WEEK 3

Objective: Learn how to define variables with the desired data-type, initialize them with appropriate values and how arithmetic operators can be used with variables and constants.

Suggested Experiments/Activities:

Tutorial 3: Variable types and type conversions:

Lab 3: Simple computational problems using arithmetic expressions.

i) Finding the square root of a given number

ii) Finding compound interest

iii) Area of a triangle using heron's formulae

iv) Distance travelled by an object

i) write a c program to finding the square root of a given number

```
/* C program to find square root of a number
   A Square root of a number is a value that, when multiplied by itself, gives the number.    For example: 5 x 5 = 25, so the square root of 25 is 5.  */
#include <stdio.h>
#include <math.h>
int main()
{
    double num, root;
    printf("Enter any number to find square root: ");
    scanf("%lf", &num);
    root = sqrt(num);
    printf("Square root of %.2lf = %.2lf", num, root);
    return 0;
}
```

Input:Enter any number to find square root:25

Output:The Square Root of 25.00 is 5.00

ii) write a c program to finding compound interest

```
#include <stdio.h>
#include <math.h>
int main()
{
    float principal, rate, time, n, amount, interest;
    printf("Enter Principal Amount : ");
```

```
    scanf("%f", &principal);
    printf("Enter Rate of Interest (%%): ");
    scanf("%f", &rate);
    printf("Enter Time (years): ");
    scanf("%f", &time);
    printf("Enter Number of Times Interest Applied per Time Period: ");
    scanf("%f", &n);

    // Compute Compound Interest using the formula: P(1 + r/100*n)^(nt)
    amount = principal * pow((1 + rate /(n*100)), (n*time));
    interest = amount - principal;

    printf("Total Amount (Principal + Compound Interest): %.2f\n", amount);
    printf("Compound Interest accrued: %.2f\n", interest);
    return 0;
}
```

Input:

Enter Principal Amount : 10000
Enter Rate of Interest (%): 5
Enter Time (years): 2
Enter Number of Times Interest Applied per Time Period: 4

Output:

Total Amount (Principal + Compound Interest): 11044.87
Compound Interest: 1044.87

iii) write a c program to find the area of a triangle using heron's formula.

```
# include<stdio.h>
# include <math.h>
int main()
{
    float a,b,c,s,area;
    printf("Enter the length of three sides of a triangle:");
    scanf("%f%f%f",&a,&b,&c);
    s = (a+b+c)/2;
```

```
    printf("\nThe value of S is %.2f ",s);
    area = sqrt(s*(s-a)*(s-b)*(s-c));
    printf("\nThe area of the triangle is:%f", area);
    return 0;
}
```

Input: Enter the length of three sides of a triangle:6 4 5

Output:

The value of S is 7.50

The area of the triangle is:9.921567

iv) write a c program to find the distance travelled by an object

```
#include<stdio.h>
int main()
{
    int a,u,t;
    float s;
    printf("enter acceleration a: ");
    scanf("%d",&a);
    printf("enter the initial velocity u: ");
    scanf("%d",&u);
    printf("enter time t: ");
    scanf("%d",&t);
    s = u*t + (a*t*t)/2;
    printf("Distance travelled by an object is %f",s);
    return 0;
}
```

Input:

enter acceleration a: 8

enter the initial velocity u: 7

enter time t: 6

Output:

Distance travelled by an object is 186.00