MATLAB HOMEWORK 1

Jordan Lian

GE 1502 -- 308 Hurtig Hall

10:30 - 11:35am

Professor Whalen

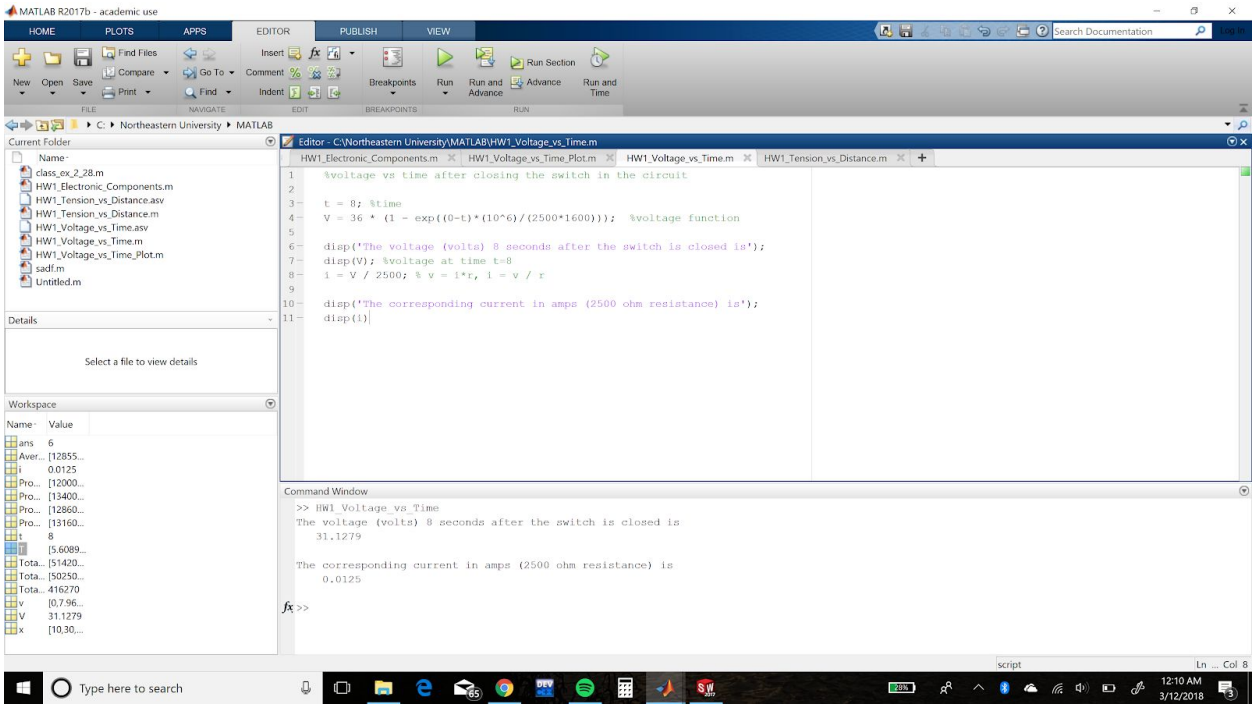
Table of Contents

Voltage V_c t seconds after closing the switch in the circuit

m-file

```
%voltage vs time after closing the switch in the circuit

t = 8; %time
V = 36 * (1 - exp((0-t)*(10^6)/(2500*1600)));  %voltage function

disp('The voltage (volts) 8 seconds after the switch is closed is');
disp(V); %voltage at time t=8
i = V / 2500; % v = i*r, i = v / r

disp('The corresponding current in amps (2500 ohm resistance) is');
disp(i);
```

