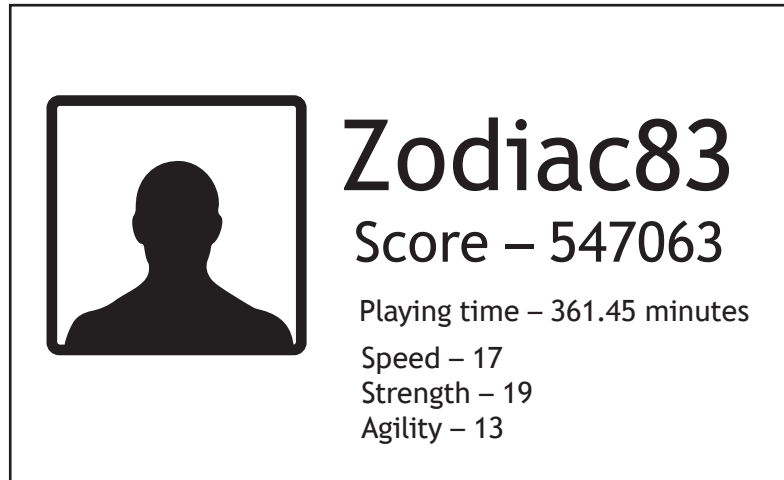


6. An online game stores a player's unique ID, their total score and the number of minutes they have played the game. The game also stores three attributes for the player which are speed, strength and agility.



Throughout gameplay the player's score and playing time are updated.

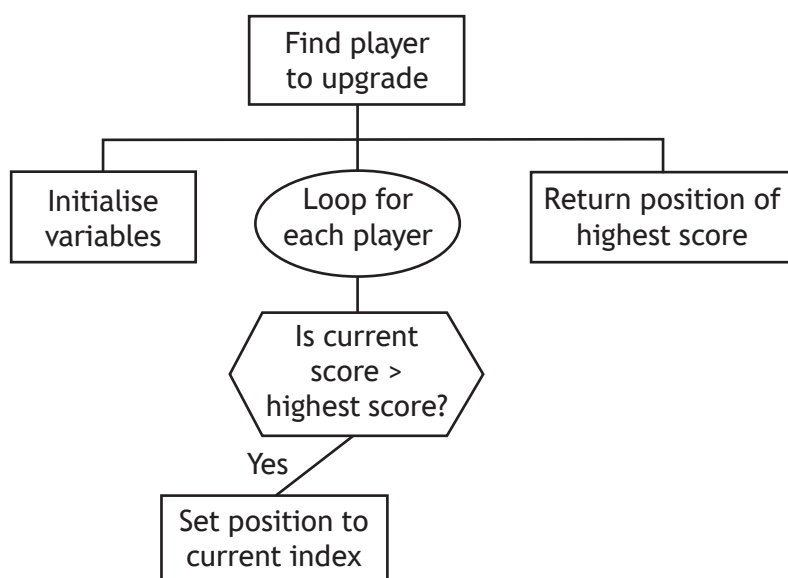


6. (continued)

- (a) At the end of each week, the player with the highest score is rewarded with an upgrade to one of their three attributes.

If more than one player has the same score, then the player who has been playing for the shortest time is rewarded.

The design for this part of the program is shown below.



Explain why a program produced from this design would not be fit for purpose. 1

[Turn over

6. (continued)

MARKS

DO NOT WRITE IN THIS MARGIN

(b) The game stores the following details for each player:

- unique ID
- score
- the number of minutes they have played the game
- speed
- strength
- agility.

A sample of data is shown below.

...
Zodiac83, 547063, 361.45, 17, 19, 13
Thrasher05, 176491, 175.12, 15, 25, 14
Knuckles45, 92543, 63.42, 16, 14, 21
...

- (i) Using a programming language of your choice, define a suitable record data structure to store the data.

2

- (ii) There are currently 10 000 registered players in the game.

Using a programming language of your choice, declare a variable that can store the data for the 10 000 players. Your answer should include the record data structure defined in part (i).

2



6. (continued)

- (c) All players whose playing time is over 500 minutes will have their speed increased by 3.

Using a programming language of your choice, write the code to implement this. Your answer should use the record data structure from part (b) (i).

4

[Turn over



6. (continued)

- (d) The program is implemented using sub-programs to help to make the code maintainable.

Describe two other benefits of creating modular code.

2

- (e) As part of the program's comprehensive test plan each sub-program was tested individually.

Describe one benefit of having a comprehensive test plan.

1
