

MATLAB HOMEWORK 3

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GE 1502 -- 308 Hurtig Hall

10:30 - 11:35am

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Table of Contents

1. Mesh Plots
2. Weather Analysis
3. Shipping Cost -- What can Brown do for you?
4. Business-Style Letter



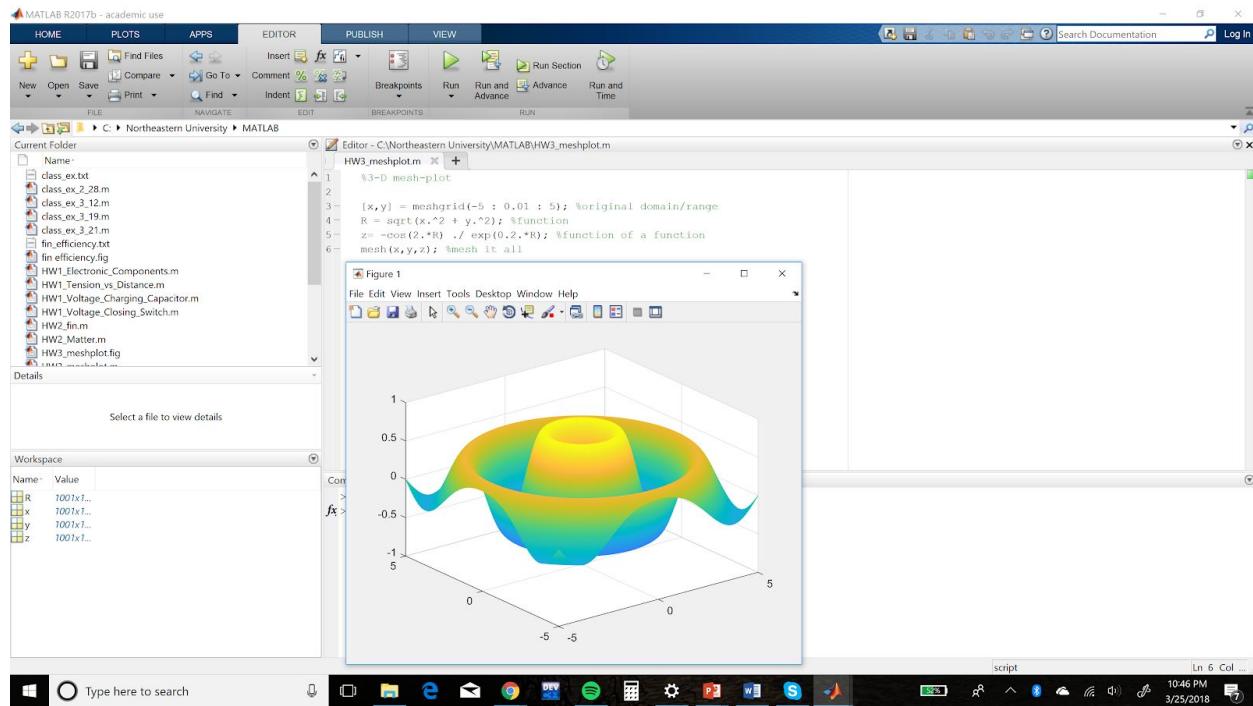
Mesh Plots

m-file

%3-D mesh-plot

```
[x,y] = meshgrid(-5 : 0.01 : 5); %original domain/range  
R = sqrt(x.^2 + y.^2); %function  
z= -cos(2.*R) ./ exp(0.2.*R); %function of a function  
mesh(x,y,z); %mesh it all
```

Plot window



Weather Analysis

m-file

%precipitation (inches) in Boston and Seattle

```
BOS = [2.67 1.00 1.21 3.09 3.43 4.71 3.88 3.08 4.10 2.62 1.01 5.93];  
SEA = [6.83 3.63 7.20 2.68 2.05 2.96 1.04 0.00 0.03 6.71 8.28 6.85];
```

