MATLAB HOMEWORK 3

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GE 1502 -- 308 Hurtig Hall

10:30 - 11:35am

Professor Whalen

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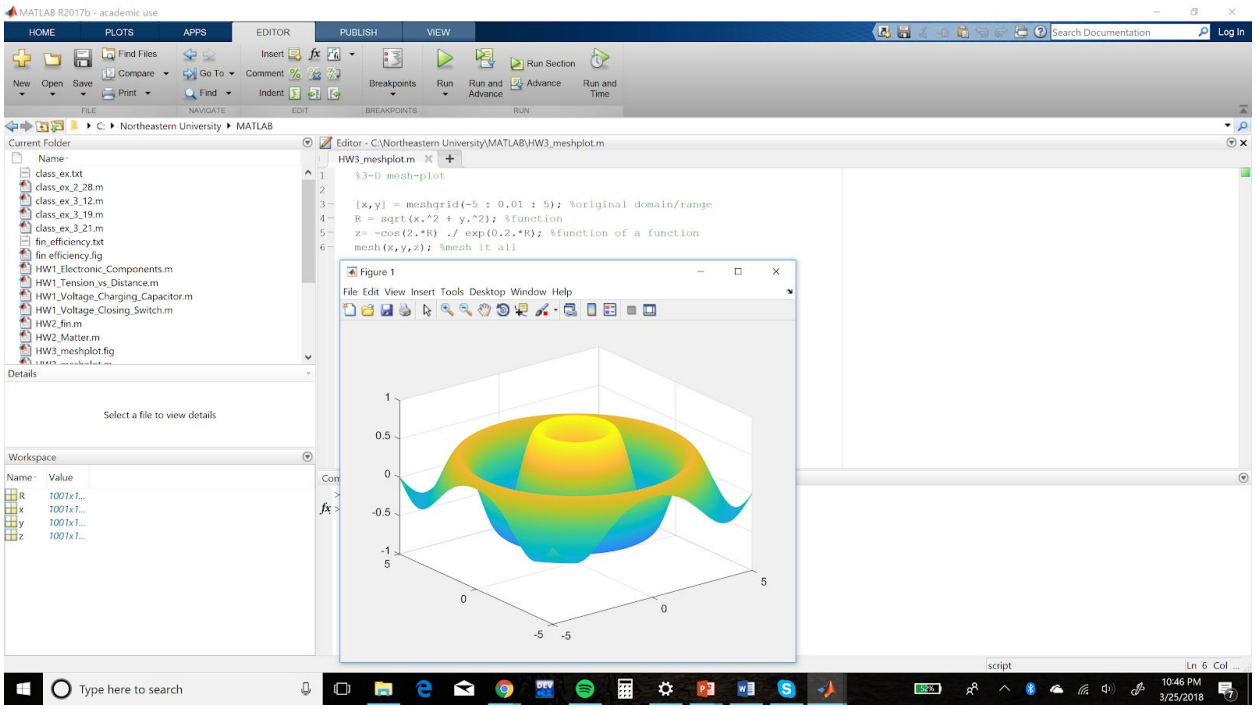
Mesh Plots

