**Experiment 6: To implement Langrange’s Interpolation formula.**

PS C:\Users\admin\Documents\Saksham Gupta\MSIT> ./a.exe

Enter the number of set of values of x and y: 4

Enter the value of x0 :0

Enter the value of y0 :2

Enter the value of x1 :1

Enter the value of y1 :3

Enter the value of x2 :2

Enter the value of y2 :12

Enter the value of x3 :5

Enter the value of y3 :147

Enter the value of x for which y to be found out :3

Y for the value 3 is 35

Figure 6.1: Output of the program

**Experiment 7: To implement Newton’s Divided Difference formula.**

PS C:\Users\admin\Documents\Saksham Gupta\MSIT> ./a.exe

Enter the number of set of values of x and y: 4

Enter the value of x0 :1

Enter the value of y0 :14

Enter the value of x1 :2

Enter the value of y1 :15

Enter the value of x2 :4

Enter the value of y2 :5

Enter the value of x3 :6

Enter the value of y3 :9

Enter the value of x for which y to be found out :5

Y for the value 5 is 3

Figure 7.1: Output of the program

**Experiment 8: Program for solving numerical integration by Trapezoidal rule**

PS C:\Users\admin\Documents\Saksham Gupta\MSIT> ./a.exe

Enter the lower bound of integration for the function:0

Enter the upper bound of integration for the function:6

Enter the number of widths for the function:6

The integral of the function is: 1.41079855

PS C:\Users\admin\Documents\Saksham Gupta\MSIT> ./a.exe

Enter the lower bound of integration for the function:0

Enter the upper bound of integration for the function:6

Enter the number of widths for the function:100

The integral of the function is: 1.40564525

PS C:\Users\admin\Documents\Saksham Gupta\MSIT> ./a.exe

Enter the lower bound of integration for the function:0

Enter the upper bound of integration for the function:6

Enter the number of widths for the function:1000

The integral of the function is: 1.40564716

Figure 8.1: Output of the program

**Experiment 9: Program for solving numerical integration by Simpson’s 1/3 rule**

PS C:\Users\admin\Documents\Saksham Gupta\MSIT> ./a.exe

Enter the lower bound of integration for the function:0

Enter the upper bound of integration for the function:0.6

Enter the number of widths for the function (n):6

The integral of the function is: 0.535155654

PS C:\Users\admin\Documents\Saksham Gupta\MSIT> ./a.exe

Enter the lower bound of integration for the function:0

Enter the upper bound of integration for the function:0.6

Enter the number of widths for the function (n):95

Since n is not even taking n as: 96

The integral of the function is: 0.535153508

Figure 9.1: Output of the program

**Experiment 10: To implement Numerical Integration Simpson 3/8 rule.**

PS C:\Users\admin\Documents\Saksham Gupta\MSIT> ./a.exe

Enter the lower bound of integration for the function:0

Enter the upper bound of integration for the function:0.6

Enter the number of widths for the function (n):6

The integral of the function is: 0.535158396

PS C:\Users\admin\Documents\Saksham Gupta\MSIT> ./a.exe

Enter the lower bound of integration for the function:0

Enter the upper bound of integration for the function:0.6

Enter the number of widths for the function (n):95

Since n is not even taking n as: 96

The integral of the function is: 0.535153568

Figure 10.1: Output of the program

**Experiment 11: Inverse of a system of linear equations using Gauss-Jordan method.**

PS C:\Users\admin\Documents\Saksham Gupta\MSIT> ./a.exe

Input data for Matrix:

Enter the order of square matrix: 2

Enter the number at position (0,0): 1

Enter the number at position (0,1): 3

Enter the number at position (1,0): 2

Enter the number at position (1,1): 5

A Inverse:

-5 3

2 -1

Figure 10.1: Output of the pass case of 2x2 matrix

PS C:\Users\admin\Documents\Saksham Gupta\MSIT> ./a.exe

Input data for Matrix:

Enter the order of square matrix: 3

Enter the number at position (0,0): 5

Enter the number at position (0,1): 7

Enter the number at position (0,2): 9

Enter the number at position (1,0): 4

Enter the number at position (1,1): 3

Enter the number at position (1,2): 8

Enter the number at position (2,0): 7

Enter the number at position (2,1): 5

Enter the number at position (2,2): 6

A Inverse:

-0.209524 0.0285715 0.27619

0.304762 -0.314286 -0.0380952

-0.00952383 0.228571 -0.12381

Figure 10.1: Output of the pass case of 3x3 matrix

PS C:\Users\admin\Documents\Saksham Gupta\MSIT> ./a.exe

Input data for Matrix:

Enter the order of square matrix: 2

Enter the number at position (0,0): 1

Enter the number at position (0,1): 1

Enter the number at position (1,0): 2

Enter the number at position (1,1): 2

A Inverse:

inf -inf

-inf inf

Figure 10.1: Output of the fail case