Student ID:

Question 1. Using Collections

[14 marks]

This question is about a program to keep track of the athletes in a sports competition.

The program has a relayTeams field containing a List of teams for the relay races. Each team is a List of Athletes, listed in the order that they will be running:

private List < List < Athlete >> relayTeams;

(a) **[4 marks]** Complete the following rotateTeams() method which will move the first athlete in every team to the last position of their team.

```
public void rotateTeams(){
```

(b) **[5 marks]** The program also has a marathonRunners field containing a Set of Athletes running in the quarter marathon.

private Set<Athlete> marathonRunners;

Complete the following findMultiAthletes() method that will return a Set of all the Athletes who are in a relay team and are also running in the marathon.

Assume that the relayTeams and marathonRunners fields have been initialised and filled correctly.

public Set<Athlete> findMultiAthletes(){

(c) **[5 marks]** Complete the following startingOrder method that will return a List of the Athletes in the marathonRunners Set, sorted by age, with the youngest athletes first.

Assume the Athlete class contains a int getAge() method that returns the age as an int. The Athlete class is **not** Comparable.

Hint: note that marathonRunners is a Set, not a List.

public List <Athlete> startingOrder(){