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

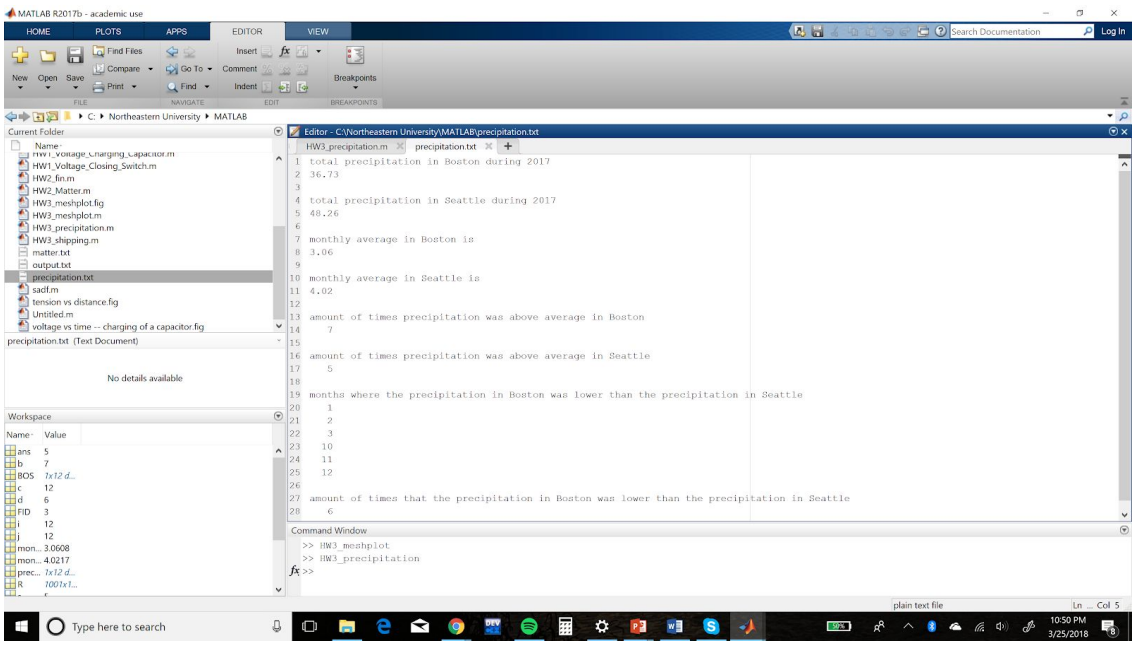
m-file

```
%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,
'%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\n',
tot_BOS);

fprintf(FID, '\n\ntotal precipitation in Seattle during 2017\n');
fprintf(FID,
'%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\t%4.2f\n',
tot_SEA);

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

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

