## Task 2: software design and development (part B)

The design for the Teetastic Golf Club member program is shown below.

**Program top level design (pseudocode)**

| | |
|---|---|
| 1. Get new member first name, surname, category and password. | OUT: first name, surname, category, password |
| 2. Read existing member data from file to parallel arrays. Add new member data to parallel arrays. Display first name, surname and category of all members. | IN: first name, surname, category, password<br>OUT: category() |
| 3. Find and display the number of members in each category and the total number of members. | IN: category() |

**Refinements**

1.1 Get first name
1.2 Get surname
1.3 Get category
1.4 Call function to get a valid password — OUT: password

- 1.4.1 Loop until password is valid
- 1.4.2 Ask the user to enter a password
- 1.4.3 Check that the first character is a capital letter (ASCII values 65 to 90)
- 1.4.4 Check that the last character is #, $ or % (ASCII values 35 to 37)
- 1.4.5 Return a valid password

2.1 Read existing member data from file into four parallel arrays: firstName(), surname(), category(), password()
2.2 Add the new member data to the existing member data in the parallel arrays
2.3 Display the first name, surname and category of all members

Your teacher or lecturer will provide you with a file “members.txt” that contains the data for 10 existing members of the club. The maximum number of members is 50.

2c Using the data flow, refinements and the information provided, implement the program in a language of your choice. Your programming language may need you to initialise variables before step 1 of the design.

Your fully completed program should:

- use a procedure to get new member data
- use a function to validate and return the new member password
- use a procedure to read existing member data from file, add new member data to parallel arrays, display member details and return the category array
- use a procedure to find and display the number of members in each category and the total number of members
- match the top level design provided
- be maintainable and modular

Check that your program is working by adding the following new member data.

Oliver Wilson, Adult, Ninjago$

The expected output from the finished program is shown below.

```
Our members are:
Angela Rich Adult
Siraj Adkins Junior
Stefano Love Senior
Cameron Wilder Junior
Griff Sutherland Adult
Amaan Sosa Senior
Isaak Schroeder Junior
Nana Galloway Junior
Lila Blanchard Adult
Eren Acosta Adult
Oliver Wilson Adult
There are currently 5 Adult members
There are currently 4 Junior members
There are currently 2 Senior members
Total current membership is  11
```

**(15 marks)**

Print evidence of:

- your program code
- the program output showing the new member data

Ensure your name and candidate number is on all evidence.

2d Describe how the function being used to validate the password could be comprehensively tested.

Your answer should make reference to your code.

**(2 marks)**

2e With reference to your own program code, evaluate:

the efficiency of your program **(1 mark)**

the robustness of your program **(1 mark)**

the fitness for purpose of your program **(1 mark)**

Candidate name_____ Candidate number_____