%precipitation for the year

```
tot_BOS = sum(BOS);
```

```

tot_SEA = sum(SEA);

FID = fopen('precipitation.txt', 'w'); %create file pointer with permission write

fprintf(FID, 'total precipitation in Boston during 2017\n');
fprintf(FID,
'%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f\n',
tot_BOS);

fprintf(FID, '\n\n total precipitation in Seattle during 2017\n');
fprintf(FID,
'%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f%.2f\n',
tot_SEA);

%monthly average precipitation
month_avg_BOS = tot_BOS/12;
month_avg_SEA = tot_SEA/12;

fprintf(FID, '\n\n monthly average in Boston is\n');
fprintf(FID, '%4.2f\n', month_avg_BOS);

fprintf(FID, '\n\n monthly average in Seattle is\n');
fprintf(FID, '%4.2f\n', month_avg_SEA);

b=0; %Boston variable
s=0; %Seattle variable

%check how many months was the precipitation above average
for i=1:12
    BOS(i);
    if (BOS(i) > month_avg_BOS)
        b=b+1;
    end
end

fprintf(FID, '\namount of times precipitation was above average in Boston\n');
fprintf(FID, '%4.0f\n', b);

for j=1:12

    if (SEA(j) > month_avg_SEA)
        s=s+1;
    end
end

```

```
end
```

```
fprintf(FID, '\namount of times precipitation was above average in Seattle\n');  
fprintf(FID, '%4.0f\n', s);
```

```
%how many months, and which months was precipitation in Boston lower than  
%Seattle
```

```
precip = [0 0 0 0 0 0 0 0 0 0 0 0];  
d=0;
```

```
fprintf(FID, '\nmonths where the precipitation in Boston was lower than the precipitation in  
Seattle\n');
```

```
for c=1:12
```

```
    if (BOS(c) < SEA(c))  
        d=d+1;  
        precip(c) = c;  
        fprintf(FID, '%4.0f\n', c);  
    end
```

```
end
```

```
fprintf(FID, '\namount of times that the precipitation in Boston was lower than the precipitation in  
Seattle\n');
```

```
fprintf(FID, '%4.0f\n', d);
```

txt file results

The screenshot shows the MATLAB R2017b interface. The Editor window displays the contents of the 'precipitation.txt' file, which contains the output of the script. The Current Folder browser shows various MATLAB files in the working directory. The Workspace browser shows variables used in the script. The Command Window at the bottom shows the commands run to execute the script.

```
total precipitation in Boston during 2017  
36.73  
total precipitation in Seattle during 2017  
48.26  
monthly average in Boston is  
3.06  
monthly average in Seattle is  
4.02  
amount of times precipitation was above average in Boston  
7  
amount of times precipitation was above average in Seattle  
5  
months where the precipitation in Boston was lower than the precipitation in Seattle  
1  
2  
3  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28
```

```
>> HW3_precipplot  
>> HW3_precipitation  
fx>>
```

Shipping Cost -- What can Brown do for you?

