```
PS D:\Arjun - Bsc.CSIT 3rd sem> cd "d:\Arjun - Bsc.CSIT 3rd sem\"
on_Method } ; if ($?) { .\Bisection_Method }

Enter the inital guess values x1 and x2:
1 2

The root is 1.671700
No. of iterations is 16
```

```
PS D:\Arjun - Bsc.CSIT 3rd sem> cd "d:\Arjun - Bsc.CSIT 3rd sem\"
onRapshonMethod } ; if ($?) { .\NewtonRapshonMethod }

Enter the initial guess value: 0
The root is -0.999928
No. of iterations is 13
```

```
PS D:\Arjun - Bsc.CSIT 3rd sem> cd "d:\Arjun - Bsc.CSIT 3rd sem\"
d } ; if ($?) { .\SecantMethod }

Enter two initial guess values: 4 2
The root is 5.741659
No. of iterations is 7
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
Enter the initial guess value: 1.0
The root is -1.841401
No. of iterations: 10
```

```
PS D:\Arjun - Bsc.CSIT 3rd sem> cd "d:\Arjun - Bsc.CSIT 3rd sem\"
intMethod } ; if ($?) { .\FixedPointMethod }

Enter the initial guess value: 1
The root is 1.999839
No. of iterations is 20
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\" ; if ($?) { gcc Lagranges
Interpolation.c -o LagrangesInterpolation } ; if ($?) { .\LagrangesInterpolation }
Enter the number of data points:
n= 3

Input the data points for x[0]&f[0]
x[0] = 2

f[0] = 1.4142

Input the data points for x[1]&f[1]
x[1] = 3

f[1] = 1.7521

Input the data points for x[2]&f[2]
x[2] = 4

f[2] = 2

Input the specified value of x: 2.5

The required functional value at 2.500000 = 1.601719
```

Output of Lagranges Interpolation

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\" ; if ($?) { gcc NewtonInterpolation
 ; if ($?) { .\NewtonInterpolation }
Enter the number of data points:
n = 3

Input the data of x[0]&f[0]
x[0]= 1

f[0]= 0

Input the data of x[1]&f[1]
x[1]= 2

f[1]= 0.3010

Input the data of x[2]&f[2]
x[2]= 3

f[2]= 0.4771
Enter the value of xp point : 2.5

At xp=2.500000, fp = 0.404662
```

Output of Newton Interpolation

```
PS D:\Arjun - Bsc.CSIT 3rd sem> cd "d:\Arjun - Bsc.CSIT 3rd sem\"
$?) { .\ForwarInterpolation }
Enter the no. of data points: 4
Enter the value of x[0]: 0.1
Enter the value of f[0]: 1.005
Enter the value of x[1]: 0.2
Enter the value of f[1]: 1.020
Enter the value of x[2]: 0.3
Enter the value of f[2]: 1.045
Enter the value of x[3]: 0.4
Enter the value of f[3]: 1.081
Enter the point x: 2.0

_____________________________________________________
x(i)     y(i)    y1(i)   y2(i)   y3(i)   y4(i)
_____________________________________________________

0.100   1.005   0.015   0.010   0.001

0.200   1.020   0.025   0.011

0.300   1.045   0.036

0.400   1.081

The functional value at xp=2.0000 is 3.9690
```

Output of Newton Forward Interpolation

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
) { .\BackwardInterpolation }
Enter the no. of data points: 4
Enter the value of x[0]: 1
Enter the value of f[0]: 2
Enter the value of x[1]: 1.2
Enter the value of f[1]: 2.564
Enter the value of x[2]: 1.4
Enter the value of f[2]: 3.036
Enter the value of x[3]: 1.6
Enter the value of f[3]: 3.456
Enter the point x: 1.3

____________________________________________________
x(i)     y(i)    y1(i)   y2(i)   y3(i)   y4(i)
____________________________________________________

1.000   2.000   0.564   -0.092  0.040

1.200   2.564   0.472   -0.052

1.400   3.036   0.420

1.600   3.456

The functional value at xp=1.3000 is 2.8090
```

Output of Newton Backward Interpolation

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
\Horner_Method }
Enter degree of polynomial: 4
Enter coefficients of dividend polynomial:
2 -1 3 -5 4
Enter the value at which polynomial to be evaluated: 2
Value of polynomial p(2.000) = 30.000
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
\LeastSquareMethod }
Enter the number of data points: 4
Enter the data points in the format (x y):
0 -1
2 5
5 12
7 20

The linear regression equation is: y = 2.90x + -1.14
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
\Trapezoidal_Rule }
Enter the initial value of x: 1
Enter the final value of x: 2
Enter the number of segments: 4

The integration is approximately 4.796875
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\" ; if ($?) { gcc
} ; if ($?) { .\Composite_Trapezoidal_Rule }
Enter the initial value of x: 0
Enter the final value of x: 2
Enter the number of segments: 4

