SdPd/java Lab Exam 3

Objective: Update a Sports League Table with Match Results

Tribes Sports maintains a league table including match results using text files and arrays.

1. **Download** the lab exam 3 **zip** file and extract the folder, **Save** on the desktop (**not** your Network account, local C drive or USB)

   – Rename the **LastNameFirstNameLabEx3** folder and starter java file as per your own name
   – E.g. **AgnewGerryLabEx3** folder and **AgnewGerryLabEx3**.java file
   – To be **verified** by your lab supervisor

2. Add your **Program Id, Name** & **Program Description** as **comments** at the top of the java program

3. **Warning:**
   – Marks will be deducted for **bad programming practices** such as:
   – Lacking meaningful variable names, white-space, indentation, etc.
   – Ensure redundant code is deleted prior to program submission

4. **File Organisation:**
   – The number of League Teams (max 25) and Match Results records are unknown
   – With both files terminated with a dummy “eof” sentinel team name string
   – The League Table file is organised in ascending alphabetic order
   – Teams are awarded 3 points for a match win and 1 point for a draw

5. **League Table text file name & layout:** LeagueTable.dat
   Each file record consists of the following details about each team:

   – teamName (String) – unique 9 character (max) team name e.g. Galway
   – played (int) – number of games played e.g. 8
   – won (int) – number of games won e.g. 5
   – drawn (int) – number of games drawn e.g. 2
   – lost (int) – number of games lost e.g. 1
   – scored (int) – number of goals scored e.g. 30
   – conceded (int) – number of goals conceded e.g. 10
   – points (int) – number of points accumulated e.g. 17
   – Note: individual played, won, drawn, etc. variables are not required as these values can be stored directly in the 2 dim league table array
   – Verify the League Table text file contents using NotePad or equivalent (see Screenshot 1)

6. **Match Results text file name & layout:** MatchResults.dat
   Each file record consists of the following details about each match played:

   – homeName (String) – home team name e.g. Galway
   – homeScore (int) – home team score e.g. 1
   – awayName (String) – away team name e.g. Mayo
   – awayScore (int) – away team score e.g. 0
   – Verify the Match Results text file contents using NotePad or equivalent (see Screenshot 2)

7. **Imports/Constants/Variables/Arrays/Initialise:**
   – Add any imports and throws required for file handling
   – Declare any constants required with meaningful names and types
   – Declare file objects, file variables & other variables as appropriate with meaningful names
   – Add a one dimension **team name** string array & a 2 dimension **league table** integer array
   – Initialise any necessary variables especially counts, totals and booleans where appropriate

Part 1:

8. **Header Output:**
   – Output the program headers including **your name** as specified where appropriate
   – See the attached Screenshot 3

9. **Output/Populate/Verify the League Table input file (Saved in appropriate Arrays):**
   – Using an outer "eof" sentinel controlled **while** loop read each team record from the League Table text file using the Initial/while/Subsequent read approach
   – Store the input fields in two appropriately named/typed **1-dim** and **2-dim** arrays
   Store the team name in the 1-dim team names string array
   – Store the team stats (played, won, drawn, lost and so on) in the 2-dim league table int array
   Using an inner **for** loop to read each team's stats
   – Line output formatted league table details using the **arrays** to verify that they have been correctly populated
   – See the attached Screenshot 3

Part 2:

10. **Output/Verify the Match Results input file (no arrays):**
   – Using an "eof" sentinel controlled **while** loop read each match result record from the file using the Initial/while/Subsequent read approach
   – Line output formatted match details to verify that they are being correctly read
   – See the attached Screenshot 4

Part 3:

11. **League Table Arrays Query**
   – Using an outer **do/while** loop input the **team number** from the keyboard
   – Until the 0 sentinel to end is encountered
   – Line output formatted league table details for the team number entered (same as above)
   – Using an inner **do/while** loop to perform team number validation (1 … team count)
   – See the attached Screenshot 5

