World Cup Stats analyser application

Instructions:

Submission : 9:00 Friday 28th August 2020 (via Canvas) – to enable transfer to MSc Year 2 (PT) September 2020

Or 9:00 Monday 7th December 2020.

You have been given a data file (*WorldCupMatches.csv*) that contains various details for each FIFA World Cup match from 1930 until 2014. You are tasked with writing an OOP based Java application that will enable the reading and searching of the data.

Create a **project solution** (named **PGCert<your student id> e.g. PGCert2048201).** Create a package named **wc**. Add *WorldCupMatches.csv* to the project. **Ensure your name and student number are placed in the Javadoc comments of all the classes you write to support the application.**

Part 1 – 50%

Using your knowledge of OOP:

1. Create a class **Match.java** that will represent each match detail. The class should have all the properties for each data point (attribute) of the match. Each attribute with appropriate validation rule is detailed below.

Attribute	**Allowable values**
Year	1930 (inclusive) onwards
Host	At least 1 character but less than 30
Stage	At least 1 character but less than 50
Stadium	At least 1 character but less than 80
City	At least 1 character but less than 40
Attendance	0 – 200000 (inclusive)
Home Team Name	At least 1 character but less than 35
Home Team Goals	0 – 15 (inclusive)
Away Team Goals	0 – 15 (inclusive)
Away Team Name	At least 1 character but less than 35
Win conditions	ET (extra time) HWP (Home Win Penalties) AWP (Away Win Penalties)
Half-time Home Goals	0 – 15 (inclusive)
Half-time Away Goals	0 – 15 (inclusive)
Home Team Initials	Three characters
Away Team Initials	Three characters

Return an appropriate exception with an appropriate exception message e.g. "*Invalid Home Goals*", "*Invalid team name format*" etc. if an attempt is made to set outside a range or allowable values.

2. You should fully **unit test** this class.

Part 2 - Searches - 50%

Create a ***Stats.java*** class is designed to support the system for searching. It should have the application's main method and then a series of methods calls.

Methods required:

1. Read each match detail from the csv, creating an instance of the *Match class* (from Part 1) for each match and populate this arraylist : (which should be created with the Stats class.)

```
public static ArrayList<Match> matches = new ArrayList<Match>();
```

   Acting on this populated ArrayList then perform the following operations matching the format of the example outputs…

2. Output to screen **all details of all matches** e.g.

   Match [year=2002, host=South Korea/Japan, stage=Group F, stadium=Saitama Stadium 2002, city=Saitama , attendance=52721, homeTeamName=England, homeTeamGoals=1, awayTeamGoals=1, awayTeamName=Sweden, winConditions= , halfTimeHomeGoals=1, halfTimeAwayGoals=0, homeTeamInitials=ENG, awayTeamInitials=SWE]

3. Output to screen the **total attendances of all matches** and the **average attendance** (to two decimal points) for WC matches.

   Total attendances in all WCs :
   Average attendances:

4. Output to screen the results of any **searched for WC year**. Eg. Searching for *1998* would output :

   All matches in WC France 1998
   Brazil 2 : Scotland 1
   Morocco 2 : Norway 2
   Italy 2 : Chile 2
   Etc…

5. Output to screen the results of any searched for country that has played in the WC e.g. Searching for Spain would output :

   Matches Spain have played in the WC
   Spain 3 : Brazil 1
   Italy 1 : Spain 1
   Italy 1 : Spain 0
   Spain 3 : USA 1
   Etc…

6. Output to screen the following details for all WC final matches

   1930 Uruguay
   Uruguay 4 : Argentina 2

   1934 Italy
   Italy 2 : Czechoslovakia 1

   1938 France
   Italy 4 : Hungary 2

   Etc...

7. Output to screen the **total number of goals scored** in all WC matches and the average goals per game (to two decimal places).

   Total goals in all WCs :
   Average goals per game :

8. Output the details for the matches with **the smallest attendance** and also **the largest attendance**.

   Attendances
   Smallest attendance 2000
   Uruguay 1930 Estadio Centenario Uruguay CHI vs FRA

   Largest attendance etc…

9. Output to screen the details of **each match that went to extra time** (i.e. Win Condition being set as ET) e.g.

   ET games
   1934 Italy Preliminary round
   Austria 3 : France 2

   1934 Italy Final
   Italy 2 : Czechoslovakia 1
   Etc…

10. Output to screen the details of **each match that went to penalties.** Win conditions either **HWP** or **AWP** e.g.

    Games that went to penalties
    1990 Italy Semi-finals
    ITA 1 : ARG 1
    Winner : ARG
    Etc...

11. Output to screen **the percentage of games won by the team that were leading at half time**.

    When complete compress (zip) the ***Eclipse solution*** and upload to **Assignments** on CANVAS

    Now : check the upload to ensure you have submitted the correct files.

[END]