Experiment- 3: Basic Math

3.1) write a C Program to convert Celsius to Fahrenheit and vice versa.

```
# include<stdio.h>
int main()
{
float c,f,ce ,fa;
printf ("\n Enter a celcius value to convert to farenheit ");
scanf ("%f" ,&c);
fa = (1.8* c) + 32;
printf ("\n\t %0.2 f Celcius = %0.2 f farenheit " ,c,fa );
printf ("\n Enter a farenheit value to convert to celcius ");
scanf ("%f" ,&f);
ce = (f -32) / 1.8;
printf ("\n\t %0.2 f Farenheit = %0.2 f Celcius ",f,ce );
return 0;
}
```

Output:

```
Compilation :[-----]$ cc filename .c
Execution :[----] $ ./a. out
Enter a celcius value to convert to farenheit
36
36.00 Celcius =96.80 Farenheit
Enter a farenheit value to convert to celcius
96.8
96.80 Farenheit =36.00 Celcius
```

3.2) Write a C Program to find largest of three numbers using ternary operator.

```
# include< stdio.h>
int main ()
{
int a,b,c, big ;
printf ("\n Enter three numbers for a,b,c");
scanf ("%d%d%d" ,&a ,&b ,&c);
big = a>b?(a>c?a:c ):(b>c?b:c);
printf (" Greatest among the three numbers = %d",big );
return 0;
}
```

Output:

```
Compilation :[-----]$ cc filename .c
Execution :[----] $ ./a. out
Enter three numbers for a,b,c
3
4
5
Greatest among the three numbers = 5
```

3.3) Write a C Program to Calculate area of a Triangle using Heron's formula.

```
# include < stdio .h>
# include < math .h>
int main ()
{
int a,b,c,s;
float area ;
printf ("\n Enter three numbers for a,b and c");
scanf ("%d%d%d" ,&a ,&b ,&c);
s = (a+b+c )/2;
area = sqrt (s*(s-a)*(s-b )*(s-c));
printf ("\ nArea of the triangle =%f",area );
return 0;
}
```

Output :

```
Compilation :[-----]$ cc filename .c -lm
Execution :[----] $ ./a. out
Enter three numbers for a,b and c
4
4
4
Area of the triangle =6.928203
```

Experiment- 4: Control Flow- I

4.1)Write a C Program to Find Whether the Given Year is a Leap Year or not.

```
# include < stdio .h>
int main ()
{
int year ;
printf ("\n Enter a year ");
scanf ("%d" ,& year );
if (( year %4==0)&&(( year %100!=0)||( year %400==0)))
{
printf ("\n It is a Leap year ");
}
else
{
printf ("\n Not a Leap year ");
}
return 0;
}
```

Output :

```
Compilation :[-----]$ cc filename .c
Execution :[----] $ ./a. out
Enter a Year : 2017
Not a Leap year
```

4.2*)* Write a C program to find the roots of a Quadratic Equation.

```
# include<stdio .h>
# include<math .h>
# include<stdlib .h>
int main()
{
int a,b,c,d, deno ;
float root1 , root2 ;
printf ("\n QUADRATIC EQUATION ");
printf ("\n Enter the values for a,b,c");
scanf ("%d%d%d" ,&a ,&b ,&c);
d = (b*b) -(4*a*c);
deno = 2*a;
if(d >=0)
{
printf ("\n Real Roots \n");
root1 = (-b+ sqrt (d ))/ deno ;
root2 = (-b- sqrt (d ))/ deno ;
printf (" ROOT1 =%f\ tROOT2 =%f",root1 , root2 );
}
else if(d ==0)
{
printf ("\n Equal Roots ");
root1 = -b/ deno ;
root2 = -b/ deno ;
printf (" ROOT1 =%f\ tROOT2 =%f",root1 , root2 );
}
else
printf ("\n Imaginary roots ");
return 0;
}
```

Output :

```
Compilation :[-----]$ cc filename .c -lm
Execution :[----] $ ./a. out
QUADRATIC EQUATION
Enter the values for a,b,c
5 6 1
Real Roots
ROOT1 = -0.200000 ROOT2 = -1.000000
Enter the values for a,b,c
6 5 4
Imaginary roots
```

4.3) write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch…case.

```
# include<stdio.h>
# include<stdlib.h>
int main ()
{
int a,b,c;
char op;
printf ("\n Enter operator ");
scanf ("%d" ,&op );
printf ("\n Enter two numbers ");
scanf ("%d%d" ,&a ,&b);
switch (op)
{
case '+':c = a+b;
        printf ("\n %d + %d = %d",a,b,c);
        break ;
case '-':c = a-b;
        printf ("\n %d - %d = %d",a,b,c);
        break ;
case '*':c = a*b;
        printf ("\n %d * %d = %d",a,b,c);
        break ;
case '/':c = a/b;
        printf ("\n %d / %d = %d",a,b,c);
        break ;
case '%':c = a%b;
        printf ("\n %d MOD %d = %d",a,b,c);
        break ;
default :printf ("\n INVALID operator ");
}
}
```

Output :

```
Compilation :[-----]$ cc filename .c
Execution :[----] $ ./a. out
Enter your choice 2
Enter two numbers
5 3
5 - 3 = 2
```