Evaluation 1

Simple C Programs - Lab 1

1. Write a C program to add two integers a and b read through the keyboard. Display the result using third variable sum.

Program:

```
#include <stdio.h>

int main()
{
    int sum,a,b;
    printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
    printf("Enter the two integers");
    scanf("%d %d", &a, &b);
    sum = a + b;
    printf("%d + %d = %d ",a,b,sum);
    return 0;
}
```

Output:

```
■ "D:\1st Year Study Material\PSUC Lab\Lab1\Add2Integers.exe"

My name is Lajith Puthuchery and Registration Number is 200905106

Enter the two integers 4 8

4 + 8 = 12

Process returned 0 (0x0) execution time : 4.072 s

Press any key to continue.
```

2. Write a C program to find the sum, difference, product and quotient of 2 numbers.

```
#include <stdio.h>
int main()
{
    float a,b,sum,diff,prod,quot;
    printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
    printf("Enter two integers");
    scanf("%f %f",&a, &b);
    sum = a+b;
```

```
printf("%.2f + %.2f = %.2f\n",a,b,sum);
diff = a-b;
printf("%.2f - %.2f = %.2f\n",a,b,diff);
prod = a*b;
printf("%.2f * %.2f = %.2f\n",a,b,prod);
if(b == 0)
{
    printf("Divison by 0 is not defined");
}
else
{
    quot = a/b;
    printf("%.2f / %.2f = %.2n,a,b,quot);
}
return 0;
}
```

```
"D:\1st Year Study Material\PSUC Lab\Evaluation1\Lab1\SumDiffProdQuot\SumDiffProdQuot.exe"

My name is Lajith Puthuchery and Registration Number is 200905106

Enter two integers4 5

4.00 + 5.00 = 9.00

4.00 - 5.00 = -1.00

4.00 * 5.00 = 20.00

4.00 / 5.00 = 0.80

Process returned 0 (0x0) execution time : 11.351 s

Press any key to continue.
```

3. Write a C program to print the ASCII value of a character

Program:

```
#include <stdio.h>
int main()
{
   char c;
   printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
   printf("Enter a character");
   scanf("%c",&c);
   printf("The ASCII value of %c is %d\n",c,c);
   return 0;
}
```

Output:

```
"D:\1st Year Study Material\PSUC Lab\Lab1\PrintASCII.exe"
                                                                                                              My name is Lajith Puthuchery and Registration Number is 200905106
Enter a characterL
The ASCII value of L is 76
Process returned 0 (0x0) execution time : 2.310 s
Press any key to continue.
4. Write a C program to display the size of the data type int, char, float, double, long int and long
double using size of ( ) operator.
Program:
#include <stdio.h>
int main()
{
  int intdata;
float floatdata;
char chardata:
double doubledata;
long int longint;
long double longdouble;
printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
printf("Size of int: %zu bytes\n", sizeof(intdata));
  printf("Size of float: %zu bytes\n", sizeof(floatdata));
  printf("Size of char: %zu byte\n", sizeof(chardata));
  printf("Size of double: %zu bytes\n", sizeof(doubledata));
printf("Size of double: %zu bytes\n", sizeof(longint));
printf("Size of double: %zu bytes\n", sizeof(longdouble));
return 0;
}
```

```
■ "D:\1st Year Study Material\PSUC Lab\Lab1\PrintDataTypesSize.exe"

My name is Lajith Puthuchery and Registration Number is 200905106
Size of int: 4 bytes
Size of char: 1 byte
Size of double: 8 bytes
Size of double: 4 bytes
Size of double: 16 bytes
Process returned 0 (0x0) execution time: 1.093 s
Press any key to continue.

5.Input P, N and R to compute simple and compound interest. [Hint: SI = PNR/100, CI = P(1+R/100)^N-P]
```

```
Program:
```

```
#include <stdio.h>
#include <math.h>

int main()

{
    int n,r;
    float si,ci,p;
    printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
    printf("Enter the principal amount, time period and rate of interest respectively");
    scanf("%d %d %d",&p,&n,&r);
    si = (p*n*r)/100;
    ci = p*pow(1+r/100,n)-p;
    printf("The Simple Interest is %f\n",si);
    printf("The Compound Interest is %f",ci);

return 0;
}
```

```
"D:\1st Year Study Material\PSUC Lab\Lab1\SimpleCompoundInterest.exe" — X

My name is Lajith Puthuchery and Registration Number is 200905106

Enter the principal amount, time period and rate of interest respectively 3450 1 2

The Simple Interest is 69.000000

The Compound Interest is 0.000000

Process returned 0 (0x0) execution time: 9.567 s

Press any key to continue.
```

