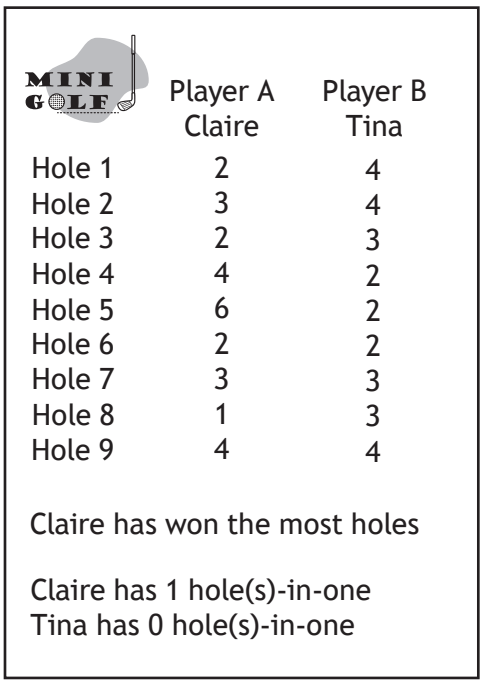
7. An app can be used to record two players' scores on a 9 hole mini-golf course.

A player wins a hole if they have fewer shots than their opponent. For example, Claire has won the first hole taking only two shots compared to Tina's four shots.

After nine holes, Claire has won four holes and Tina has won two.



Both players' names and their nine scores are entered.

The app displays the name of the player who wins the most holes or a message stating the game has been drawn if the number of holes won is the same.

(a) One boundary of this app is that the app is for games between exactly two players.

State two other boundaries for this app. **2**

_____

_____

_____

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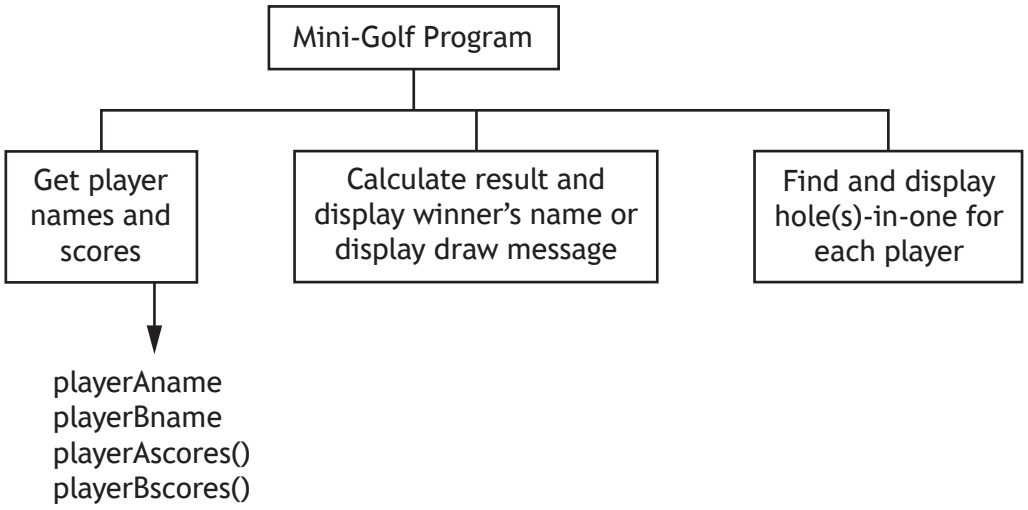
[Turn over

7. (continued)

(b) The top-level design of the main steps of the program is shown below.

Complete the diagram to show the data flow for the program. **2**



7. (continued)

(c) Using a design technique of your choice, refine the following step. **6**

Calculate result and display winner's name or display draw message

7. (continued)

(d) A hole-in-one is achieved when a player completes the hole by taking just one shot.

The app counts and displays the number of holes-in-one for a player. Below is the code used to implement this feature. When tested the code was found to contain errors.

```
...
Line 201  FUNCTION holesInOne (ARRAY OF INTEGER scores)
          RETURNS INTEGER
Line 202      DECLARE noHolesInOne INITIALLY 0

Line 203      FOR index FROM 0 TO 8 DO
Line 204          IF scores[index] = 1 THEN
Line 205              SET noHolesInOne TO noHolesInOne + 1
Line 206          END IF
Line 207      END FOR

Line 208      RETURN noHolesInOne
Line 209  END FUNCTION
...
Line 258  SEND playerAname & " has scored " &
          holesInOne(playerAname, playerAscores) &
          " hole(s)-in-one" TO DISPLAY
...
```

(i) There is an error at the function call.

Describe the error. **1**

(ii) Using a programming language of your choice, correct the error described in part (i). **1**

MARKS | DO NOT WRITE IN THIS MARGIN

7. (continued)

(e) Programmers have control over the scope of a variable when writing code.

Describe how the position of the declaration of a variable, within code, determines its scope. **2**