TOPIC 1 - 1 - A
WORKING WITH DATA
WORKSHEET

Goal: To create a Python program that will read in two columns of data from a text file and then plot that data.

A. GENERATE SOME DATA

First we need to create some fake data to work with. We want a single file, called `data.txt`, which has two columns of numbers – the first column x_i has 100 numbers going from 0 to 1.0, and the second column f_i corresponds to the function

$$f(x) = xe^{-x^2}.$$

Do this however you want - Python, Excel, by hand, whatever. Then we'll go over my method using Python and NumPy together.

B. PLOT SOME DATA

Now plot the data, using these basic steps:

1. Create a Python file called `plot-data.py`.
2. Use NumPy to read in the text file and assign arrays to each column.
3. Use MatPlotLib to plot the data and display it on the screen.

Finally, consider some extensions to what you have:

- Make the plot look nice (readable font sizes, whatever else you like).
- Comment the file so it's readable to others.
- Include an option to save the plot as a PDF file or PNG image.
- Extend the code to allow more than two columns, and provide an option for which columns to plot.
- Include an option to set the x and y limits of the plot.

Plus whatever else you think will be useful later.

C. GITHUB

If you need to, create an account on GitHub.com. Send me your username and I'll add you to our repository. You can either use the web interface or clone the repository to your computer and update that.

Update GitHub so that your `plot-data.py` file is in your folder and up-to-date.