**Date: 06.03.17**

**SUPROTIK DEY**

**IT Hx-31**

**4TH SEM, 510815050**

**Write a program in C/C++/Java to find out the value of a definite integral with Monte Carlo simulation.**

**SOURCE CODE:**

/\*Program to find the integral of a function using Monte Carlo Simulation\*/

#include<stdio.h>

#include<math.h>

#include<time.h>

void generateStockRandomFnStream(int a, int b, int n, float \*arr)

{

int i, m;

m = b - a + 1;

for(i = 0; i < n; i++)

{

arr[i] = rand() % m + a;

}

}

//this is the defined function...

float myDefFunc(float x)

{

return pow(sin(x),2.0);//(sinx)^2

}

int main()

{

srand(time(NULL));

int a,b,n,i;

float sum, integral;

printf("Enter start and stop points of integration:");

scanf("%d %d",&a,&b);

printf("Enter the number of random points to be generated:");

scanf("%d",&n);

float arrRand[n];

generateStockRandomFnStream(a,b,n,arrRand);

sum=0.0;

for(i=1;i<=n;i++)

{

sum=sum+myDefFunc(arrRand[i-1]);

}

integral=(float)((b-a)\*sum/n);

printf("\nThe integral is:%f.",integral);

return 0;

}

**OUTPUT:**

Enter start and stop points of integration:2 6

Enter the number of random points to be generated:100

The integral is:1.903322.