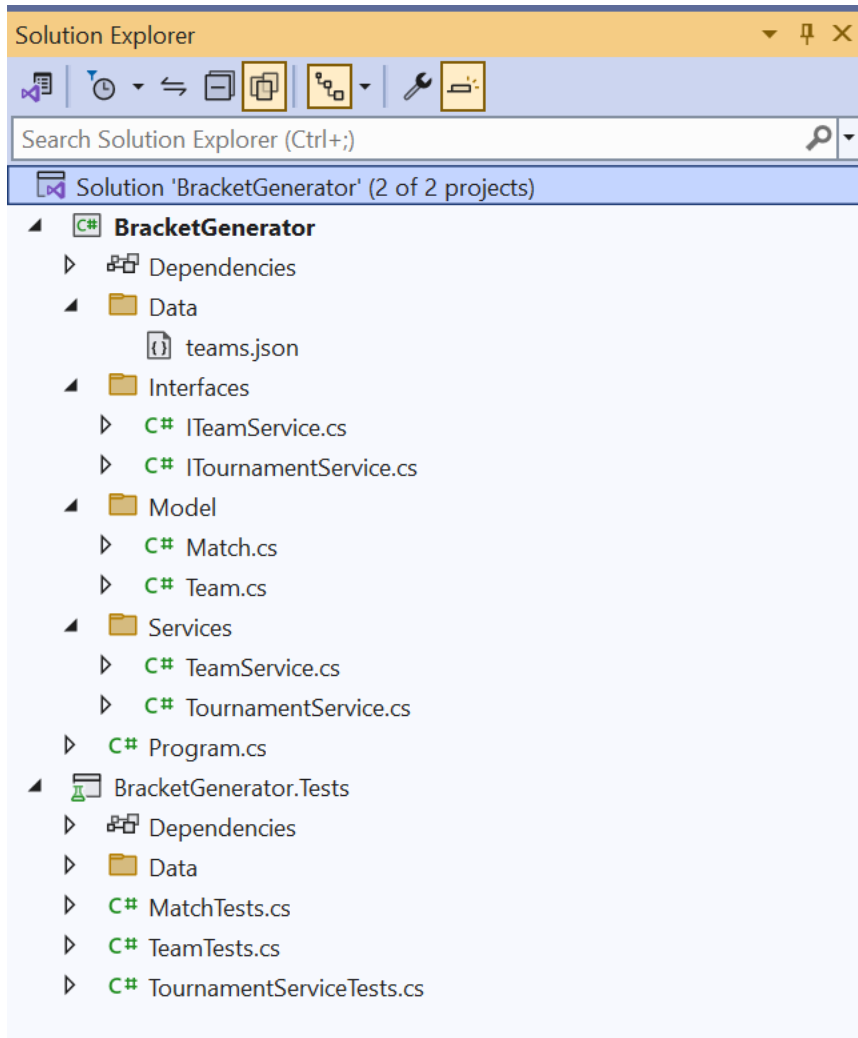## Solution structure

- Project 1: BracketGenerator
- Project 2: BracketGenerator.Tests

Project 1: BracketGenerator

1. **Data folder** – Includes sample json data files
2. **Interfaces folder** – Includes all interface files that support application service implementations, allowing the decoupling of dependencies from the business logic layer.
   a. ITeamService – This interface defines the LoadTeams() method, which is responsible for loading the team data
   b. `ITournamentService` – This interface defines `the SeedTournamentData(), PathToVictory(), GetTournamentWinner() methods`
3. **Models folder** – Includes the model classes that represent the application entities
   a. Match.cs- The Match class defines the properties that represent the attributes of a match entity.
   b. Team.cs- The Team class defines the properties that represent the attributes of a team entity.

4. **Services folder** – Includes the service classes responsible for handling and executing the application support service implementations.
    a. TeamService - This service implements the **LoadTeams()** method, which is responsible for loading the team data
    b. TournamentService – This service implements the following methods
    - SeedTournamentData()– Loads the Teams from the teams.json file in the data folder
    - PathToVictory()– Populates the tournament brackets and scores for each tournament round. Based on the score this will populate the advanced teams for the next round.
    - GetTournamentWinner()– Populates the winner of the tournament

Technologies used
- .NET Core,
- Microsoft.DependencyInjection

Project 2: BracketGenerator.Tests

All the application test cases exist in this project
Each test class contains the test cases related to each responsible area of the entity.
Technologies used
- Microsoft .NET Test Sdk
- XUnit
- Moq

The application gets initiated and starts in the program.cs file below codes.

```csharp
1 reference
private static void StartApplication(ITournamentService tournamentService)
{
    Console.WriteLine("Program Starting-------------");
    Console.WriteLine("");
    // feed the initial data
    tournamentService.SeedTournamentData();

    tournamentService.PathToVictory();
    tournamentService.GetTournamentWinner();
    Console.WriteLine("");
    Console.WriteLine("Program Completed-------------");
    Console.ReadLine();
}
```

How to extend the teams?
You can add more participant teams to the teams.json file.

