AMATH 301 – Autumn 2020
Homework 0

No due date

This homework is an example of the type of homework you will see in this class. It is intended only for you to practice submitting to Gradescope. The solutions are posted on Canvas.

Instructions for submitting:

- Coding problems are submitted to Gradescope as a MATLAB script (`.m` file) or a python scrip (`.py` file).

- Writeup problems are submitted to Gradescope as a single `.pdf` file that contains text and plots. Put the problems in order and label each writeup problem. When you submit, **you must indicate which problem is which on Gradescope**. **All code you used for this part of the assignment should be included at the end of your .pdf file.**

Coding problems

1. **Creating variables in MATLAB.**
   Define the following variables in MATLAB:

   (a) Define $x = 3.1$ and save it to the variable `x`.

   (b) Define $y = -29$ and save it to the variable `y`.

   (c) Define $z = \pi$ and save it to the variable `z`.

2. Which python ditribution are we using in this class? Save your answer to the variable `problem2`.

   A. Python 2.7

   B. Python 3.9

   C. Python 3.0

   D. Python 3.8

Writeup problems

You should start a new MATLAB or python script for the writeup portion of the assignment.

1. The following code will create a straight line. Copy it into either MATLAB or python, save the plot, and add it to your writeup (**NOTE: You may not be able to copy and paste directly. Instead, just recreate this code**).

   MATLAB

   ```
   x = [-5:0.5:5];
   y = x;
   plot(x,y,'k')
   hold on
   plot(x,y,'o')
   xlabel('x')
   ylabel('y')
   ```

   python

   ```
   import numpy as np
   import matplotlib.pyplot as plt
   x = np.arange(-5,5+0.5,0.5)
   y = x
   plt.plot(x,y,color='black')
   plt.plot(x,y,color='blue',marker='o')
   plt.xlabel('x')
   plt.ylabel('y')
   plt.show()
   ```

   Explain in your own words what the blue circles are in the plot.

2. The following code will create a parabola. Copy this code into MATLAB or python, save the plot, and add it to your writeup. (**NOTE: You may not be able to copy and paste directly. Instead, just recreate this code**).

   MATLAB

   ```
   x = [-5:0.5:5];
   y = x.^2;
   plot(x,y,'k')
   hold on
   ```

```
plot(x,y,'o')
xlabel('x')
ylabel('y')
```

python

```
import numpy as np
import matplotlib.pyplot as plt
x = np.arange(-5, 5+0.5, 0.5)
y = x**2
plt.plot(x,y,color='black')
plt.plot(x,y,marker='o', color='blue')
plt.xlabel('x')
plt.ylabel('y')
```

Explain in your own words what the .^ (in MATLAB) or the ** (in python) commands do.