Part 4:

12. **Match Results input file (re-processed):**
   – Remember to first close and reopen the Match Results input file
   – Duplicate the above "eof" sentinel controlled **while** loop which reads match records from the file using the Initial/while/Subsequent read approach
   – Then search the team name array using an **inner while** for the **home** team involved in each match and update their league table stats accordingly as indicated below
   (i.e. can ignore the away team and the away result)

13. **Team Name Search:**
   – Using an **inner while** loop search the Team Names array case insensitively for the home team involved in each match using a boolean variable
   – Where unsuccessful and the home team is not found in the team name array output an appropriate rejected match record to the "**RejectedMatchResults.dat**" report file as shown

– To be verified using NotePad or equivalent (See the attached Screenshot 6)

14. **Successful Team Name Search Processing:**
   – If successful Line output formatted match details supplemented with a home result character (either W for a home win, D for a home draw or L for a home loss)
   – Then process the match result using the home result character with a switch statement to update the league table stats array
   – Consider the implications of match result: Alpha 3 V Beta 2 for the home team Alpha
   Increment the home team Played, add the goals to the appropriate Scored/Conceded values
   Increment the appropriate Win, Draw or Lost values and adjust the points accordingly
   – See the attached Screenshot 7

Part 5:

15. **Save Updated League Table Arrays to a new Output File:**
   – When finished output the League Table arrays to a new file called "**NewLeagueTable.dat**"
   – Using a pair of **nested for** loops
   – Remember to append the dummy "eof" sentinel record at the file end
   – To be verified using NotePad or equivalent (See the attached Screenshot 8)

16. **Close Files:**
   Close the file objects

17. **Save – The End:**
   – When finished Save and Exit TextPad
   – Zip (R/click: Send Compressed) the **LastNameFirstNameLabEx3** folder
   – Upload the **LastNameFirstNameLabEx3** zip file to Moodle link provided
   – To be **verified** by your supervisor **before** you **submit** the zip file
   – Remember to submit your "Named" Algorithm sheet and any rough work
   – Sign the **attendance sheet** before you exit the lab

Screenshot 1

LeagueTable - Notepad

File Edit Format View Help

```
Antrim      8   4   2   2   14   14   14
Clare       9   2   2   5    2   22    8
Cork        7   3   1   3   13   12   10
Galway      8   5   2   1   30   10   17
Limerick    7   2   5   0   13   23   11
Mayo        9   5   2   2   21    6   17
Sligo       8   4   1   3   15   16   13
Wexford     8   4   0   4   15   36   12
eof         0   0   0   0    0    0    0
```

Screenshot 2

MatchResults - Notepad

File Edit Format View Help

```
Galway      1  Mayo      0
Sligo       2  Mayo      0
Antrim      3  Cork      2
Cork        4  Mayo      4
Limerick    5  Galway    2
Sligo       4  Galway    5
Mayo        3  Antrim    3
Galway      2  Cork      6
xMayo       0  Sligo     0
XXX         0  YYY       0
eof         0            0
```

Part 1/Screenshot 3

```
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   Team          Play     Won    Draw    Lost Scored Conceded Points
=============================================================================
 1 Antrim          8       4       2       2      14      14      14
 2 Clare           9       2       2       5       2      22       8
 3 Cork            7       3       1       3      13      12      10
 4 Galway          8       5       2       1      30      10      17
 5 Limerick        7       2       5       0      13      23      11
 6 Mayo            9       5       2       2      21       6      17
 7 Sligo           8       4       1       3      15      16      13
 8 Wexford         8       4       0       4      15      36      12
```

