```
%LAB:-04
%Title :- To determine functional value at any arbitary point of a discrete
%function using Langrage Interpolation.
%Developed by:- Munna Pajiyar
%Roll No:- 221452
%Date:- 2024/12/13


%------------Three Critical Statements-----------------
close all;
clear variables;
clc;

%-------------User Input Section-----------------------
x=input('enter the value for x=');
y=input('enter the value for y=');
while(length(x)~=length(y))
    clc;
    disp('X & Y must have same dimension.');
    x=input('enter the value for x=');
    y=input('enter the value for y=');
end
    out=[x;y];
    disp(out);

X=input('Enter value of x for which y is to be found.');


%----------------Calculation section--------------------
n=length(x);
sum=0;
for i=1:n
    temp=1;
    for j=1:n
        if i~=j
            temp=temp*(X-x(j))/(x(i)-x(j));
        end
    end
    sum= sum + temp*y(i);
end

%---------------Output Section-------------------------
result=strcat('the value of y at x= ',num2str(X),'is y= ', num2str(sum));
disp('_____________________________________________');
disp(result);
```