

CS 101 - Algorithms & Programming I

Fall 2022 - Lab 9

Due: Week of December 12, 2022

*Remember the **honor code** for your programming assignments.*

*For all labs, your solutions must conform to the CS101 style **guidelines**!*

All data and results should be stored in variables (or constants where appropriate) with meaningful names.

The objective of this lab is to learn how to use Arrays and ArrayLists. An array is a container object that holds a **fixed** number of values of a single type. When you need an array-like data structure that offers **dynamic resizing**, you would usually use an ArrayList. An ArrayList is an array that resizes itself as needed. Remember that analyzing your problems and designing them on a piece of paper *before* starting implementation/coding is always a best practice.

0. Setup Workspace

Start VSC and open the previously created workspace named `labs_ws`. Now, under the `labs` folder, create a new folder named `lab9`.

In this lab, you are to have five Java classes/files (under `labs/lab9` folder) as described below. A sixth Java file containing the revision should go under this folder as well. We expect you to submit 6 files, including the revision, *without* compressing them. Do *not* upload other/previous lab solutions in your submission. Outputs of sample runs are shown as **brown** whereas the user inputs are shown in **blue** color.

In this lab, you will implement a tournament like Qatar 2022 World Cup with `Player`, `Team`, `Game`, `Group` and `Qatar22` classes. We will provide you with a partially filled `Qatar22` class which contains the main method.

Many football tournaments, like Qatar 2022, are being held worldwide. These football tournaments start with the Groups stage, where teams are randomly placed into groups. In this assignment, you will implement an application that handles the group stage players, teams, games, and groups.

1. Player Class

Create a new/empty file to define a class named `Player`. This class defines the details of a football player in the application.

Instance Data Members:

- `name`: The name of the player (String)
- `age`: The age of the player (int)
- `nationality`: The nationality of the player (String)
- `jerseyNumber`: The jersey number of the player (int)
- `position`: The position of the player (String)
- `marketValue`: The current market value of the player (int)

Methods:

- **Constructor:**
 - Creates the player to be used.
 - You may want to use setters to reuse the code.
 - Takes `name`, `age`, `nationality`, `jerseyNumber`, `position`, and `marketValue`. There are restrictions where `age` and `marketValue` must be positive, and `jerseyNumber` must be between 1 and 99, inclusive.
 - Initializes the data members `name`, `age`, `nationality`, `jerseyNumber`, `position`, `marketValue`.
- **Accessor methods:**
 - You need to implement methods to access the data variables `name`, `age`, `nationality`, `jerseyNumber`, `position`, `marketValue` of the player.
- **Setter methods:**
 - `setAge`: Sets the player's age if the age is positive.
 - `setJerseyNumber`: Sets the jersey number of the player. Jerseys are numbered between 1 and 99, inclusive.
 - `setPosition`: Changes the position of a player.
 - `setMarketValue`: Changes the market value of a player if the value is positive.
- **toString method**
 - Override the `toString` method to get an understandable string representation of a player object, showing the player's name, age, nationality, jersey number, position, and market value.

Sample run:

```
Player p = new Player("Raheem Sterling", 27, "England", 17, "Left Wing", 70000000);
System.out.println(p);
```

```
Raheem Sterling      27      England      17      Left Wing      70,000,000
```

2. Team Class

Create a new/empty file to define a class named `Team`. This class defines the details of a team in the application.

Instance Data Members:

- `ID`: The ID of the team (int)
- `name`: The name of the team (String)
- `averageAge`: The average age of the team (int)
- `marketValue`: The total market value of the team (int)
- `squad`: ArrayList of Player objects (ArrayList)

Methods:

- **Constructor:**
 - Registers the team to the system.
 - Takes `ID` and `name`, where `ID` must be positive.
 - Initializes the data members `ID`, `name`, `averageAge`, `marketValue`, and `squad`.
- **Accessor methods:**
 - You need to implement methods to access the data variables `ID`, `name`, `averageAge`, and `marketValue`.
- **Team methods:**
 - `playerExists` : returns true if a player with a specific jersey number exists in the team.
 - `addPlayer` : takes a Player object as parameter and adds this player to the team if the player does not exist in the team and the player is a citizen of that country
 - `removePlayer`: removes the player from the team with the specific jersey number
 - `toString`: Override the `toString` method to return an informative representation of the team including team ID, name, average age, total market value, and players in the team.

