CONFIDENTIAL

SCHOOL OF COMPUTING
Faculty of Engineering

UNIVERSITI TEKNOLOGI MALAYSIA

TEST 2 (DEBUGGING)

SEMESTER I 2020/2021

SUBJECT CODE : SECJ/SCSJ1013
SUBJECT NAME : PROGRAMMING TECHNIQUE I
YEAR/COURSE : 1 (SECJ/ SECV/ SECB/ SECR/ SECP)
TIME : 20:10 – 20:50 MYT (40 minutes)
DATE : 4th JANUARY 2021 (Monday)

INSTRUCTIONS TO THE STUDENTS:

- Please read the ***General Guidelines for the Programming Technique I Test 2*** that is shared in Telegram's Group and/ or provided in UTM e-learning
- Read the problem and instructions carefully.
- You are given **FORTY MINUTES** to complete the test inclusive of the submission of your program (**25 minutes to answer** the question and **15 minutes to submit** the answer).
- Your program must follow the input and output as required in the text and shown in the examples. You must test the programs with (but not limited to) all the input given in the examples.

IMPORTANT NOTES:

- All the **COMMENT STATEMENTS** in the submitted program **WILL NOT BE EVALUATED**.

SUBMISSION PROCEDURE:

- Only the source code is required for the submission and the source code's file shall be named as follows: ***Name_ matricsNo_section.cpp*** (i.e. *AinaAli_A20EC018_01.cpp*).
- You do not need to compress the file.
- Submit the source code file via the **UTM's e-learning system**.

Question [35 Marks]

You are given a C++ program (**Test2Q1.cpp**) with 11 errors (syntax errors and/ or logical errors, if any). The program is developed to determine COVID-19 risk status. It has three (3) user-defined functions as listed below:

Function Name	Description
display_Question	To display the question text.
yes_No	To get an answer from the user. This function will repeatedly ask the answer from the users until it gets a valid input ('y' or 'n').
get_Status	It will return integer values either 0, 1, 2, or 3 that respectively represent the GREEN, YELLOW, ORANGE, or RED status. The parameters (**red_zone**, **close_contact**, **fever**) were previously set to 'y' or 'n' by a series of calls to the **yes_No** function.

The **main** function of the program has a series of calls to **display_Question** and **yes_No** functions inside a loop control structure. You are required to debug the errors, compile, and run the program. You are **NOT ALLOWED** to **remove** any statements in the program. You are only allowed to **update** the statements provided in the program and add a new statement(s) if absolutely necessary.

The program should produce the outputs as in **Figure 1**. ***Note:*** The values in **bold** are input by the user.

```
1   //Test2Q1.cpp
2   #include <iostream>
3   using namespace std;
4
5   // function prototypes
6   void display_Question();
7   void yes_No(char);
8   int get_Status(char, char);
9
10  // start main function
11  int main() {
12      char red_zone, close_contact, fever; //two possible character values
13                                           //only: 'y' -> yes, 'n' -> no
14      int status; // 0 -> GREEN, 1 -> YELLOW, 2 -> ORANGE, 3 -> RED
15
16      for (int i = 1; i < 3; i++) {
17          display_question(i);
18
19          if (i == 1)
20              yes_No(red_zone); // set red_zone either 'y' or 'n'
21          else if (i == 2)
22              yes_No(close_contact); // set close_contact either 'y' or 'n'
23          else
24              yes_No(fever); // set fever either 'y' or 'n'
25      }
```

```
26
27      // get risk status based on red_zone, close_contact, fever parameters
28      status = get_Status(red_zone, close_contact, fever);
29
30      cout << "Your Covid-19 risk status is ";
31      switch (status) {
32          case 0: cout << "GREEN"; break;
33          case 1: cout << "YELLOW"; break;
34          case 2: cout << "ORANGE";
35          case 3: cout << "RED";
36      }
37      cout << "\n";
38
39      return 0;
40  }
41
42  // start new user-defined functions
43  void display_Question(int q) {
44      switch (q)
45          case 1: cout << "Living in red zone?\n"; break;
46          case 2: cout << "Have a close contact with Covid-19 patient?\n";
47                  break;
48          case 3: cout << "Body temperature >= 38 degrees Celcius?\n";
49      }
50  }
51
52  void yes_No(char ans) {
53      do {
54          cout << "Please enter your answer (y / n): ";
55          cin >> ans;
56      } while (ans == 'n' && ans == 'y');
57
58      cout << '\n';
59  }
60
61  void get_Status(char rz, char cc, char f) {
62      int s = 0;
63
64      if (rz == 'y') s++;
65      if (cc == 'y') s++;
66      if (f == 'y') s++;
67
68      return s;
69  }
```

Sample Output for Program Execution 1

```
Living in red zone?
Please enter your answer (y / n): n

Have a close contact with Covid-19 patient?
Please enter your answer (y / n): n

Body temperature >= 38 degrees Celcius?
Please enter your answer (y / n): t
Please enter your answer (y / n): a
Please enter your answer (y / n): n
```

```
Your Covid-19 risk status is GREEN
```

Sample Output for Program Execution 2

```
Living in red zone?
Please enter your answer (y / n): n

Have a close contact with Covid-19 patient?
Please enter your answer (y / n): y

Body temperature >= 38 degrees Celcius?
Please enter your answer (y / n): p
Please enter your answer (y / n): y

Your Covid-19 risk status is ORANGE
```

Sample Output for Program Execution 3

```
Living in red zone?
Please enter your answer (y / n): q
Please enter your answer (y / n): y

Have a close contact with Covid-19 patient?
Please enter your answer (y / n): n

Body temperature >= 38 degrees Celcius?
Please enter your answer (y / n): n

Your Covid-19 risk status is YELLOW
```

Sample Output for Program Execution 4

```
Living in red zone?
Please enter your answer (y / n): q
Please enter your answer (y / n): y

Have a close contact with Covid-19 patient?
Please enter your answer (y / n): s
Please enter your answer (y / n): y

Body temperature >= 38 degrees Celcius?
Please enter your answer (y / n): t
Please enter your answer (y / n): b
Please enter your answer (y / n): y

Your Covid-19 risk status is RED
```

Figure 1: The example of outputs