Date Due: 30 November 2017 – 2pm

THE ASSIGNMENT BRIEF

A New Professional Association of Tennis Players has started a New Tennis Tournament Circuit.

The first season will start with just four tournaments which will take place at different times of the year in different locations.

Each tournament has been assigned a degree of difficulty.

Each tournament has prize money awarded to every player that reaches the last eight.

Each tournament has two competitions for Men and Women singles

Each place in the top sixteen is awarded a given number of ranking points

You are required to design, implement and evaluate a simple system that takes as input the score for each match for a given tournament and updates each player's position, calculates each player's ranking points and produces a list of the players ranking in descending order. The system calculates the prize money due to each player at any given point in time and accumulates these having stored them safely.

The four tournaments are listed below

TAC1 – degree of difficulty 2.7

TAE21 – degree of difficulty 2.3

TAW11 – degree of difficulty 3.1

TBS2 – degree of difficulty 3.25

The first season has attracted 32 men and 32 women players in total and details of these players are given to you in separate files.

The prize money awarded for each of the eight top positions for each tournament is also given to you in a file.

Your system should check for erroneous double entries of results.

The system should also check for the validity of scores entered – i.e. one player in the men's game must have three sets per match, but no two players can have three sets in the same match. Similarly, in the ladies game the winner in a match must win two sets and no two players can win two sets each in the same match.

Match results should show the score in terms of sets won for each player. A win in the men circuit is on best of five and a win in the women circuit is on best of three.

Assumptions:

- In calculating the rating points the standard tournament place points will be multiplied by the degree of difficulty.

- Each match's score must be represented as Player A, number of sets A, Player B, number of sets B.
- The winner is the player that has won three set in the men's game or two sets in the ladies game.

Hint – Read the following section in the Goodrich et al textbook

5.5. Using Array-Based Sequences

Note: The use of hard-coded data is unacceptable any submission that contains any form of hard-coded data will receive a 0 (zero) mark!

TASKS

1. Identify and justify what type of data structures you will use for storing the data
2. Design a solution for ranking players according to the points they have earned (pseudocode)
3. Implement the solution for ranking players according to points earned (Python Code)
4. Explain the algorithm implemented and justify its choice
5. Design a further solution that ranks the payers based on prize money earned (pseudocode)
6. Implement the additional solution in task 5 using Python.
7. Discuss and justify your choice of entering match results

ASSESSMENT CRITERIA

To achieve a **PASS** you have to complete the following tasks successfully

Tasks 1, 2 and 3. Task 3 has to be working but the solution produced might not be the most efficient solution.

To achieve a mark between **41-69** you have to complete the following tasks successfully.

Tasks 1, 2, 3 and 4. For this mark band task 3 has to deliver an efficient solution that is functionally correct. To achieve the full range of marks here your explanation and justification of the algorithm should contribute towards assessing the intelligence, efficiency and correctness of the solution obtained.

To achieve a mark in the range **70-100 you have to complete all tasks.** The two designs and the two implementations must be flawless. The justification for the selection of data structures and algorithms must be detailed and based on scientific fact.