Sample output for a Team object:

```
Team turkiye = new Team(38, "Türkiye");
Player p1 = new Player("Altay Bayindir",24, "Türkiye", 1, "Goalkeeper", 13000000);
Player p2 = new Player("Çağlar Söyüncü",26, "Türkiye", 4, "Centre Back", 22000000);
turkiye.addPlayer(p1);
turkiye.addPlayer(p2);
System.out.println(turkiye);
```

```
=====
=                                     Team Details                                =
=====
ID: 38
Team: Türkiye
Average Age: 25
Market Value: 35,000,000
```

Squad is composed of following players:

Name	Age	Nationality	Number	Position	Market Value
Altay Bayindir	24	Türkiye	1	Goalkeeper	13,000,000
Çağlar Söyüncü	26	Türkiye	4	Centre Back	22,000,000

3. Game Class

Your next task is to create a new/empty file to define a class named `Game` that defines the details of a game/match in the application.

Instance Data Members:

- `teams`: Array of `Team` objects playing the game (Array)
- `goals`: Array of integers indicating the goals scored by respective teams (Array)

Methods:

- Constructor:
 - Registers the game to the system.
 - Takes `team1`, `team2`, `team1Goals`, and `team2Goals`, where goals must be positive and teams must exist.
 - Initializes the data members `teams` and `goals`.
- Accessor methods:
 - You need to implement a method to access the data variable `teams`.
- Game methods:
 - `getTeamPoints`: returns the points obtained from this game for a given team with its team ID.
 - `toString`: Override the `toString` method to return an informative representation of the game, including team names and the goals of the respective teams.

Sample output for a `Game` object:

```
Team germany = new Team(6, "Germany");
Team turkiye = new Team(38, "Türkiye");
Game g1 = new Game(turkiye, germany, 3, 2);
System.out.println(g1);
```

Türkiye vs. Germany: 3-2

4. Group Class

Create a new/empty file to define a class named `Group`. This class defines the details of a group in the world cup qualifiers.

Instance Data Members:

- `name`: The name of the group (String)
- `groupSize`: The size of the group (int)
- `numberOfTeams`: The number of teams currently added to the group (int)
- `teams`: Array of Team objects playing the game (Array)
- `games`: Array of {Array of Game objects} indicating the games played between teams in the group (2D Array)
- `points`: Array of points received (Array)

Methods:

- Constructor:
 - Registers the group to the system.
 - Takes a `name` and a positive `groupSize`.
 - Initializes the data members `name`, `groupSize`, `numberOfTeams`, `teams`, `games`, and `points`.
- Accessor methods:
 - You need to implement methods to access the data variables `name`, `groupSize`, and `numberOfTeams`.
- Group methods:
 - `teamExists`: returns true if the team with the given ID exists in the group
 - `addTeam`: adds a team to the group if the team does not already exist in the group and there is room in the group
 - `addGame`: adds a game to the group by updating the individual team game properties in the group captured by the `games` data member. The game is added only if both teams of the game belong to the same group. Furthermore, we assume that there is only one game between the teams (there is no concept of Home vs. Visitor in the world cup). Additional games added between the same teams will be ignored. When the game is added, points for the teams are updated accordingly.
 - `toString`: Override the `toString` method to return an informative representation of the group, which displays the standings within the group according to the points so far.