Application Output

```
Program Starting--------------

***************Tournament Teams***************
        Seed    Team
(1).    1A      Qatar
(2).    1A      Ecuador
(3).    2B      Senagal
(4).    2B      Netherlands
(5).    1B      England
(6).    1B      Iran
(7).    2A      USA
(8).    2A      Wales
(9).    1C      Argentina
(10).   1C      Saudi Arabia
(11).   2D      Mexico
(12).   2D      Poland
(13).   1D      France
(14).   1D      Australia
(15).   2C      Denmark
(16).   2C      Tunisia
(17).   1E      Spain
(18).   1E      Costa Rica
(19).   2F      Germany
(20).   2F      Japan
(21).   1F      Belgium
(22).   1F      Canada
(23).   2E      Morocco
(24).   2E      Croatia
(25).   1G      Brazil
(26).   1G      Serbia
(27).   2H      Switzerland
(28).   2H      Cameroon
(29).   1H      Portugal
(30).   1H      Ghana
(31).   2G      Uruguay
(32).   2G      South Korea
```

```
************Tournament Round 1************
(1).    Qatar Vs Ecuador
(2).    Senagal Vs Netherlands
(3).    England Vs Iran
(4).    USA Vs Wales
(5).    Argentina Vs Saudi Arabia
(6).    Mexico Vs Poland
(7).    France Vs Australia
(8).    Denmark Vs Tunisia
(9).    Spain Vs Costa Rica
(10).   Germany Vs Japan
(11).   Belgium Vs Canada
(12).   Morocco Vs Croatia
(13).   Brazil Vs Serbia
(14).   Switzerland Vs Cameroon
(15).   Portugal Vs Ghana
(16).   Uruguay Vs South Korea
```

```
***************Results for round 1***************
Team 1: Qatar,Score: 2
Team 2: Ecuador,Score: 0

Team 1: Senagal,Score: 6
Team 2: Netherlands,Score: 4

Team 1: England,Score: 0
Team 2: Iran,Score: 8

Team 1: USA,Score: 6
Team 2: Wales,Score: 5

Team 1: Argentina,Score: 9
Team 2: Saudi Arabia,Score: 8

Team 1: Mexico,Score: 3
Team 2: Poland,Score: 8

Team 1: France,Score: 8
Team 2: Australia,Score: 6

Team 1: Denmark,Score: 5
Team 2: Tunisia,Score: 6

Team 1: Spain,Score: 5
Team 2: Costa Rica,Score: 3

Team 1: Germany,Score: 9
Team 2: Japan,Score: 1

Team 1: Belgium,Score: 4
Team 2: Canada,Score: 6

Team 1: Morocco,Score: 8
Team 2: Croatia,Score: 1

Team 1: Brazil,Score: 1
Team 2: Serbia,Score: 9

Team 1: Switzerland,Score: 9
Team 2: Cameroon,Score: 8

Team 1: Portugal,Score: 7
Team 2: Ghana,Score: 2

Team 1: Uruguay,Score: 1
Team 2: South Korea,Score: 0
```

```
**Teams qualified to the tournament round 2**
(1).Qatar
(2).Senagal
(3).Iran
(4).USA
(5).Argentina
(6).Poland
(7).France
(8).Tunisia
(9).Spain
(10).Germany
(11).Canada
(12).Morocco
(13).Serbia
(14).Switzerland
(15).Portugal
(16).Uruguay

************Tournament Round 2************
(1).     Qatar Vs Senagal
(2).     Iran Vs USA
(3).     Argentina Vs Poland
(4).     France Vs Tunisia
(5).     Spain Vs Germany
(6).     Canada Vs Morocco
(7).     Serbia Vs Switzerland
(8).     Portugal Vs Uruguay
```

```
***************Results for round 2***************
Team 1: Qatar,Score: 6
Team 2: Senagal,Score: 1

Team 1: Iran,Score: 4
Team 2: USA,Score: 2

Team 1: Argentina,Score: 5
Team 2: Poland,Score: 8

Team 1: France,Score: 8
Team 2: Tunisia,Score: 9

Team 1: Spain,Score: 3
Team 2: Germany,Score: 7

Team 1: Canada,Score: 7
Team 2: Morocco,Score: 7

Team 1: Serbia,Score: 7
Team 2: Switzerland,Score: 8

Team 1: Portugal,Score: 7
Team 2: Uruguay,Score: 3
```

```
**Teams qualified to the tournament round 3**
(1).Qatar
(2).Iran
(3).Poland
(4).Tunisia
(5).Germany
(6).Canada
(7).Switzerland
(8).Portugal

*************Tournament Round 3************
(1).     Qatar Vs Iran
(2).     Poland Vs Tunisia
(3).     Germany Vs Canada
(4).     Switzerland Vs Portugal

***************Results for round 3**************
Team 1: Qatar,Score: 7
Team 2: Iran,Score: 7

Team 1: Poland,Score: 4
Team 2: Tunisia,Score: 8

Team 1: Germany,Score: 5
Team 2: Canada,Score: 8

Team 1: Switzerland,Score: 3
Team 2: Portugal,Score: 5
```

```
**Teams qualified to the tournament round 4**
(1).Qatar
(2).Tunisia
(3).Canada
(4).Portugal

*************Tournament Round 4************
(1).     Qatar Vs Tunisia
(2).     Canada Vs Portugal

***************Results for round 4**************
Team 1: Qatar,Score: 0
Team 2: Tunisia,Score: 7

Team 1: Canada,Score: 2
Team 2: Portugal,Score: 8
```

```
**Teams qualified to the tournament round 5**
(1).Tunisia
(2).Portugal

************Tournament Round 5************
(1).    Tunisia Vs Portugal

***************Results for round 5***************
Team 1: Tunisia,Score: 1
Team 2: Portugal,Score: 7
```

```
-----------------------GetTournamentWinner-----------------------

        Team:Tunisia, Score:1
        Team:Portugal, Score:7
****************************************************************
****************************************************************
*********** Soccer World Cup winner :Portugal ***********
****************************************************************
****************************************************************

--GetTournamentWinner END------


Program Completed--------------
```