

C Programming for Engineering

Mid Term

Instruction

- (1). For each C program that you write, you have to send the *.c source code file along with the screenshot of the results in your terminal
- (2). Name your *.c source code according to the respected question (question1.c for Question 1, question2.c for Question 2, etc)
- (3). Save your screenshots in jpeg/png format.
- (4). Save your work in one zip document and send to `ipg@ieee.org` using email subject “[MID-CPROG] <student_number> <your_name>” (note the use of the square bracket for subject heading).
- (5). Deadline: Wednesday, 28 November 2018, 20:00 WIB

Question 1. Write a C program that display the following menu:

```
Select a Language and I will say Good Morning:
```

1. English
2. Italian
3. Spanish
4. German
5. End the Program

```
Enter your selection ? 2 [enter]
```

```
Buongiorno!
```

```
Select a Language and I will say Good Morning:
```

1. English
2. Italian
3. Spanish
4. German
5. End the Program

```
Enter your selection ? 5 [enter]
```

```
Thank you for using this program!
```

```
[program ends]
```

If the user select item 1, the program should display “Good Morning!”

If the user select item 2, the program should display “Buongiorno!”

If the user select item 3, the program should display “Buenos dias!”

If the user select item 4, the program should display “Guten morgen!”

If the user select item 5, the program should display “Thank you for using this program”, then the program should end.

When user select item 1–4, the program displays its appropriate responses and then re-display the options waiting for the next input from the user. The program only stops when user selects item 5.

Question 2. Write a C program to request an input from the user. Use this input as the limit of a loop. Valid input are numbers in the range of 3 to 10. Outside this range, the input will be considered invalid and the program will display an error message “Invalid input! Try again...”

The program should determine the smallest and largest numbers based on data inputted by the user.

Following is a sample output after the program is run:

```
Enter a number [3-10]: 2 [enter]
Invalid input! Try again ...? 5 [enter]
```

```
Enter number #1: 8
Enter number #2: 5
Enter number #3: 9
Enter number #4: 2
Enter number #5: 4
```

```
The smallest number is 2
The largest number is 9
```

```
Try again (y/n)? n [enter]
```

```
Thank you for using this program!
```

```
[program ends]
```

Question 3. Change the for loop and the do-while loop into a simple while loop, then incorporate them into your own C program.

```
1  int my_factorial (int n){
2      int i, ret = 1;
3      for (i = 2; i <= n; i++)
4          ret *= i;
5      return ret;
6  }

1  #include <stdlib.h>
2  #include <stdio.h>
3
4  double generate_random_double () {
5      /* Generate random number in the
6       interval [0,1) */
7      double ret=(double)rand();
8      return ret/(RAND_MAX+1);
9  }
10 int samp_geometric_rv(double p){
11     double q;
12     int n = 0;
13     do {
14         q = generate_random_double();
15         n++;
16     } while ( q >= p)
17     return n;
18 }
19
```