

PROGRAMNAME:- LAGRANGE'S INTERPOLATION

EQUATION

```
n = input('\nEnter n: ');
for i = 1:n
    x(i) = input('Enter x: ');
    y(i) = input('Enter y: ');
end
xg = input('\nEnter output interpolation point: ');
yg = 0;

for i = 1:n
    L(i) = 1;
    for j = 1:n
        if (i~=j)
            L(i) = L(i)*((xg-x(j))/(x(i)-x(j)));
        end
    end
    fprintf('\nThe Lagranges polynomials L%d is %f',i,L(i));
    yg = yg + L(i)*y(i);
end

fprintf('\nAt the given value xg = %f the value of yg = %f',xg,yg);
```

OUTPUT

Enter n: 4

Enter x: 0

Enter y: 2

Enter x: 1

Enter y: 3

Enter x: 2

Enter y: 12

Enter x: 5

Enter y: 147

Enter output interpolation point: 1.5

The Lagranges polynomials L1 is -0.087500

The Lagranges polynomials L2 is 0.656250

The Lagranges polynomials L3 is 0.437500

The Lagranges polynomials L4 is -0.006250

At the given value $x_g = 1.500000$ the value of $y_g = 6.125000$