APPENDIX 1 – C STAGE SEMESTER 2 2019

INTRODUCTION

The World Athletics Championship takes place in Doha, Qatar, during September this year. While New Zealand may expect to do well in the men's shot put and the women's pole vault, the first New Zealand woman to win a World Championships title was Beatrice Faumuina. She won gold for the discus in 1997 in Athens.

In this assignment, you are to simulate a championship discus event.

To make sure that you generate only sensible results, your first task will be to look up the men's and women's records from Commonwealth and Olympic Games, World Athletics Championships and other events. Record your findings in your log.

REQUIREMENTS

Write a console application that simulates a discus event either for men or for women. Your program must:

1. Specify whether it is for men or for women.
2. Get the names of between 12 and 16 competitors.
3. Conduct 3 rounds in which each competitor in turn throws the discus and record the distances thrown.
4. Random numbers must be used to determine whether or not a competitor has fouled. Fouls include stepping out of the front of the throwing circle, or the discus landing outside the designated area. A foul gives a distance of 0.
5. For throws that are not fouls, the distances thrown must be simulated by generating random numbers. The distances must be kept within reasonable limits bearing in mind the records for events in this discipline. An event in which each competitor easily breaks the world discus record will not gain high marks!
6. At the end of the each round, competitors must be listed showing the best throw of each. Competitors with the same longest throw are ranked by their second best throw and, if still equal, by their worst throw.
7. When these rounds are complete, the gold, silver and bronze medal winners must be announced along with their best throws.

Course References

The extra challenge in Unit 5 shows how to generate random numbers. You will need to make sure that only numbers in the required range are generated.

Arrays were mentioned only at the end of Unit 6 and were not explained. Storing the distances in an array is recommended, so you need to do some more research.

Results

Results of at least 5 simulated events must be given. Annotated screen dumps may be used for this.

Reflection

Comment on the extra programming features you used in this stage of the assignment, mentioning how each was used and how easy you found them.

APPENDIX 2 – B STAGE SEMESTER 2 2019

This is an extension of C stage which must be completed first.

REQUIREMENTS

1 It must be possible to start a new simulation without having to restart the program.

2 At the end of each round, when each player has had a turn, a progress graph must be plotted. It must show the best throw of each player in a way that fits on the screen clearly.

To qualify as a graph, your display must use symbols to show the score, not just numbers. For example:

```
Bob   |**********************************
Sally |**************************************
Tommy |**********************************
Chen  |******************************
```

Course References

The extra challenge in Unit 5 also suggests a way to plot a simple graph. Feel free to find other ways to display the graph.

You should also find out how a while loop works.

Results

As part of your log, present results to show that your simulation works. Annotated screen dumps are acceptable. One should show how you allow the user to start a new simulation. You should use at least 3 or 4 screen dumps to show the progress graph during the course of a simulation.

Reflection

Comment on the extra programming features you used in this stage of the assignment, mentioning how each was used and how easy you found them.

APPENDIX 3 – A STAGE SEMESTER 2 2019

INTRODUCTION

Having completed your console application for stages C and B, you are now to produce a simple graphical version of the simulation. You should use a graphical user interface such as with Windows Forms available with C#. The basic rules are as stated in stage C, and an example program will be available, but you are free to be creative in your interpretation.

REQUIREMENTS

1. The simulation must use a graphical user interface (GUI) such as that available through Visual Studio, but you are free to use Java if you wish. Use of other development tools must be checked first with your stream tutor.

2. Your program must simulate the competition showing turns and distances. Some form of graphical simulation is expected, though to save time you may allow the user to turn off this feature for testing!

3. The simulation rules are as explained under C Stage. You may expand the basic rules to allow an extra 3 throws for the top 8 competitors.

4. It should also be possible to start a new simulation without having to restart the program.

Code

As well as following programming standards and writing code that works, for an A+ grade you will be expected to:

- Make good use of your own methods to prevent having to write a lot of repeated code.

- Make good use of at least one non-static class that you have written yourself.

Testing

Look up acceptance testing and discuss with your tutor what tests should be required. Provide a report of the tests that you carried out.

Reflection

Comment on the programming features you used in this stage of the assignment, mentioning how each was used and how easy you found them.