fprintf(FID, '\nmonthly 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

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



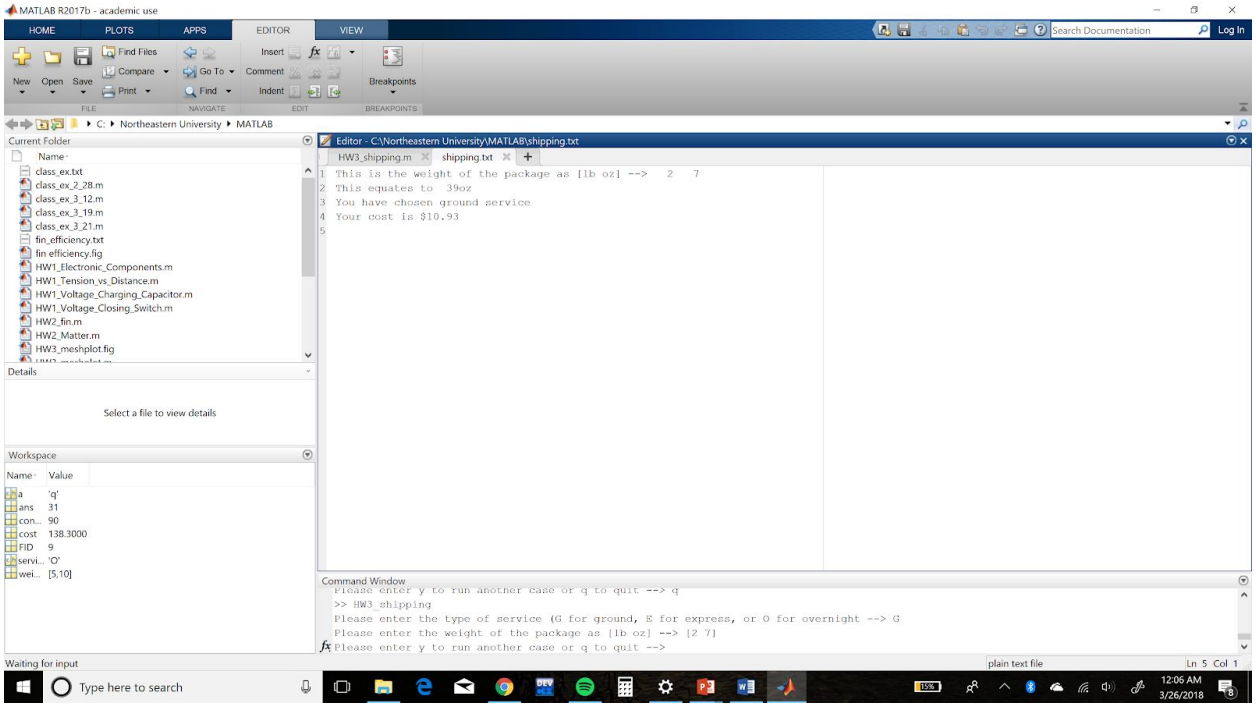
Shipping Cost -- What can Brown do for you?

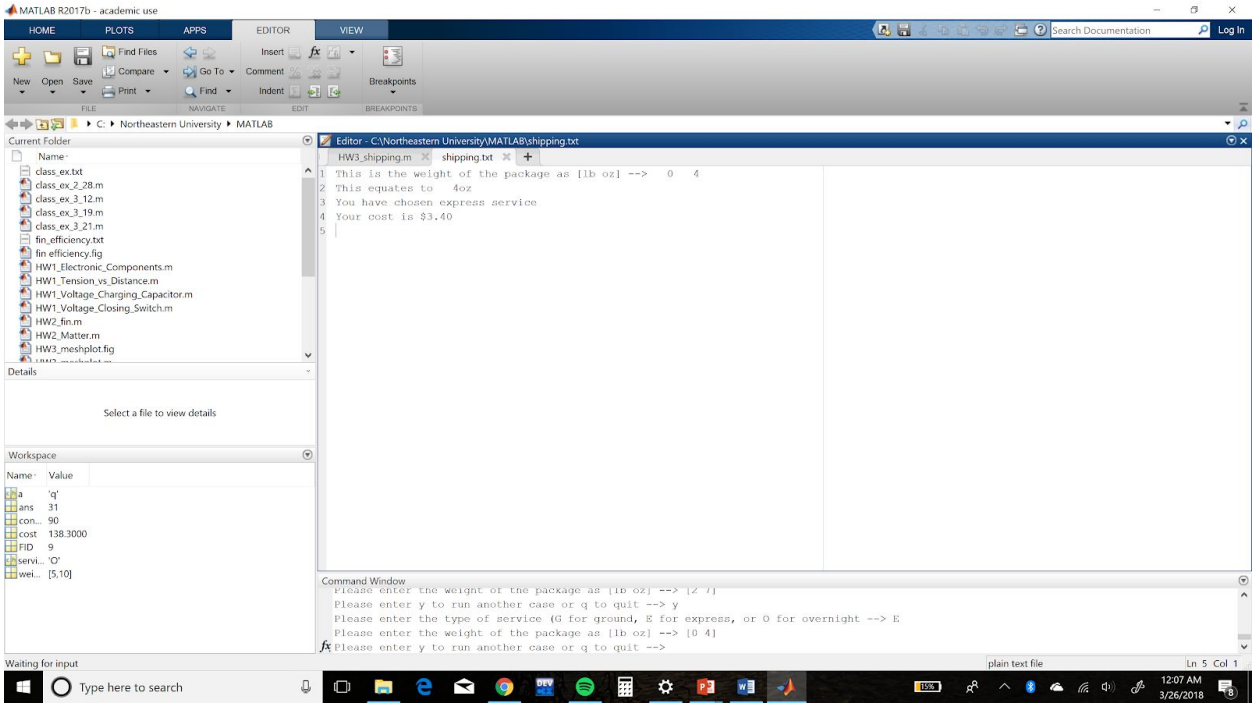
m-file

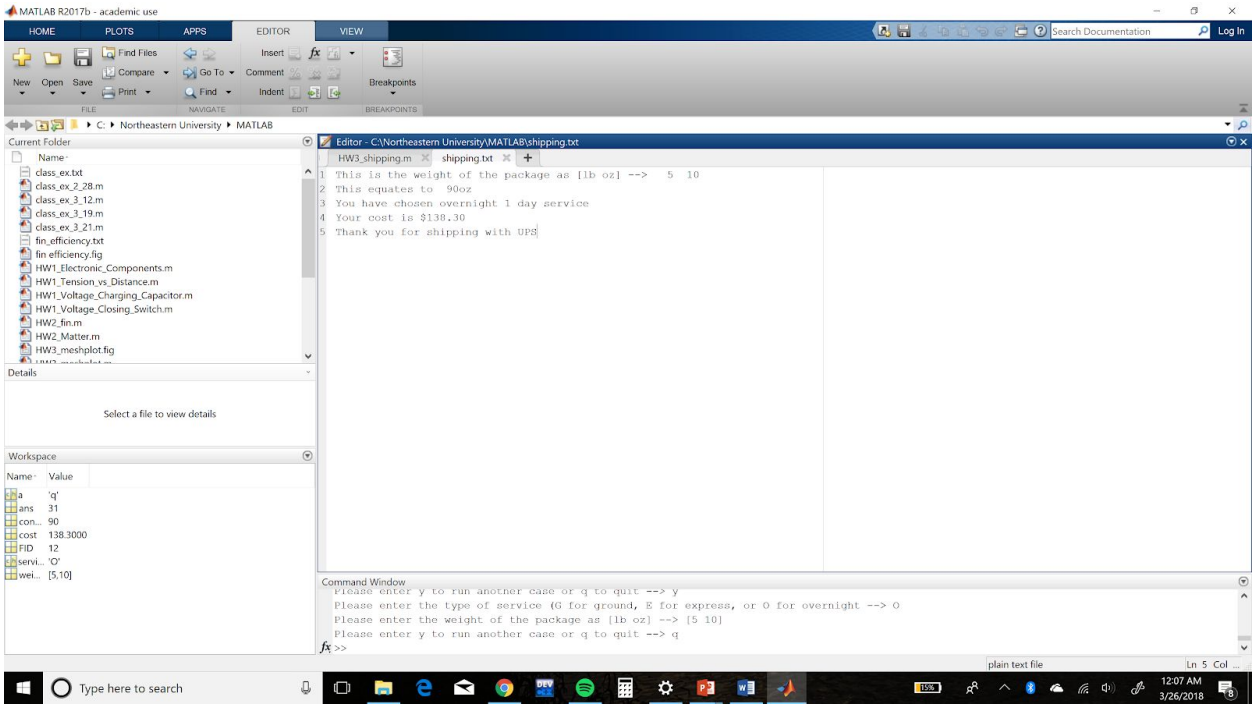
```
a = 'y'; %counter loop initializer

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 calculationsq
         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)