Command window results



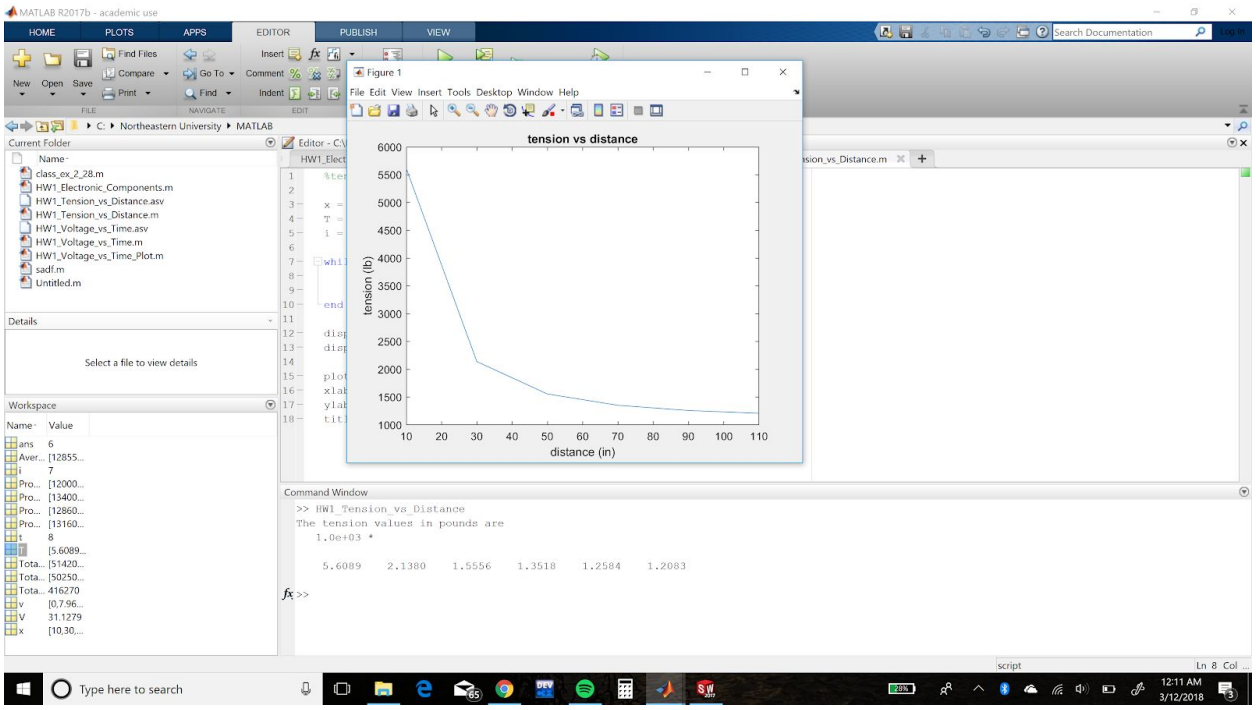
Tension force vs distance on a beam

m-file

```
%tension vs distance
```

```
x = [10, 30, 50, 70, 90, 110]; %domain (array)
T = [0, 0, 0, 0, 0, 0]; %initialize
i = 1; %counter loop

while i < 7 %calculate desired values
    T(i) = ((500*110) * sqrt(2500 + (x(i)*x(i)))) / (50*x(i)); %function
    i = i+1;
end

disp('The tension values in pounds are');
disp(T); %display output values

plot(x,T); %plot function
xlabel('distance (in)');
ylabel('tension (lb)');
title('tension vs distance');
```

Plot and command window results



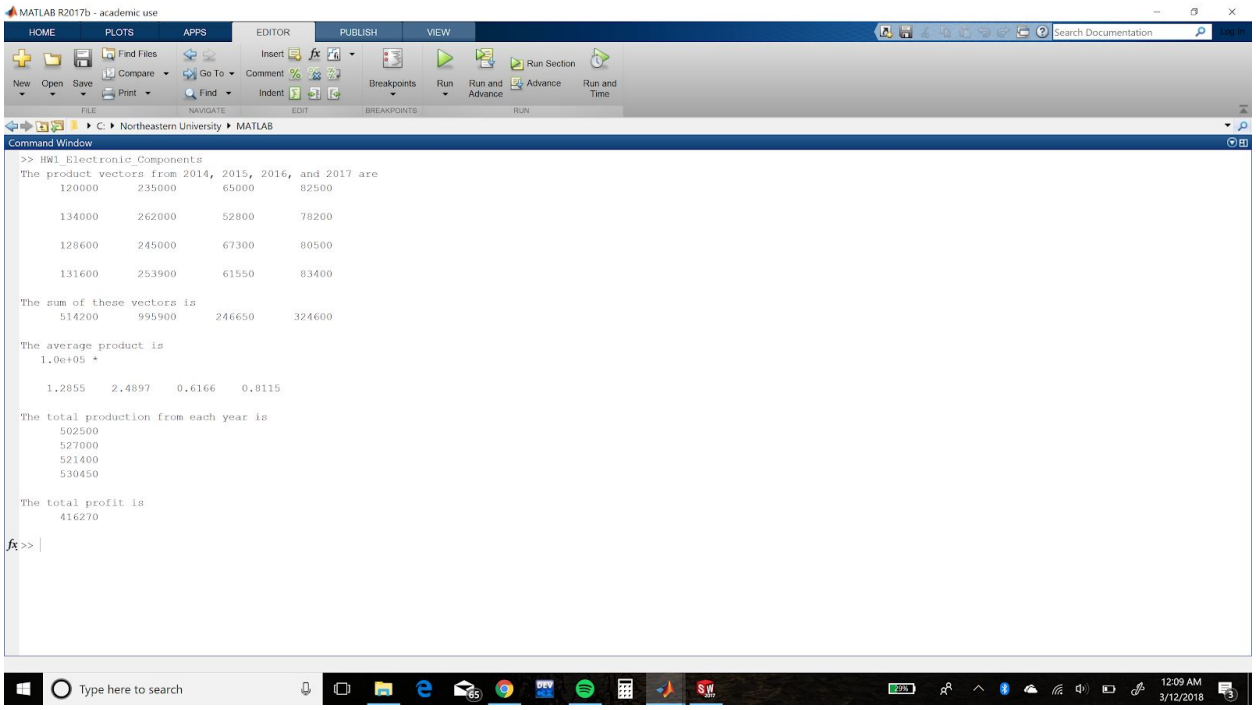
Production data for 4 electronic components

M-file

```
Prod14 = [120000 235000 65000 82500];
Prod15 = [134000 262000 52800 78200];
```

```
Prod16 = [128600 245000 67300 80500];
Prod17 = [131600 253900 61550 83400];

disp('The product vectors from 2014, 2015, 2016, and 2017 are');
disp(Prod14);
disp(Prod15);
disp(Prod16);
disp(Prod17);

Total_Product = Prod14 + Prod15 + Prod16 + Prod17;

disp('The sum of these vectors is');
disp(Total_Product);

Average_Product =  Total_Product([1:4]) / 4;

disp('The average product is');
disp(Average_Product);

Total_Production = [sum(Prod14); sum(Prod15); sum(Prod16); sum(Prod17)];

disp('The total production from each year is');
disp(Total_Production);

Total_Profit = sum(Total_Production) / 5;

disp('The total profit is');
disp(Total_Profit);
```

Command window results



Voltage during the charging the capacitor

m-file

```
%voltage vs time during the charging of a capacitor

t = [0.2 0.4 0.6 0.8 1.0]; %time values
V =[75.9 103.8 114.0 117.8 119.2]; %voltage values

plot(t,V);
xlabel('time (s)');
ylabel('voltage (V)');
title('voltage vs time during the charging of a capacitor');
```

Plot results