Sample output for a Group object:

```
Group B = new Group("B", 3);
Team germany = new Team(6, "Germany");
Team turkiye = new Team(38, "Türkiye");
Team england = new Team(34, "England");
B.addTeam(england);
B.addTeam(germany);
B.addTeam(turkiye);
Game g1 = new Game(turkiye, germany, 3, 3);
Game g2 = new Game(turkiye, england, 2, 0);
B.addGame(g2);
B.addGame(g1);
System.out.println(B);
```

```
=====
=          Group B Standings          =
=====
1.      Germany (  6 )    4
2.      England ( 34 )    1
3.      Türkiye ( 38 )    0
=====
```

5. Main Class

Download the Java class provided to you with the `Qatar22` name. This class already defines the three teams with players for you, namely, Türkiye, England, and Germany. Furthermore, a group with 4 teams is created with these three teams added. Your main method will start with this already-filled data. Then, you will provide a menu for the user to interact with `Player`, `Team`, `Game`, and `Group` objects. Create the `Qatar22` app where user will be able to:

- create a new team,
- display a team,
- add a player to a team,
- remove a player with ID from a team,
- add a game to the group,
- display standings in the group,
- exit the application

Note: You need to check user input for the correctness and perform the modifications and updates if the inputs are valid. For example, if the group is already full, you will not accept adding a new team to the group. Or if a player with a jersey number already is on the team, you should respond to the user indicating that “a player with that jersey number is already in the team.” Users should know what is going on in the application. We have shown only some problematic input cases, but you should consider all possible scenarios. The specific conditions are given in each class for each property. You do not need to check for the correctness of input if it is not specified in the class.

Hint: To implement “6 - Display Standings”, you can use the `Arrays.sort` methods available in [Arrays](#). Also, you may implement this by a simple algorithm like below:

```
while( there are teams not displayed yet){  
    find the team that is not displayed yet with the maximum points and display it  
}
```

Sample run (Create a new team):

```
-----  
Welcome to Qatar 2022! Get Ready for the World Cup!  
-----  
----- Group: A -----  
1 - Create a new Team  
2 - Display a Team  
3 - Add a Player to a Team  
4 - Remove a Player with ID from a Team  
5 - Add a Game to the Group  
6 - Display Standings  
7 - Exit  
-----  
Your choice: 1  
What is the unique ID of the Team?: 10
```

```

What is the name of the Team?: Brazil
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----
Your choice: 6
=====
=          Group A Standings          =
=====
1.      Germany (  6 )    0
2.      England ( 34 )    0
3.      Türkiye ( 38 )    0
4.      Brazil ( 10 )    0
=====

```

Sample run (Create a new team with a full group, first display the group to see it):

```

----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----
Your choice: 6
=====
=          Group A Standings          =
=====
1.      Germany (  6 )    0
2.      England ( 34 )    0
3.      Türkiye ( 38 )    0
4.      Brazil ( 10 )    0
=====

----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----
Your choice: 1
Group already has 4/4 teams.

```


Sample run (Create a new team with a negative ID):

```
-----
Welcome to Qatar 2022! Get Ready for the World Cup!
-----
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----
Your choice: 1
What is the unique ID of the Team?: -1
Group ID cannot be negative!
```

Sample run (Display a team):

```
-----
Welcome to Qatar 2022! Get Ready for the World Cup!
-----
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----
Your choice: 2
What is the unique ID of the Team?: 38
=====
=                                     Team Details                                     =
=====
ID: 38
Team: Türkiye
Average Age: 24
Market Value: 206,500,000
Squad is composed of following players:
-----
```

Name	Age	Nationality	Number	Position	Market Value
Ugurcan Çakir	26	Türkiye	23	Goalkeeper	14,000,000
Altay Bayındır	24	Türkiye	1	Goalkeeper	13,000,000
Çağlar Söyüncü	26	Türkiye	4	Centre Back	22,000,000
Ozan Kabak	22	Türkiye	15	Centre Back	10,000,000
Tayyip Sanuç	22	Türkiye	6	Centre Back	3,800,000
Eren Elmalı	22	Türkiye	13	Left Back	4,200,000