m-file

```
a = 'y'; %counter loop initializer

while(a == 'y') %counter loop where service occurs
    service = input('Please enter the type of service (G for ground, E for express, or O for
overnight --> ', 's');
    weight = input('Please enter the weight of the package as [lb oz] -->');
    converted_weight = (weight(1)*16) + weight(2); %oz

    FID = fopen('shipping.txt', 'w'); %create file pointer with permission write
    fprintf(FID, 'This is the weight of the package as [lb oz] -->');
    fprintf(FID, '%4.0f', weight);
    fprintf(FID, '\nThis equates to');
    fprintf(FID, '%4.0f', converted_weight);
    fprintf(FID, 'oz');

    if(service == 'G') %ground service
        fprintf(FID, '\nYou have chosen ground service\n');
        if(converted_weight < 8) %price calculations
            cost = 0.7 + (0.06*converted_weight);
        elseif ((converted_weight >= 8) && (converted_weight <= 80))
            cost = 1.18 + (0.25*converted_weight);
        else
            cost = 4.96 + (0.45*converted_weight);
        end
    elseif(service == 'E') %express service
        fprintf(FID, '\nYou have chosen express service\n');
        if(converted_weight < 8)
            cost = 2.40 + (0.25*converted_weight);
        elseif ((converted_weight >= 8) && (converted_weight <= 80))
            cost = 4.40 + (0.50*converted_weight);
        else
            cost = 15.20 + (0.65*converted_weight);
        end
    elseif(service == 'O') %overnight service
        fprintf(FID, '\nYou have chosen overnight 1 day service\n');
        if(converted_weight < 8)
```

```

cost = 12.20 + (0.80*converted_weight);
elseif ((converted_weight >= 8) && (converted_weight <= 80))
    cost = 18.60 + (0.75*converted_weight);
else
    cost = 61.80 + (0.85*converted_weight);
end
end

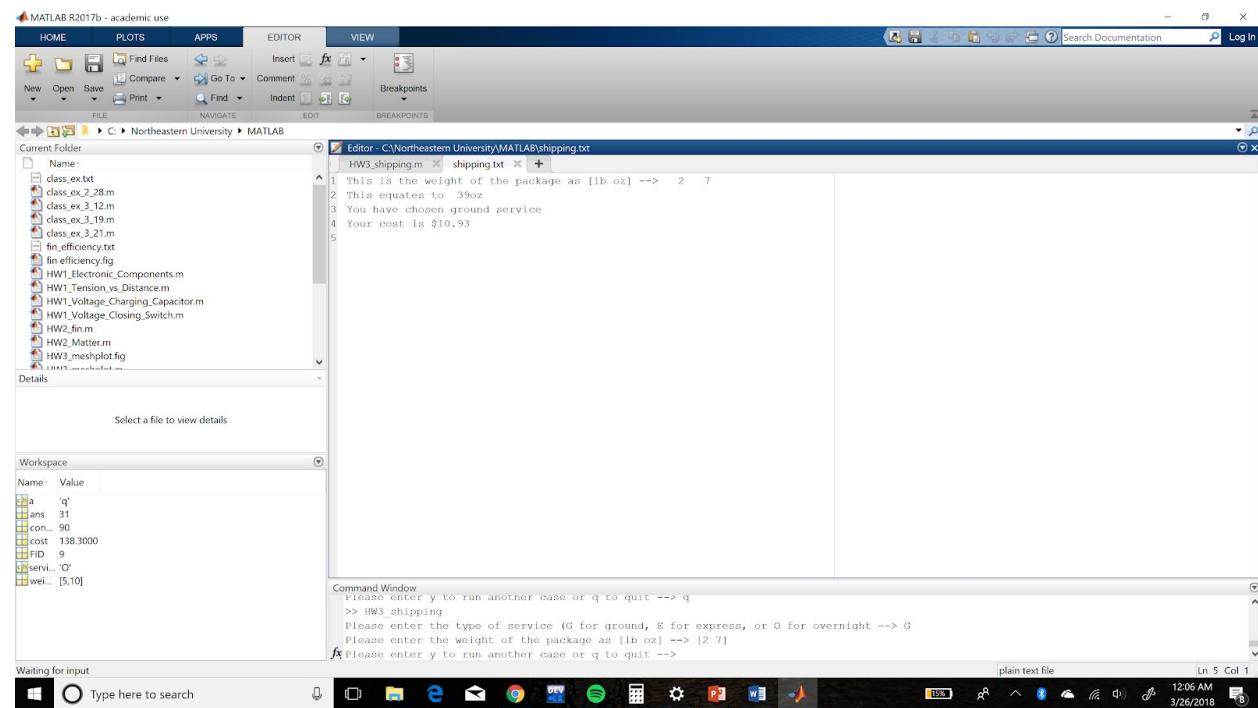
fprintf(FID, 'Your cost is $'); %print cost
fprintf(FID, '%4.2f\n', cost);

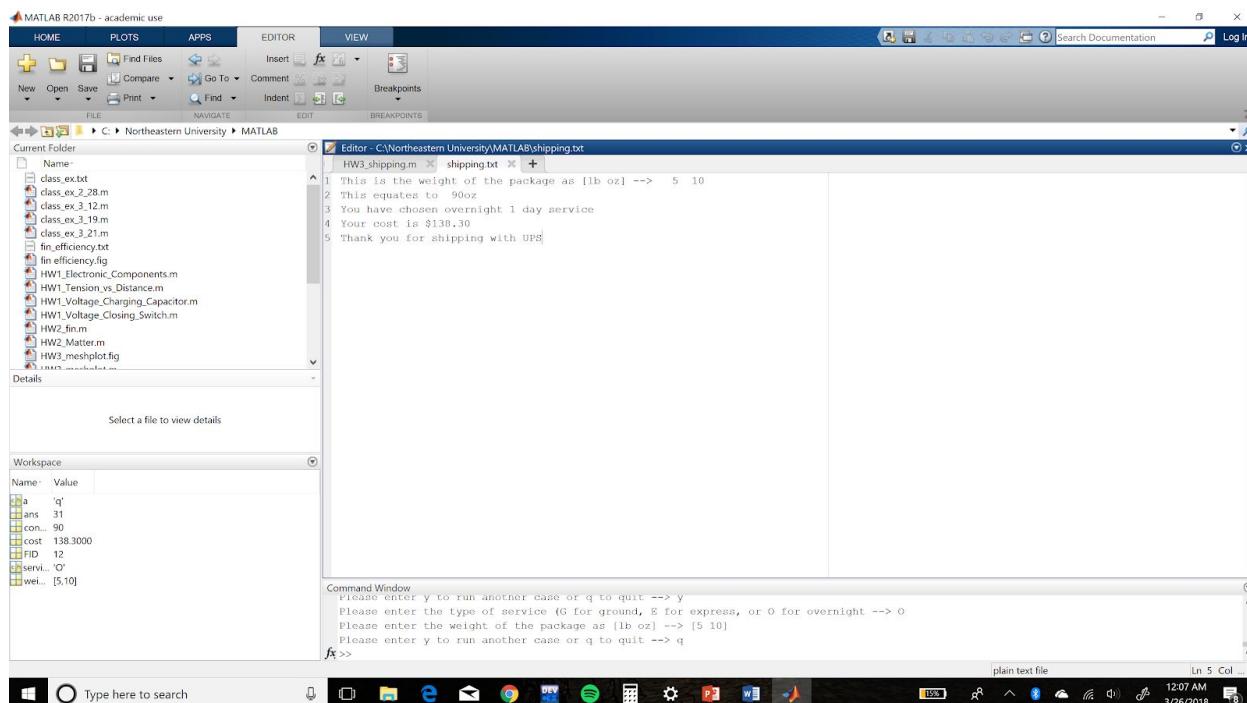
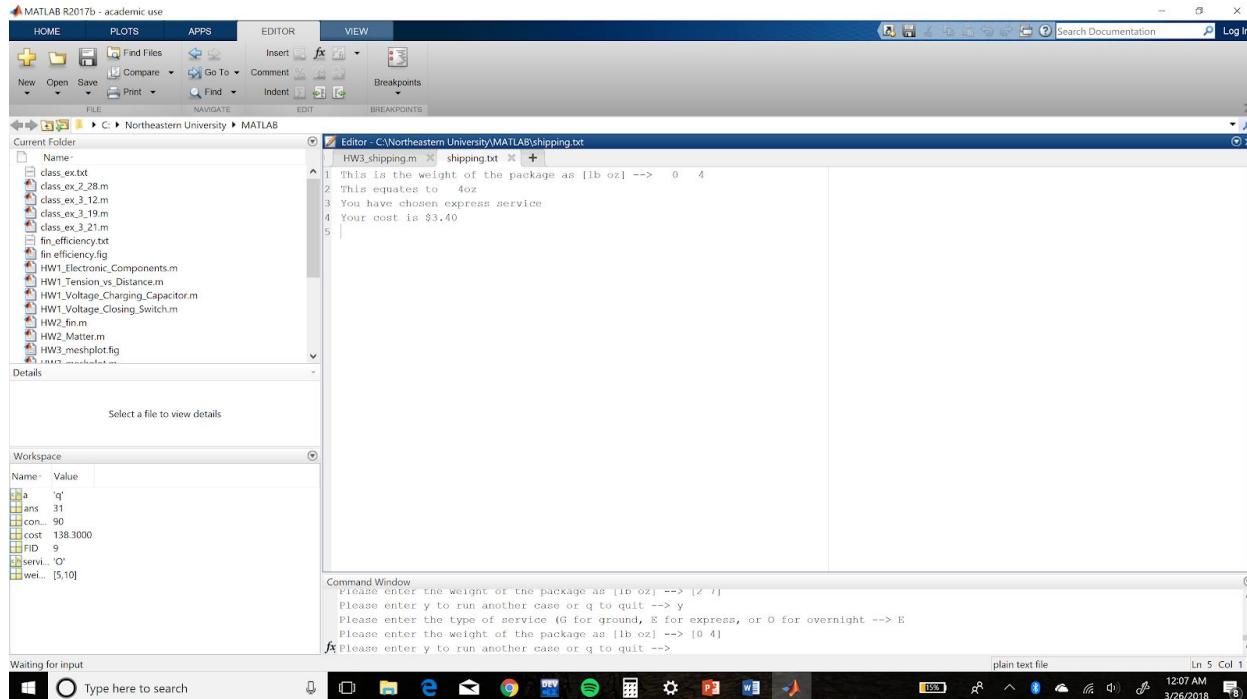
a = input('Please enter y to run another case or q to quit --> ', 's'); %counter loop
end

fprintf(FID, 'Thank you for shipping with UPS');

```

txt file





Business-Style Letter

(see attached file)