The integration using Composite Trapezoidal Rule is approximately 6.250000
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
.\Simpsons1by3Rule }
Enter the initial value of x: 1
Enter the final value of x: 2

The integration is 0.956791
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
.\Simpsons3by8Rule }
Enter the initial value of x: 1.5
Enter the final value of x: 3

The integration is 20.484375
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
} ; if ($?) { .\GaussianIntegration2Points }
Enter the initial value of x: 0.2
Enter the final value of x: 1.5

The integration is 3.731207
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
} ; if ($?) { .\GaussianIntegration3Points }
Enter the initial value of x: 0.3
Enter the final value of x: 2

The integration is 15.865971
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
$?) { .\GaussEliminationMethod }
Enter the no. of unknowns : 3
Enter 3x4 elements for tha augmented matrix:
10 1 1 12
2 10 1 13
1 1  5 6

The echelon form matrix:
10.00   1.00    1.00    12.00
-0.00   9.80    0.80    10.60
-0.00   0.00    4.83    3.83

The solution set:
x[1]=1.0190
x[2]=1.0169
x[3]=0.7928
```

Output of Gauss Elimination

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
 { .\GaussJordanMethod }
Enter the no. of unknowns : 3
Enter 3x4 elements for tha augmented matrix:
10 1 1 12
2 10 1 13
1 1  5 6

The reduced echelon form matrix is:
1.00    0.00    0.00    1.02
-0.00   1.00    0.00    1.02
-0.00   0.00    1.00    0.79

The solution set is:
x[1]=1.0190
x[2]=1.0169
x[3]=0.7928
```

Output of Gauss Jordan

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
{ .\GaussSeidelIteration }
Enter the no. of unknowns : 3
Enter 3x4 elements for tha augmented matrix:
30 -10 -5 290
10 -70 20 -260
10 -30 120 -850

9.667   5.095   -6.615
10.263  3.290   -7.116
9.577   3.049   -7.119
9.497   3.037   -7.115
9.493   3.037   -7.115
9.493   3.038   -7.115
The solution set is:
x[1]=9.493
x[2]=3.038
x[3]=-7.115
The no. of iteration: 6
```

Output of Gauss Seidel Iteration

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
\JacobiIteration }
Enter the no. of unknowns : 3
Enter 3x4 elements for tha augmented matrix:
40 -20 -10 390
10 -60 20 -280
10 -30 120 -860

9.750   4.667   -7.167
10.292  3.903   -6.813
9.998   4.111   -7.049
10.043  3.984   -6.972
9.999   4.017   -7.008
10.006  3.997   -6.996
10.000  4.002   -7.001
10.001  4.000   -6.999
10.000  4.000   -7.000
The solution set is:
x[1]=10.000
x[2]=4.000
x[3]=-7.000

The no. of iteration: 9
```

Ouptut of Jacobi Iteration

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
 ($?) { .\EularMethod }
Enter initial values of x and y: 1 2
Enter x-value at which y is required: 2
Enter step-size: 0.5

The value of y at x=2.00 is 7.8750
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
 .\RungeKuttaMethod }
Enter initial values of x and y: 0 0
Enter x-value at which y is required: 0.2
Enter step-size: 0.2

The value of y at x=0.20 is 0.0027 :
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
$?) { .\HeunMethod }
Enter initial values of x and y: 1 2
Enter x-value at which y is required: 2
Enter step-size: 0.25

The value of y at x=2.00 is 7.8608 :
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\" ;
 { .\PoisonGaussSeidal }
Enter Dimension of plate
3
Enter Dimension of grid
1
Enter teperatures at left, right, bottom & upper part of plate
0  0   0  0
Enter Accuracy Limit
0.001
solution:
 x1=-3.25
 x2=-5.50
 x3=-5.50
x4=-10.75
```

Output of Poison's Equation

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\" ; if
) { .\LaplaceEquationMethod }
Enter Dimension of plate: 3
Enter temperatures at left, right, bottom & upper part of plate:
 75 100 50 300
Enter Accuracy Limit: 0.001
Solution:
x1 =  56.25
x2 = 118.75
x3 =  56.25
x4 = 118.75
```

Output of Laplace Equation

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\"
$?) { .\DolittleLU }
Enter Dimension Matrix: 3
Enter Elements of Matrix
1 2 1 3 4 5 2 3 5
**L Matrix**
        1.000000        0.000000        0.000000
        3.000000        1.000000        0.000000
        2.000000        0.500000        1.000000
**U Matrix**
        1.000000        2.000000        1.000000
        0.000000        -2.000000       2.000000
        0.000000        0.000000        2.000000
```

```
PS C:\CSIT - Arjun Mijar_18> cd "c:\CSIT - Arjun Mijar_18\" ;
RombergIntegration }
Enter Lower & Upper Limit
1 2
Enter p & q of required T(p,q)
2 2

Romberg Estimate of integration = 0.739471
```