

```

prompt1='Please enter in a list of x-values using brackets! ';
prompt2='Please enter in a list of corresponding y-values using brackets!: ';
prompt3='Resolution, enter in a posiive integer? ';
promptend='Again? (0=yes/1=no) ';
again=0;
while again ~=1
    xlst=input(prompt1);
    flst=input(prompt2);
    res=input(prompt3);
    maxX=max(xlst);
    minX=min(xlst);
    myX=linspace(minX,maxX,res);
    listlenX= length(xlst);
    if length(flst)== listlenX
        disp('Your lists are okay!');
        disp('Here are your coefficients!')
        myCo=newtonCoeff(xlst,flst);
        disp(myCo);
        myY=newtonP(myX,xlst,myCo);
        scatter(myX,myY);
        hold on
        scatter(xlst,flst,140,'d','filled','MarkerFaceColor',[0 .7 .7]);
    else
        disp('Your lists need to be same length!');
    end
    again=input(promptend);
end

%{
xlst=[1,2,3,4];
flst=[5,8,5,1];

flst
for k=1:4
    temp1=flst(k);
    for n=k:3
        temp2=flst(n+1);
        flst(n+1)=diffq(xlst(n-k+1),xlst(n+1),temp1,temp2);
        temp1=temp2;
    end
end
flst
%}

```

```
function c_out = newtonCoeff(xlst,ylst)
flst=ylst;
listlenX=length(xlst);
    for k=1:listlenX
        temp1=flst(k);
        for n=k:listlenX-1
            temp2=flst(n+1);
            flst(n+1)=diffq(xlst(n-k+1),xlst(n+1),temp1,temp2);
            temp1=temp2;
        end
    end
    c_out=flst;
end
```

```
function y_out = newtonP(xin,xlst,nCoeff)
sum=0;
for k=1:length(xlst)
    prod=nCoeff(k);
    for j=1:k-1
        prod=prod.*(xin-xlst(j));
    end
    sum=sum+prod;
end
y_out=sum;
end
```

```
function ans_out = diffq(x1,x2,f1,f2)
    ans_out=(f1-f2)/(x1-x2);
end
```

```
>> main
Please enter in a list of x-values using brackets! [1,2,3,4]
Please enter in a list of corresponding y-values using brackets!: [1,300,-40,0.7]
Resolution, enter in a positive integer? 100
Your lists are okay!
Here are your coefficients!
    1.0000  299.0000 -319.5000  169.9500

Again? (0=yes/1=no) Warning: Invalid or unsupported printer '192.168.0.7' specified.
> In alternatePrintPath
  In print (line 82)
  In printdlg (line 61)
  In main (line 26)
```