Zeki Çelik	25	Türkiye	2	Right Back	15,000,000
Salih Özcan	24	Türkiye	5	Defensive Midfield	17,000,000
Hakan Çalhanoğlu	28	Türkiye	10	Central Midfield	35,000,000
Arda Güler	17	Türkiye	25	Attacking Midfield	10,000,000
Kerem Aktürkoğlu	24	Türkiye	7	Left Wing	13,000,000
Cengiz Ünder	25	Türkiye	17	Right Wing	17,000,000
Enes Ünal	25	Türkiye	16	Centre Forward	25,000,000
Umut Bozok	26	Türkiye	19	Centre Forward	5,500,000
Cenk Tosun	31	Türkiye	9	Centre Forward	2,000,000
=====					

Sample run (Display a team with negative ID):

```

-----
Welcome to Qatar 2022! Get Ready for the World Cup!
-----
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----
Your choice: 2
What is the unique ID of the Team?: -1
Team ID cannot be negative!

```

Sample run (Display a team that does not exist, first display the group to see which teams are already in the group):

```

-----
Welcome to Qatar 2022! Get Ready for the World Cup!
-----
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----
Your choice: 6
=====
=          Group A Standings          =
=====
1.      Germany ( 6 )    0
2.      England ( 34 )   0
3.      Türkiye ( 38 )   0
=====

```

```

----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----

Your choice: 2
What is the unique ID of the Team?: 12
Team does not exist!

```

Sample run (Add a player to a team):

```

-----
Welcome to Qatar 2022! Get Ready for the World Cup!
-----

----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----

Your choice: 2
What is the unique ID of the Team?: 6
=====
=                                     Team Details                                     =
=====

ID: 6
Team: Germany
Average Age: 26
Market Value: 654,000,000
Squad is composed of following players:
-----

```

Name	Age	Nationality	Number	Position	Market Value
Andre Ter Stegen	30	Germany	22	Goalkeeper	30,000,000
Manuel Neuer	36	Germany	1	Goalkeeper	12,000,000
Antonio Rüdiger	29	Germany	2	Centre Back	40,000,000
Niklas Süle	27	Germany	15	Centre Back	35,000,000
Thilo Kehrer	26	Germany	5	Centre Back	22,000,000
David Raum	24	Germany	3	Left Back	26,000,000
Lukas Klostermann	26	Germany	16	Right Back	14,000,000
Joshua Kimmich	27	Germany	6	Defensive Midfield	80,000,000
Leon Goretzka	27	Germany	8	Central Midfield	65,000,000
Ilkay Gündogan	32	Germany	21	Central Midfield	25,000,000
Jamal Musiala	19	Germany	14	Attacking Midfield	100,000,000

Leroy Sane	26	Germany	19	Left Wing	70,000,000
Serge Gnabry	27	Germany	10	Right Wing	65,000,000
Karim Adeyemi	20	Germany	24	Right Wing	35,000,000
Yousoufa Moukoko	18	Germany	26	Centre Forward	30,000,000
Niclas Füllkrug	29	Germany	9	Centre Forward	5,000,000

----- Group: A -----

- 1 - Create a new Team
- 2 - Display a Team
- 3 - Add a Player to a Team
- 4 - Remove a Player with ID from a Team
- 5 - Add a Game to the Group
- 6 - Display Standings
- 7 - Exit

Your choice: 3

What is the unique ID of the Team to add the Player?: 6

Enter the name of the player: Mesut Ozil

Enter the age of the player: 34

Enter the nationality of the player: Germany

Enter the jersey number of the player: 20

Enter the position of the player: Attacking Midfield

Enter the market value of the player: 1000000

----- Group: A -----

- 1 - Create a new Team
- 2 - Display a Team
- 3 - Add a Player to a Team
- 4 - Remove a Player with ID from a Team
- 5 - Add a Game to the Group
- 6 - Display Standings
- 7 - Exit

Your choice: 2

What is the unique ID of the Team?: 6

= Team Details =

ID: 6

Team: Germany

Average Age: 26

Market Value: 655,000,000

Squad is composed of following players:

Name	Age	Nationality	Number	Position	Market Value
Andre Ter Stegen	30	Germany	22	Goalkeeper	30,000,000
Manuel Neuer	36	Germany	1	Goalkeeper	12,000,000
Antonio Rüdiger	29	Germany	2	Centre Back	40,000,000
Niklas Süle	27	Germany	15	Centre Back	35,000,000
Thilo Kehrer	26	Germany	5	Centre Back	22,000,000
David Raum	24	Germany	3	Left Back	26,000,000

Lukas Klostermann	26	Germany	16	Right Back	14,000,000
Joshua Kimmich	27	Germany	6	Defensive Midfield	80,000,000
Leon Goretzka	27	Germany	8	Central Midfield	65,000,000
Ilkay Gündogan	32	Germany	21	Central Midfield	25,000,000
Jamal Musiala	19	Germany	14	Attacking Midfield	100,000,000
Leroy Sane	26	Germany	19	Left Wing	70,000,000
Serge Gnabry	27	Germany	10	Right Wing	65,000,000
Karim Adeyemi	20	Germany	24	Right Wing	35,000,000
Youssoufa Moukoko	18	Germany	26	Centre Forward	30,000,000
Niclas Füllkrug	29	Germany	9	Centre Forward	5,000,000
Mesut Ozil	34	Germany	20	Attacking Midfield	1,000,000

=====

Sample run (Add a player to a team, Player with the jersey number already exists!):

```

----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----

Your choice: 3
What is the unique ID of the Team to add the Player?: 6
Enter the name of the player: Mario Gotze
Enter the age of the player: 30
Enter the nationality of the player: Germany
Enter the jersey number of the player: 20
Player with the jersey number already exists!

```

Sample run (Add a player to a team, Player must be a citizen of the country!):

```

----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----

Your choice: 3
What is the unique ID of the Team to add the Player?: 6
Enter the name of the player: Neymar da Silva Santos Junior
Enter the age of the player: 30
Enter the nationality of the player: Brazil
Player must be a citizen of the country!

```

Sample run (Add a player to a team; market value cannot be negative!):

```
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----

Your choice: 3
What is the unique ID of the Team to add the Player?: 6
Enter the name of the player: Mesut Ozil
Enter the age of the player: 34
Enter the nationality of the player: Germany
Enter the jersey number of the player: 91
Enter the position of the player: Attacking Midfield
Enter the market value of the player: -1000000
Market value cannot be negative!
```

Sample run (Remove a player from a team, display the squad before removing a player):

```
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----

Your choice: 2
What is the unique ID of the Team?: 38
=====
=                                     Team Details                                     =
=====
ID: 38
Team: Türkiye
Average Age: 24
Market Value: 206,500,000
Squad is composed of following players:
-----
Name                Age  Nationality  Number  Position          Market Value
-----
Ugurcan Çakir       26   Türkiye     23      Goalkeeper        14,000,000
Altay Bayındır       24   Türkiye      1      Goalkeeper        13,000,000
Çağlar Söyüncü     26   Türkiye      4      Centre Back       22,000,000
Ozan Kabak          22   Türkiye     15      Centre Back       10,000,000
Tayyip Sanuç        22   Türkiye      6      Centre Back        3,800,000
Eren Elmalı         22   Türkiye     13      Left Back          4,200,000
Zeki Çelik          25   Türkiye      2      Right Back        15,000,000
Salih Özcan         24   Türkiye      5      Defensive Midfield 17,000,000
```

Hakan Çalhanoglu	28	Türkiye	10	Central Midfield	35,000,000
Arda Güler	17	Türkiye	25	Attacking Midfield	10,000,000
Kerem Aktürkoglu	24	Türkiye	7	Left Wing	13,000,000
Cengiz Ünder	25	Türkiye	17	Right Wing	17,000,000
Enes Ünal	25	Türkiye	16	Centre Forward	25,000,000
Umut Bozok	26	Türkiye	19	Centre Forward	5,500,000
Cenk Tosun	31	Türkiye	9	Centre Forward	2,000,000