6. Input radius to find the volume and surface area of a sphere. [Hint: volume = $(4\pi r^3)/3$, Area= $4\pi r^2$]

```
Program:
#include <stdio.h>
#include <math.h>
#define PI 3.142857
int main()
{
int r;
float vol, area;
printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
printf("Enter the radius of the sphere");
scanf("%d",&r);
vol = (4*PI*pow(r,3))/3;
area = 4*PI*pow(r,2);
printf("The volume of the sphere of radius %d is %f\n",r,vol);
printf("The surface area of the sphere of radius %d is %f",r,area);
return 0;
}
Output:
 ■ "D:\1st Year Study Material\PSUC Lab\Lab1\Sphere.exe"
 My name is Lajith Puthuchery and Registration Number is 200905106
Enter the radius of the circle7
 The volume of the sphere of radius 7 is 1437.333252
 The surface area of the sphere of radius 7 is 616.000000
                            execution time : 3.277 s
 Process returned 0 (0x0)
 Press any key to continue.
7. Convert the given temperature in Fahrenheit to Centigrade. [Hint:C=5/9(F-32)]
Program:
#include <stdio.h>
int main()
{
```

```
float tempC, tempF;
printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
printf("Enter the temperature in Fahrenheit");
scanf("%f",&tempF);
tempC = (5.0/9.0)*(tempF-32);
  printf("The temprature is %.2fC in Celsius Scale",tempC);
return 0;
}
Output:
 "D:\1st Year Study Material\PSUC Lab\Lab1\TemperatureConversion.exe"
 My name is Lajith Puthuchery and Registration Number is 200905106
Enter the temperature in Fahrenheit 212
The temprature is 100.00C in Celsius Scale
 Process returned 0 (0x0)
                          execution time : 2.966 s
 ress any key to continue.
8. Write a C program to evaluate the following expression for the values a = 30, b=10, c=5,d=15
(i) (a + b) * c/d
(ii) ((a + b) * c) / d
(iii) a + (b * c)/d
(iv) (a + b) * (c / d)
Program:
#include <stdio.h>
int main()
  printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
  int a=30, b=10, c=5, d=15;
  int exp1, exp2, exp3, exp4;
  exp1 = (a+b)*c/d;
  printf("The result of the expression (a+b)*c/d is %d\n",exp1);
  exp2 = ((a+b)*c)/d;
  printf("The result of the expression ((a+b)^*)c/d is %d\n",exp2);
  exp3 = a + (b*c)/d;
  printf("The result of the expression a+(b*c)/d is %d\n",exp3);
```

```
exp4 = (a+b)*(c/d);
printf("The result of the expression (a+b)*(c/d) is %d\n",exp4);
return 0;
```

```
■ "D:\1st Year Study Material\PSUC Lab\Lab1\ExpressionEvaluation.exe" — X

My name is Lajith Puthuchery and Registration Number is 200905106

The result of the expression (a+b)*c/d is 13

The result of the expression ((a+b)*)c/d is 13

The result of the expression a+(b*c)/d is 33

The result of the expression (a+b)*(c/d) is 0

Process returned 0 (0x0) execution time: 1.007 s

Press any key to continue.
```

Branching Control Structures - Lab 2

1. Check whether the given number is odd or even.

```
#include <stdio.h>
int main()
{
   int num;
   printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
   printf("Enter a number");
   scanf("%d",&num);
   if(num % 2 ==0)
   {
      printf("%d is an even number",num);
   }
   else
   {
      printf("%d is an odd number",num);
   }
}
```

```
return 0;
```

```
"D:\1st Year Study Material\PSUC Lab\Evaluation1\Lab2\OddEven\OddEven.exe" — X

My name is Lajith Puthuchery and Registration Number is 200905106

Enter a number5
5 is an odd number

Process returned 0 (0x0) execution time: 3.339 s

Press any key to continue.

2.Find the largest among given 3 numbers.

Program:
```

```
•
```

```
#include <stdio.h>
int main()
{
printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
int a,b,c, largest;
printf("Enter three numbers");
scanf("%d %d %d",&a,&b,&c);
if(a > b)
{
if(a>c)
{
largest = a;
}
else
{
     largest = c;
}
}
else
{
if(b >c)
{
largest = b;
```

```
}
else
{
       largest = c;
}
}
printf("The largest of %d, %d and %d is %d",a,b,c,largest);
return 0;
}
Output:
 ■ "D:\1st Year Study Material\PSUC Lab\Evaluation1\Lab2\LargestOf3\LargestOf3.exe"
 y name is Lajith Puthuchery and Registration Number is 200905106
Enter three numbers2 4 8
The largest of 2, 4 and 8 is 8
Process returned 0 (0x0) exec
                         execution time : 5.068 s
Press any key to continue.
3. Swap two numbers without using third variable.
Program:
#include <stdio.h>
int main()
{
int a,b;
printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
printf("Enter the two numbers to be swapped");
scanf("%d %d",&a,&b);
printf("Before swapping\n a = %d\n b = %d\n",a,b);
a = a + b;
b = a - b;
a = a - b;
printf("After swapping\ a = %d\ b = %d",a,b);
return 0;
```