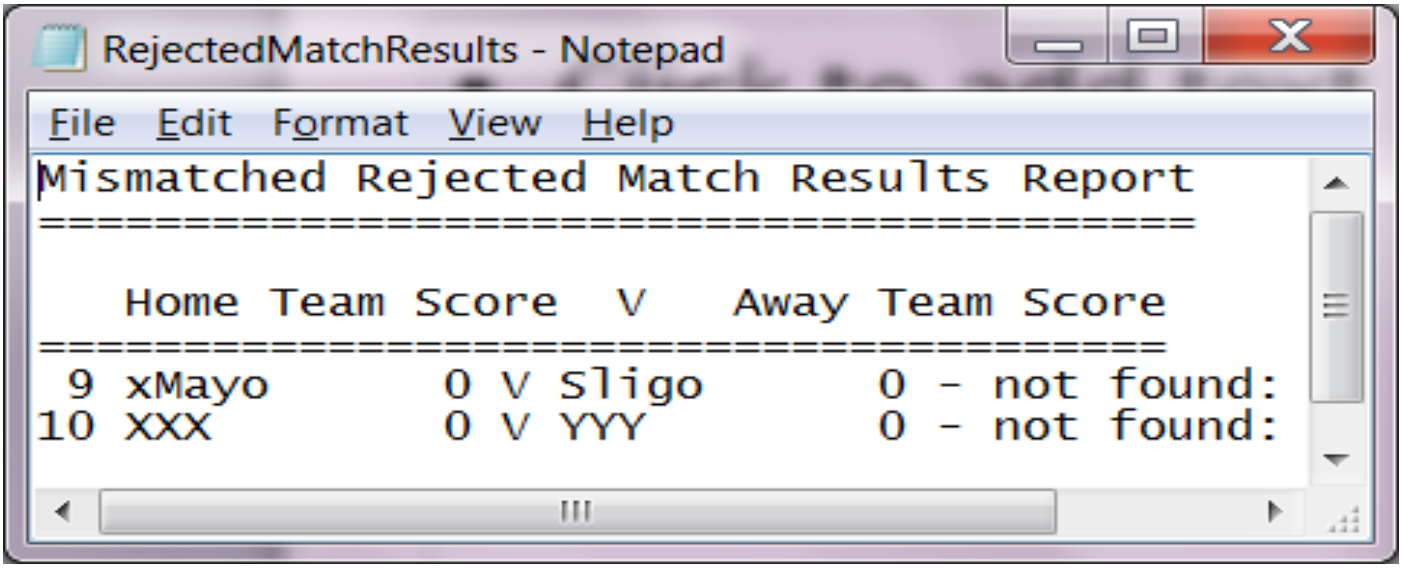
Part 2/Screenshot 4

```
    Home Team Score   V    Away Team Score
=================================================
 1  Galway          1    V    Mayo            0
 2  Sligo           2    V    Mayo            0
 3  Antrim          3    V    Cork            2
 4  Cork            4    V    Mayo            4
 5  Limerick        5    V    Galway          2
 6  Sligo           4    V    Galway          5
 7  Mayo            3    V    Antrim          3
 8  Galway          2    V    Cork            6
 9  xMayo           0    V    Sligo           0
10  XXX             0    V    YYY             0
```

Part 3/Screenshot 5

```
Enter team number (0/End): -1
Enter team number (0/End): 9
Enter team number (0/End): 1
   Team        Play    Won   Draw   Lost Scored Conceded Points
=============================================================
 1 Antrim        8      4      2      2     14     14     14
Enter team number (0/End): 8
   Team        Play    Won   Draw   Lost Scored Conceded Points
=============================================================
 8 Wexford       8      4      0      4     15     36     12
Enter team number (0/End): 0
```

Part 4/Screenshot 6



Part 4/Screenshot 7

	Home Team	Score	V	Away Team	Score	Result
1	Galway	1	V	Mayo	0	W
2	Sligo	2	V	Mayo	0	W
3	Antrim	3	V	Cork	2	W
4	Cork	4	V	Mayo	4	D
5	Limerick	5	V	Galway	2	W
6	Sligo	4	V	Galway	5	L
7	Mayo	3	V	Antrim	3	D
8	Galway	2	V	Cork	6	L

Part 5/Screenshot 8