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| Project |
| SOFT6018 – Problem Solving & Programming I  (worth 20%) |
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Specification

CIT Sports & Social club are considering running a round robin (or all-play-all) football tournament, i.e. a tournament in which each team plays all the other teams in turn so if n is the number of teams, there are matches played. You have been asked to develop a Java application to assist the club to run the tournament.

The application should enable the club to enter:

* The number of teams - must be an integer value greater than or equal to 2.
* The name of each team – must contain at least 1 character.
* For each match played by each team:
  + The team’s status in each match, i.e. whether they won, drew or lost.
  + The number of fans who attended the match – must be a non-negative integer value.

For each match, teams are awarded points as follows:

* + If the team wins the match, they receive 3 points
  + If the team draws the match, they receive 1 point
  + If the team loses the match, they receive 0 points

Tickets for matches cost €5.50 and it has been agreed that the prize for the tournament will be 50% of the takings from all the matches played. In the event that more than 1 team wins the tournament this prize must be shared equally between the winning teams.

The application should:

* Print out a table showing the team name, the number of games won, drawn and lost together with the total points obtained by the team.
* The total attendance at all matches.
* The average attendance per game
* The total takings from all matches
* Determine the winning team, or teams, and their winnings.

Some sample runs of the application might appear as follows:

* When one team wins

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\* Welcome to CIT's Round Robin Football Tournament \*

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Enter the number of teams? 3

What is the name of the team 1? A

Match 1: (1 of 2) for A vs. team 2

Did A?

1: Draw

2: Win

3: Lose

==>1

Match 1: (1 of 2) for A vs. team 2 how many supporters attended? 100

Match 2: (2 of 2) for A vs. team 3

Did A?

1: Draw

2: Win

3: Lose

==>3

Match 2: (2 of 2) for A vs. team 3 how many supporters attended? 200

What is the name of the team 2? B

Carefully re-enter the score for: B vs. team 1

Did B?

1: Draw

2: Win

3: Lose

==>1

Match 3: (2 of 2) for B vs. team 3

Did B?

1: Draw

2: Win

3: Lose

==>2

Match 3: (2 of 2) for B vs. team 3 how many supporters attended? 100

What is the name of the team 3? C

Carefully re-enter the score for: C vs. team 1

Did C?

1: Draw

2: Win

3: Lose

==>2

Carefully re-enter the score for: C vs. team 2

Did C?

1: Draw

2: Win

3: Lose

==>3

Team Won Drawn Lost Total

==== === ===== ==== =====

A 0 1 1 1

B 1 1 0 4

C 1 0 1 3

Total attendance at all matches is: 400

Average attendance per game is: 133.0

Total takings at all matches is (€): 2200.0

The winning team is B takes home €1100.0

* When multiple teams win

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Enter the number of teams? 3

What is the name of the team 1? A

Match 1: (1 of 2) for A vs. team 2

Did A?

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2: Win

3: Lose

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Match 1: (1 of 2) for A vs. team 2 how many supporters attended? 100

Match 2: (2 of 2) for A vs. team 3

Did A?

1: Draw

2: Win

3: Lose

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Match 2: (2 of 2) for A vs. team 3 how many supporters attended? 200

What is the name of the team 2? B

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What is the name of the team 3? C

Carefully re-enter the score for: C vs. team 1

Did C?

1: Draw

2: Win

3: Lose

==>1

Carefully re-enter the score for: C vs. team 2

Did C?

1: Draw

2: Win

3: Lose

==>1

Team Won Drawn Lost Total

==== === ===== ==== =====

A 0 2 0 2

B 0 2 0 2

C 0 2 0 2

Total attendance at all matches is: 400

Average attendance per game is: 133.0

Total takings at all matches is (€): 2200.0

The winning teams are A and B and C and take home €366.6666666666667 each

* When invalid results are entered:

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What is the name of the team 1? A

Match 1: (1 of 2) for A vs. team 2

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Match 1: (1 of 2) for A vs. team 2 how many supporters attended? 100

Match 2: (2 of 2) for A vs. team 3

Did A?

1: Draw

2: Win

3: Lose

==>1

Match 2: (2 of 2) for A vs. team 3 how many supporters attended? 200

What is the name of the team 2? B

Carefully re-enter the score for: B vs. team 1

Did B?

1: Draw

2: Win

3: Lose

==>2

Match 3: (2 of 2) for B vs. team 3

Did B?

1: Draw

2: Win

3: Lose

==>1

Match 3: (2 of 2) for B vs. team 3 how many supporters attended? 100

What is the name of the team 3? C

Carefully re-enter the score for: C vs. team 1

Did C?

1: Draw

2: Win

3: Lose

==>2

Carefully re-enter the score for: C vs. team 2

Did C?

1: Draw

2: Win

3: Lose

==>2

Data is invalid - please check your data and start again.

# Marking Scheme

|  |  |
| --- | --- |
| **Submission Date: Sunday 4th December 2016 @ 23:59** | |
| **Description** | **Mark** |
| Comments, e.g..:   * Appropriate and informative comments   Programming Style, e.g.:   * Naming Conventions for identifiers for classes, methods, variables and constants. * Indentation and lineation. * Readability of code. | 10 |
| Implementation, e.g.:   * Constant Declarations * Variable Declarations * Providing the functionality specified. * Ensuring that the code produces valid output and is fully tested. | 70 |
| Input Validation, e.g.:   * Checking that a value of the correct data type has been entered and that the value is in the appropriate range. | 20 |

Please note that the use of any, or all, of the following are not allowed in this project:

* Object-oriented programming techniques
* Methods, etc.
* Arrays or ArrayLists
* Files
* Databases, etc.

Essentially, students are only allowed to use concepts that have been covered in class and all code, apart from import statements, must appear in the main method. Students who fail to do so will be heavily penalised.