}

```
□ "D:\1st Year Study Material\PSUC Lab\Evaluation1\Lab2\SwapWithoutThird\SwapWithoutThird.exe"

My name is Lajith Puthuchery and Registration Number is 200905106

Enter the two numbers to be swapped3 6

Before swapping

a = 3

b = 6

After swapping

a = 6

b = 3

Process returned 0 (0x0) execution time: 5.532 s

Press any key to continue.
```

4. Compute all the roots of a quadratic equation using switch case statement. [Hint: $x = (-b + /-sqrt(b^2 - 4ac))/2a$]

```
#include <stdio.h>
#include <math.h>
int main()
{
int z;
float a,b,c,disc, root1, root2,x,img,real;
printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
printf("Enter the values for a, b and c");
scanf("%f %f %f",&a,&b,&c);
disc = b*b - 4*a*c;
x = sqrt(fabs(disc));
if(disc > 0)
{
z=1;
}
else if (disc == 0)
{
z=2;
}
else
{
    z=3;
}
```

```
switch(z)
{
case 1:
        printf("The quadratic equation has 2 real and distinct roots\n");
root1 = -b/(2*a) + x/(2*a);
    root2 = -b/(2*a) - x/(2*a);
       printf("r1 = \%f\nr2 = \%f\n",root1,root2);
       break;
case 2:
        printf("The quadratic equation has 2 real and equal roots\n");
root1 = -b/(2*a);
root2 = root1;
        printf("r1 = \%f\nr2 = \%f\n",root1,root2);
       break;
case 3:
        printf("The quadratic equation has 2 imaginary roots\n");
real = -b/(2*a);
img = x/(2*a);
       printf("r1 = \%f + i\%f\nr2 = \%f - i\%f\n",real,img,real,img);
        break;
default:
        break;
}
return 0;
}
Output:
 ■ "D:\1st Year Study Material\PSUC Lab\Evaluation1\Lab2\QuadraticRoots\QuadraticRoots.exe"
My name is Lajith Puthuchery and Registration Number is 200905106
Enter the values for a, b and c1 4 3
The quadratic equation has 2 real and distinct roots
```

5. Write a program that will read the value of x and evaluate the following function.

execution time : 12.477 s

```
Y = 1 \text{ if } x > 0,
```

r1 = -1.000000r2 = -3.000000

Process returned 0 (0x0)

Press any key to continue.

```
0 if x=0,
-1 if x<0
Use else if statements & Print the result ('Y' value).
Program:
#include <stdio.h>
int main()
{
int x,y;
printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
printf("Enter the value for x");
scanf("%d",&x);
if(x>0)
{
y=1;
}
else if (x==0)
{
y=0;
}
else
{
y=-1;
}
printf("Y = %d",y);
return 0;
}
```

```
■ "D:\1st Year Study Material\PSUC Lab\Evaluation1\Lab2\FunctionEvaluation\FunctionEvaluation.exe"

My name is Lajith Puthuchery and Registration Number is 200905106

Enter the value for x 7

Y = 1

Process returned 0 (0x0) execution time : 5.466 s

Press any key to continue.
```

6. Find the smallest among three numbers using conditional operator.

```
#include <stdio.h>
int main()
{
printf("My name is Lajith Puthuchery and Registration Number is 200905106\n");
int a,b,c, smallest;
printf("Enter three numbers");
scanf("%d %d %d",&a,&b,&c);
if(a < b)
{
if(a<c)
{
smallest = a;
}
else
{
smallest = c;
}
}
else
{
if(b < c)
{
smallest = b;
}
else
{
smallest = c;
}
}
printf("The smallest of %d, %d and %d is %d",a,b,c,smallest);
return 0;
}
```

"D:\1st Year Study Material\PSUC Lab\Evaluation1\Lab2\SmallestOf3\SmallestOf3.exe" — X

My name is Lajith Puthuchery and Registration Number is 200905106

Enter three numbers2 4 8

The smallest of 2, 4 and 8 is 2

Process returned 0 (0x0) execution time : 9.818 s

Press any key to continue.