda01"
    database = "FIFA_World_Cup_2022"
```

```
[6]: connection = create_db_connection(host, user, password,database)

MySQL Database connection successful
```

```
[7]: cursor = connection.cursor() #create a cursor that allows row-by-row processing of the result sets.
    cursor.execute("SHOW DATABASES;")

    for (databases) in cursor: #printing all the databases in the system
        print(databases[0])
```

```
bytearray(b'FIFA_World_Cup_2022')
bytearray(b'film_db')
bytearray(b'information_schema')
bytearray(b'movies_db')
bytearray(b'music_db')
bytearray(b'mysql')
bytearray(b'performance_schema')
bytearray(b'sys')
bytearray(b'university_db')
```

```
[8]: cursor = connection.cursor()
    cursor.execute("SHOW TABLES;")

    for (databases) in cursor: #printing all the tables in the FIFA_World_Cup_2022 database
        print(databases[0])
```

```
bytearray(b'assigned_team_group')
bytearray(b'assigned_teamcoach')
bytearray(b'football_games')
bytearray(b'football_players')
bytearray(b'head_coach_managers')
bytearray(b'match_venue')
bytearray(b'national_football_teams')
bytearray(b'stadiums')
bytearray(b'staff_members')
bytearray(b'team_players')
bytearray(b'team_staff_members')
bytearray(b'worldcup_groups')
```

```
[9]: def read_query(connection, query): #this function accepts the connection and the query and it runs it
    cursor = connection.cursor()
    result = None
    try:
        cursor.execute(query)
        result = cursor.fetchall()
        return result
    except Error as err:
        print(f"Error: '{err}'")
```

```
[10]: def print_tasks(query): #prints the results of the given query
    results = read_query(connection, query)
    for result in results:
        print(result)
    print('\n')
```

[11]: *#sql queries for the first 5 queries of task 4*

```
task4_1 = """
SELECT *
FROM football_players;
"""

task4_2 = """
SELECT head_coach_managers.first_name,head_coach_managers.last_name,head_coach_managers.nationality,national_football_teams.country AS Team
FROM head_coach_managers,national_football_teams,assigned_teamcoach
WHERE
head_coach_managers.coach_id = assigned_teamcoach.coach_id
AND
national_football_teams.team_id = assigned_teamcoach.team_id;
"""

task4_3 = """
SELECT national_football_teams.country AS Team, worldcup_groups.group_name
FROM worldcup_groups,national_football_teams,assigned_team_group
WHERE
worldcup_groups.group_id = assigned_team_group.group_id
AND
national_football_teams.team_id = assigned_team_group.team_id;
"""

task4_4 = """
SELECT football_games.match_name, stadiums.Stadium_name, football_games.referee
FROM stadiums, football_games, match_venue
WHERE
football_games.game_id = match_venue.game_id
AND
stadiums.stadium_id = match_venue.stadium_id;
"""
```

```
task4_5 = """
SELECT national_football_teams.country AS Team, COUNT(staff_members.staff_id) AS No_of_staff_members
FROM staff_members, national_football_teams, team_staff_members
WHERE
staff_members.staff_id = team_staff_members.staff_id
AND
national_football_teams.team_id = team_staff_members.team_id
GROUP BY national_football_teams.team_id;
"""
```

[12]:

```
user_input = ''
while user_input == '' or user_input == 'wrong input':    #using a while loop to take the input query from the user
    user_query = input('Enter query: ')                #and print its results using print_tasks function
    if user_query.lower() == 'task4_1':
        print_tasks(task4_1)
    elif user_query.lower() == 'task4_2':
        print_tasks(task4_2)
    elif user_query.lower() == 'task4_3':
        print_tasks(task4_3)
    elif user_query.lower() == 'task4_4':
        print_tasks(task4_4)
    elif user_query.lower() == 'task4_5':
        print_tasks(task4_5)
    elif user_query.lower() == 'quit':
        break
    else:
        print('wrong input')
```

Enter query: task4_1

('Remko', 'Pasveer', 'GK', 39, 'p1')
('Idrissa', 'Gueye', 'MF', 33, 'p10')
('Nampalys', 'Mendy', 'MF', 30, 'p11')
('Nicolas', 'Jackson', 'FW', 21, 'p12')
('Hernán', 'Galíndez', 'GK', 35, 'p13')
('Piero', 'Hincapié', 'DF', 20, 'p14')
('Robert', 'Arboleda', 'DF', 31, 'p15')
('José', 'Cifuentes', 'MF', 23, 'p16')
('Romario', 'Ibarra', 'MF', 28, 'p17')
('Michael', 'Estrada', 'FW', 26, 'p18')
('Saad', 'Al-Sheeb', 'GK', 32, 'p19')
('Jurriën', 'Timber', 'DF', 21, 'p2')
('Mohammed', 'Waad', 'DF', 23, 'p20')
('Tarek', 'Salman', 'DF', 24, 'p21')
('Abdulaziz', 'Hatem', 'MF', 32, 'p22')
('Ahmed', 'Alaaeldin', 'FW', 29, 'p23')
('Ali', 'Assadalla', 'MF', 29, 'p24')
('Jordan', 'Pickford', 'GK', 28, 'p25')
('Kyle', 'Walker', 'DF', 32, 'p26')
('Luke', 'Shaw', 'DF', 27, 'p27')
('Jack', 'Grealish', 'FW', 27, 'p28')
('Jordan', 'Henderson', 'MF', 32, 'p29')
('Matthijs', 'de Ligt', 'DF', 23, 'p3')
('Harry', 'Kane', 'FW', 29, 'p30')
('Matt', 'Turner', 'GK', 28, 'p31')
('Walker', 'Zimmerman', 'DF', 29, 'p32')
('Tyler', 'Adams', 'MF', 23, 'p33')
('Antonee', 'Robinson', 'DF', 25, 'p34')
('Yunus', 'Musah', 'MF', 19, 'p35')
('Giovanni', 'Reyna', 'FW', 20, 'p36')
('Alíreza', 'Beiranvand', 'GK', 30, 'p37')
('Sadegh', 'Moharrami', 'DF', 26, 'p38')
('Ehsan', 'Hajsaifi', 'DF', 32, 'p39')
('Virgil van', 'Dijk', 'DF', 31, 'p4')
('Mehdi', 'Taremi', 'FW', 30, 'p40')

('Karim', 'Ansarifard', 'FW', 32, 'p41')
('Vahid', 'Amiri', 'MF', 34, 'p42')
('Wayne', 'Hennessey', 'GK', 35, 'p43')
('Ben', 'Davies', 'DF', 29, 'p44')
('Chris', 'Mepham', 'DF', 25, 'p45')
('Brennan', 'Johnson', 'FW', 21, 'p46')
('Aaron', 'Ramsey', 'MF', 31, 'p47')
('Gareth', 'Bale', 'FW', 33, 'p48')
('Emiliano', 'Martínez', 'GK', 30, 'p49')
('Frenkie', 'de Jong', 'MF', 25, 'p5')
('Germán', 'Pezzella', 'DF', 31, 'p50')
('Rodrigo', 'De Paul', 'MF', 28, 'p51')
('Marcos', 'Acuña', 'MF', 31, 'p52')
('Julián', 'Álvarez', 'FW', 22, 'p53')
('Lionel', 'Messi', 'FW', 35, 'p54')
('Wojciech', 'Szczęsny', 'GK', 32, 'p55')
('Jan', 'Bednarek', 'DF', 26, 'p56')
('Krystian', 'Bielik', 'MF', 24, 'p57')
('Arkadiusz', 'Milik', 'FW', 28, 'p58')
('Damian', 'Szymański', 'MF', 27, 'p59')
('Cody', 'Gakpo', 'FW', 23, 'p6')
('Robert', 'Lewandowski', 'FW', 34, 'p60')
('Seny', 'Dieng', 'GK', 27, 'p7')
('Kalidou', 'Koulibaly', 'DF', 31, 'p8')
('Formose', 'Mendy', 'DF', 21, 'p9')

Enter query: task4_2

('Ronald', 'Koeman', 'Dutch', 'Netherlands')
('Fernando', 'Santos', 'Portuguese', 'Poland')
('Aliou', 'Cissé', 'Senegalese', 'Senegal')
('Félix', 'Sánchez', 'Spanish', 'Ecuador')
('Carlos', 'Queiroz', 'Portuguese', 'Qatar')
('Gareth', 'Southgate', 'English', 'England')
('Anthony', 'Hudson', 'English-American', 'United States')
('Amir', 'Ghalenoei', 'Iranian', 'Iran')
('Rob', 'Page', 'Welsh', 'Wales')
('Lionel', 'Scaloni', 'Argentine', 'Argentina')

Enter query: task4_3

('Netherlands', 'Group A')
('Senegal', 'Group A')
('Ecuador', 'Group B')
('Qatar', 'Group B')
('England', 'Group C')
('United States', 'Group C')
('Iran', 'Group D')
('Wales', 'Group D')
('Poland', 'Group E')
('Argentina', 'Group E')

```
Enter query: task4_4
('Senegal vs Netherlands', 'Lusail Stadium', 'Wilton Sampaio')
('Qatar vs Ecuador', 'Al Bayt Stadium', 'Daniele Orsato')
('England vs United States', 'Khalifa International Stadium', 'Jesús Valenzuela')
('Wales vs Iran', 'Ahmad bin Ali Stadium', 'Mario Escobar')
('Poland vs Argentina', 'Education City Stadium', 'Danny Makkellie')
```

```
Enter query: task4_5
('Netherlands', 3)
('Qatar', 3)
('England', 3)
('United States', 3)
('Iran', 3)
('Wales', 3)
('Argentina', 3)
('Poland', 3)
('Senegal', 3)
('Ecuador', 3)
```

```
Enter query: quit
```