----- Group: A -----

- 1 - Create a new Team
- 2 - Display a Team
- 3 - Add a Player to a Team
- 4 - Remove a Player with ID from a Team
- 5 - Add a Game to the Group
- 6 - Display Standings
- 7 - Exit

Your choice: 4

What is the unique ID of the Team to remove the Player?: 38

Enter the jersey number of the player: 16

----- Group: A -----

- 1 - Create a new Team
- 2 - Display a Team
- 3 - Add a Player to a Team
- 4 - Remove a Player with ID from a Team
- 5 - Add a Game to the Group
- 6 - Display Standings
- 7 - Exit

Your choice: 2

What is the unique ID of the Team?: 38

=====

= Team Details =

=====

ID: 38

Team: Türkiye

Average Age: 24

Market Value: 181,500,000

Squad is composed of following players:

Name	Age	Nationality	Number	Position	Market Value
Ugurcan Çakir	26	Türkiye	23	Goalkeeper	14,000,000
Altay Bayindir	24	Türkiye	1	Goalkeeper	13,000,000
Çağlar Söyüncü	26	Türkiye	4	Centre Back	22,000,000
Ozan Kabak	22	Türkiye	15	Centre Back	10,000,000
Tayyip Sanuç	22	Türkiye	6	Centre Back	3,800,000
Eren Elmalı	22	Türkiye	13	Left Back	4,200,000
Zeki Çelik	25	Türkiye	2	Right Back	15,000,000
Salih Özcan	24	Türkiye	5	Defensive Midfield	17,000,000
Hakan Çalhanoglu	28	Türkiye	10	Central Midfield	35,000,000

Arda Güler	17	Türkiye	25	Attacking Midfield	10,000,000
Kerem Aktürkoglu	24	Türkiye	7	Left Wing	13,000,000
Cengiz Ünder	25	Türkiye	17	Right Wing	17,000,000
Umut Bozok	26	Türkiye	19	Centre Forward	5,500,000
Cenk Tosun	31	Türkiye	9	Centre Forward	2,000,000

=====

Sample run (Remove a player from a team; team does not exist!):

```

----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----
Your choice: 4
What is the unique ID of the Team to remove the Player?: 50
Team does not exist!

```

Sample run (Remove a player from a team; player does not exist!):

```

----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----
Your choice: 4
What is the unique ID of the Team to remove the Player?: 38
Enter the jersey number of the player: 88
Player does not exist!

```


Sample run (Add a game to the group, display standings to see the changes):

```
-----  
Welcome to Qatar 2022! Get Ready for the World Cup!  
-----
```

```
----- Group: A -----
```

- 1 - Create a new Team
- 2 - Display a Team
- 3 - Add a Player to a Team
- 4 - Remove a Player with ID from a Team
- 5 - Add a Game to the Group
- 6 - Display Standings
- 7 - Exit

```
-----  
Your choice: 6
```

```
=====
```

=	Group A Standings	=
---	-------------------	---

```
=====
```

1.	Germany (6)	0
2.	England (34)	0
3.	Türkiye (38)	0

```
=====
```

```
----- Group: A -----
```

- 1 - Create a new Team
- 2 - Display a Team
- 3 - Add a Player to a Team
- 4 - Remove a Player with ID from a Team
- 5 - Add a Game to the Group
- 6 - Display Standings
- 7 - Exit

```
-----  
Your choice: 5
```

What is the unique ID of the First Team?: 38

What is the unique ID of the Second Team?: 6

Enter the score (such as 2 1): 3 3

```
----- Group: A -----
```

- 1 - Create a new Team
- 2 - Display a Team
- 3 - Add a Player to a Team
- 4 - Remove a Player with ID from a Team
- 5 - Add a Game to the Group
- 6 - Display Standings
- 7 - Exit

```
-----  
Your choice: 6
```

```
=====
```

