

# Birla Institute of Technology & Science, Pilani, Hyderabad Campus

Second Semester 2020-2021

Computer Programming [CS F111]

## Lab 3

**Q1.** Create a “Pass-Fail” Grader that prints “Pass” if the average of the 5 subjects is greater than 75 else “Fail”. Take 5 double inputs ( $\leq 100$ ) for the same.

```
1  #include <stdio.h>
2
3  int main() {
4      double num1,num2,num3,num4,num5;
5      printf("Enter marks of Subject 1:");
6      scanf("%lf",&num1);
7      printf("Enter marks of Subject 2:");
8      scanf("%lf",&num2);
9      printf("Enter marks of Subject 3:");
10     scanf("%lf",&num3);
11     printf("Enter marks of Subject 4:");
12     scanf("%lf",&num4);
13     printf("Enter marks of Subject 5:");
14     scanf("%lf",&num5);
15     if(((num1+num2+num3+num4+num5)/5)>=75)
16         printf("Pass");
17     else
18         printf("Fail");
19 }
```



```
Enter marks of Subject 1:23
Enter marks of Subject 2:12
Enter marks of Subject 3:2
Enter marks of Subject 4:3
Enter marks of Subject 5:12
Fail
```

```
...Program finished with exit code 0
Press ENTER to exit console.
```

Q.2 If  $Ax^2+Bx+C$  represents a general quadratic expression, taking A, B, C as input, print the roots of this equation.

```
1  #include<stdio.h>
2  #include<math.h>
3
4  void main()
5  {
6  float a,b,c,root1,root2;
7  printf("Enter values of a,b,c for finding roots of a quadratic eq: ");
8  scanf("%f%f%f",&a,&b,&c);
9
10 /*checking condition*/
11 if(b*b>=4*a*c)
12 {
13 root1=(-b+sqrt(b*b-4*a*c))/2*a;
14 root2=(-b-sqrt(b*b-4*a*c))/2*a;
15 printf("root1= %f\nroot2= %f",root1,root2);
16 }
17 else
18 printf("\n Imaginary Roots.");
19 }
```

input

```
Enter values of a,b,c for finding roots of a quadratic eq: 4 3
2

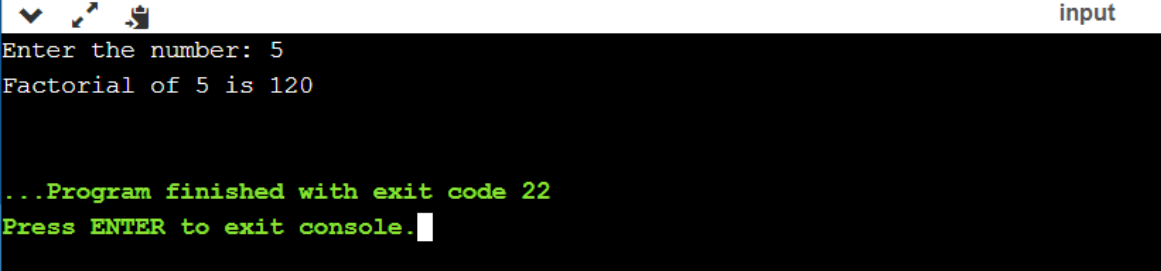
Imaginary Roots.

...Program finished with exit code 18
Press ENTER to exit console.
```

```
Enter values of a,b,c for finding roots of a quadratic eq: 2 5 3
root1= -4.000000
root2= -6.000000
```

Q.3 Ask the user for integer input, check whether it is positive or negative. Print the factorial if positive else print "Cannot calculate factorial for negative input". (As factorials grow exponentially, use unsigned int instead of int).

```
1  #include <stdio.h>
2
3  void main()
4  {
5      int n, i;
6      long fact;
7      printf("Enter the number: ");
8      scanf("%d", &n);
9
10     if (n == 0)
11         printf("Factorial of 0 is 1\n");
12     else if (n < 0)
13     {
14         printf("Cannot calculate factorial for negative input");
15     }
16     else
17     {
18         unsigned int accu = 1;
19         unsigned int i;
20         for (i = 1; i <= n; i++)
21         {
22             accu *= i;
23         }
24         printf("Factorial of %d is %u\n", n, accu);
25     }
26 }
27
28
```



input

Enter the number: 5  
Factorial of 5 is 120

...Program finished with exit code 22  
Press ENTER to exit console.

Q.4 Implement a simple calculator that adds, subtracts, multiplies and divides. You should take 2 numbers and a symbol as input. If symbol == '+', '-', '\*', '/' perform addition, subtraction, multiplication and division respectively.

```

1  #include <stdio.h>
2
3  int main()
4  {
5      char op;
6      float num1, num2;
7
8      printf("Enter operator either + or - or * or /: ");
9      scanf("%c", &op);
10
11     printf("Enter two operands: ");
12     scanf("%f", &num1);
13     scanf("%f", &num2);
14
15     if(op=='+')
16         printf("Result: %f", num1+num2);
17     else if(op=='-')
18         printf("Result: %f", num1-num2);
19     else if(op=='*')
20         printf("Result: %f", num1*num2);
21     else if(op=='/')
22         printf("Result: %f", num1/num2);
23     else
24         printf("Error! operator is not correct");
25
26     return 0;
27 }

```

```

Enter operator either + or - or * or /: -
Enter two operands: 23 4
Result: 19.000000

```

```

...Program finished with exit code 0
Press ENTER to exit console.

```

Q.5 Take 3 positive doubles as input and find out the maximum and minimum and print the difference between the two (up to 2 decimal places).

```
1  #include <stdio.h>
2  int main() {
3
4      double n1,n2,n3;
5      printf("Enter number1:");
6      scanf("%lf",&n1);
7      printf("Enter number2:");
8      scanf("%lf",&n2);
9      printf("Enter number3:");
10     scanf("%lf",&n3);
11
12     double max,min;
13     if(n1>=n2)
14     {
15         if(n1>=n3)
16         {
17             max=n1;
18             if(n3>=n2)
19                 min=n2;
20             else
21                 min=n3;
22         }
23         else
24         {
25             max=n3;
26             min=n2;
27         }
28     }
29     else if(n2>=n3)
30     {
```

```

31         max=n2;
32         if(n3>=n1)
33             min=n1;
34         else
35             min=n3;
36     }
37     else
38     {
39         max=n3;
40         min=n1;
41     }
42
43     printf("Difference between Maximum and Minimum is: %0.2lf",max-min);
44
45     return 0;
46 }

```

```

Enter number1:56
Enter number2:43
Enter number3:23
Difference between Maximum and Minimum is: 33.00

...Program finished with exit code 0
Press ENTER to exit console.

```

### Task:

1. Write a c program which takes 4 integers as input, add them and print the result.
2. Write a C program which finds the minimum among 4 numbers.
3. Write a C program which takes two integer as an input and exchange these numbers.

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