**Program 1**

**Name :** Abhishek Gairola

**Course :** B-Tech CSE

**Sem/Sec :** 5th/H

**Univ. Rollno :** 2018075

**Date** : 14/09/22

**Objective –**

WAP to estimate the Absolute Error, Relative Error and Percentage Error using the concept of round off and truncation.

**Method/Algorithm –**

**Absolute Error :**

Let the true value of a quantity be X and the approximate value of that quantity be X1. Hence absolute error has defined the difference between X and X1. Absolute Error is denoted by EA.

Hence EA= X-X1=δX

**Relative Error :**

ER = EA/X = (Absolute Error)/X

**Percentage Error :**

EP= 100×EP= 100×EA/X

**3.PROGRAM**

#include <stdio.h>

#include <math.h>

int main()

{

double x, temp, x1;

int n;

printf("Enter the number : ");

scanf("%lf", &x);

printf("Enter the decimal place : ");

scanf("%d", &n);

temp = x \* pow(10, n);

int res = (int)(temp + 0.5);

int res1 = (int)(temp);

temp = (float)res / pow(10, n);

x1 = (float)res1 / pow(10, n);

printf("After round off we have : %lf\n", temp);

printf("After truncate we have : %lf\n", x1);

printf("absolute error %f \n", fabs(x - x1));

printf("relative error %f \n", fabs((x - x1) / x));

printf("percentage error %f \n", fabs((x - x1) / x) \* 100);

}

**4.OUTPUT :**

Enter the number : 4.543432343

Enter the decimal place : 4

After round off we have : 4.543400

After truncate we have : 4.543400

absolute error 0.000032

relative error 0.000007

percentage error 0.000712