=	Group A Standings	=
---	-------------------	---

```
=====
```

1.	Germany (6)	1
2.	Türkiye (38)	1
3.	England (34)	0

```
=====
```

```

----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----

Your choice: 5
What is the unique ID of the First Team?: 38
What is the unique ID of the Second Team?: 34
Enter the score (such as 2 1): 2 0
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----

Your choice: 6
=====
=          Group A Standings          =
=====
 1.      Türkiye ( 38 )    4
 2.      Germany (  6 )    1
 3.      England ( 34 )    0
=====

```

Sample run (Add a game to the group; first team does not exist!):

```

----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----

Your choice: 5
What is the unique ID of the First Team?: 12
First team does not exist!

```

Sample run (Add a game to the group, Second team does not exist!):

```
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----
Your choice: 5
What is the unique ID of the First Team?: 38
What is the unique ID of the Second Team?: 12
Second team does not exist!
```

Sample run (Add a game to the group; scores cannot be negative!):

```
-----
Welcome to Qatar 2022! Get Ready for the World Cup!
-----
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----
Your choice: 6
=====
=          Group A Standings          =
=====
1.      Germany ( 6 )    0
2.      England ( 34 )   0
3.      Türkiye ( 38 )   0
=====
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----
Your choice: 5
What is the unique ID of the First Team?: 38
What is the unique ID of the Second Team?: 34
Enter the score (such as 2 1): -2 1
Scores cannot be negative!
```

Sample run (Add multiple games between the same teams which will not have any effect):

```
-----  
Welcome to Qatar 2022! Get Ready for the World Cup!  
-----
```

```
----- Group: A -----
```

- 1 - Create a new Team
- 2 - Display a Team
- 3 - Add a Player to a Team
- 4 - Remove a Player with ID from a Team
- 5 - Add a Game to the Group
- 6 - Display Standings
- 7 - Exit

```
-----  
Your choice: 6
```

```
=====
=          Group A Standings          =
=====
1.      Germany (  6 )    0
2.      England ( 34 )    0
3.      Türkiye ( 38 )    0
=====
```

```
----- Group: A -----
```

- 1 - Create a new Team
- 2 - Display a Team
- 3 - Add a Player to a Team
- 4 - Remove a Player with ID from a Team
- 5 - Add a Game to the Group
- 6 - Display Standings
- 7 - Exit

```
-----  
Your choice: 5
```

```
What is the unique ID of the First Team?: 34
What is the unique ID of the Second Team?: 38
Enter the score (such as 2 1): 2 1
```

```
----- Group: A -----
```

- 1 - Create a new Team
- 2 - Display a Team
- 3 - Add a Player to a Team
- 4 - Remove a Player with ID from a Team
- 5 - Add a Game to the Group
- 6 - Display Standings
- 7 - Exit

```
-----  
Your choice: 6
```

```
=====
=          Group A Standings          =
=====
1.      England ( 34 )    3
2.      Germany (  6 )    0
3.      Türkiye ( 38 )    0
=====
```

```

----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----

Your choice: 5
What is the unique ID of the First Team?: 34
What is the unique ID of the Second Team?: 38
Enter the score (such as 2 1): 1 2
Already a game between the teams exists!
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----

Your choice: 6
=====
=          Group A Standings          =
=====
1.      England ( 34 )    3
2.      Germany (  6 )    0
3.      Türkiye ( 38 )    0
=====

----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team
5 - Add a Game to the Group
6 - Display Standings
7 - Exit
-----

Your choice: 5
What is the unique ID of the First Team?: 38
What is the unique ID of the Second Team?: 34
Enter the score (such as 2 1): 2 1
Already a game between the teams exists!
----- Group: A -----
1 - Create a new Team
2 - Display a Team
3 - Add a Player to a Team
4 - Remove a Player with ID from a Team

```

5 - Add a Game to the Group
6 - Display Standings
7 - Exit

Your choice: 6

=====
= Group A Standings =
=====

1.	England (34)	3
2.	Germany (6)	0
3.	Türkiye (38)	0

=====