National University of Computer & Emerging Sciences, Karachi
Fall-2020 CS / SE / AI / DF Department
Midterm 1
12th October 2020, 12:00 noon – 01:00 pm

Course Code: CS118	**Course Name: Programming Fundamentals**
Instructor Name: M. Shahzad / Basit Ali / S. Zain / Atiya / Musawar / Nida	
Student Roll No:	**Section No:**

Instructions:

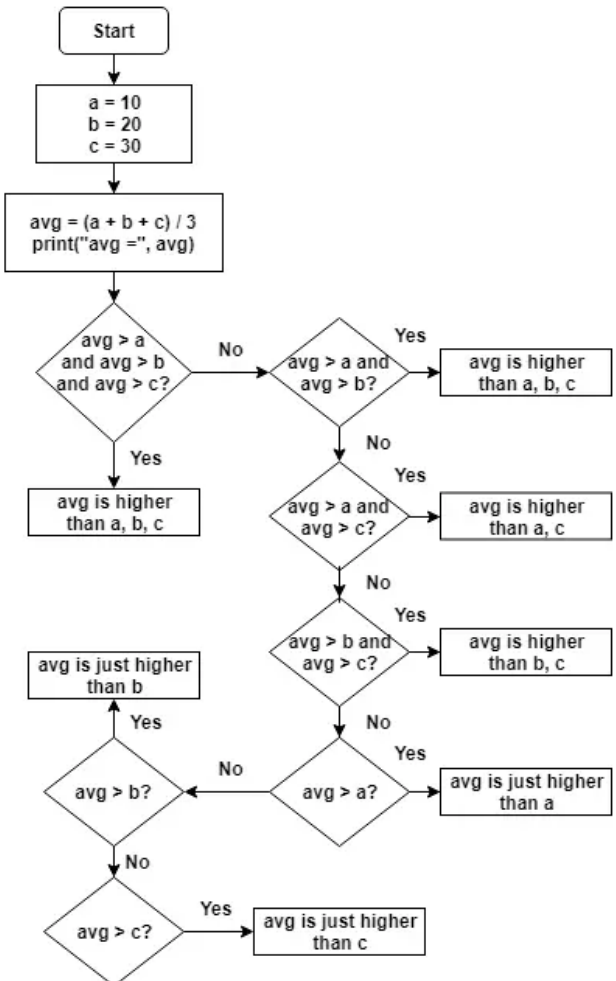
- Return the question paper and make sure to keep it inside your answer sheet.
- Read each question completely before answering it. There are **4 questions and 1 page**.
- In case of any ambiguity, you may make assumption. But your assumption should not contradict any statement in the question paper.
- You are **not allowed to write** anything on the question paper (except your ID and group).

Time: 60 minutes. **Max Marks**: 40 Points

Q1. Draw PAC and Flowchart for a system where Ahmed (Computer scientist) wants to check the accuracy (precision) of his designed instrument. He checks the accuracy using the following equation.

Where True Positive (TP) and False Positive (FP) are the input floating point number from the user. He checks the precision 10 times. If Ahmed gets any precision value equal to 1. He should end his observation by displaying message "successful Experiment". **[12 mins, 10 Points]**

Q2. Convert the below flowchart into proper C program. You are required to define and use appropriate data-types for each variable. Also, you can use relational operators for the conditions. **[23 mins, 15 Points]**



Q3. Write on the answer sheet that following statements are TRUE or FALSE (Give 1 line reason). **[10 min – 10 Points]**

1. 'C' Compiler is responsible to execute the program.
2. At preprocessing stage, source code will be amended with some addition files.
3. If user input exceeds the memory range of the integer variable then the error is compiler time error.
4. The below code will display 5 when run:
   ```
   int a=5; printf("%d", a%=(a*2));
   ```
5. The below code will display 1.5 when run:
   ```
   int a = 3, b=2; printf("%d", a/b);
   ```

Q4. Using the provided data in the Table below, check whether the given code is complete or not, if not then rewrite the complete code again. **[10 mins, 10 Points]**

Unit used (u)	Residential rate	Commercial rate
0 < units <= 200	0.8	0.6
200 < units <= 999	0.7	0.3
Above 900	0.5	0.2
code	'r'	'c'

```
#include <stdio.h>
int main(void)
{
    double r = 0.0; int electric_unit_used = 0; char prop_type;
    printf("Enter the type of property, c-commercial, r-residential: ");
    scanf("%c", &prop_type);
    printf("Enter the electric unit used: ");
    scanf("%d", &electric_unit_used);
    if(prop_type == 'c')
    {
        if(electric_unit_used <= 200)
        {
          r = 0.8;
          printf("The rate is %.1f\n", r);
        }
        else
        {
          r = 0.5;
          printf("The rate is %.1f\n", r);
        }
    }
    if(prop_type == 'r')
    {
        if(electric_unit_used <= 200)
        {
           r = 0.6;
           printf("The rate is %.1f\n", r);
        }
    }
    return 0;
}
```

********** Best of Luck**********