

CSE541 Homework 3 (Lab)

Due 11:59 p.m., Monday, April 21

All coding for this lab is to be done INDIVIDUALLY. You may discuss the lab with other students but DO NOT LOOK AT OR COPY anyone else's code.

1. Write a Matlab function named "NewtonInterp" to implement the Newton interpolation method. Store your function in a file named "NewtonInterp.m". The first line of your function should be:

```
function yi = NewtonInterp(x,y,xi)
```

where

- x, y are row-vectors of $(n + 1)$ data values, constituting a table of $(n + 1)$ data points to be interpolated;
- xi is a row-vector of x-values, where interpolation is to be found (xi could be a single value);
- yi is a row-vector of interpolated y-values.

That is, find the polynomial $p_n(x)$ in Newton's form that interpolates the given table (x, y) . Then compute $p_n(t)$ for each value t in xi .

2. Test your function with the commands:

```
x = [1, 2, 3, 4, 5, 6, 7, 8];  
y = [2, 0, 0, 8, 0, 4, 1, 8];  
xi=1:0.05:8;  
yi = NewtonInterp(x,y,xi);  
plot(x,y,'ro',xi,yi)
```

3. Save the figure of the plot in a file named **test.fig**.
4. Your function must work for any table (x, y) of any size.
5. Be sure to comment your code.
6. Submission guidelines:
 - Submit your "NewtonInterp.m" and "test.fig" files using the command
 - **submit c541aa lab1** if you are in the 9:30 section;
 - **submit c541ab lab1** if you are in the 11:30 section.
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