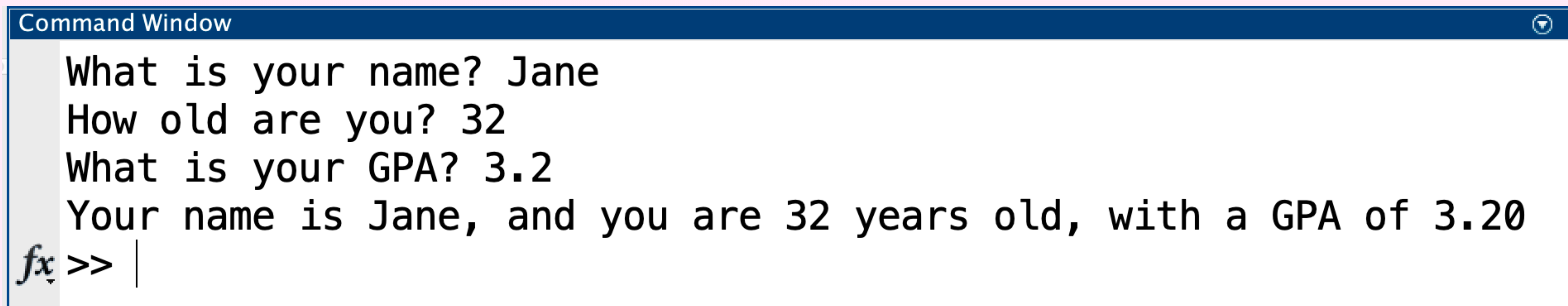# Revision Lab

Week 10-11

ENGG100 - Spring 2024

TASK 1 - Displaying/Formatting Outputs

- Write a script that **asks** the user the below questions:

  - "What is your name?" (String)

  - "How old are you?" (Whole number)

  - "What is your GPA?" (Floating point number formatted to 2 decimal place)

- Then, display the information back to the user in the following format:

```
Command Window
What is your name? Jane
How old are you? 32
What is your GPA? 3.2
Your name is Jane, and you are 32 years old, with a GPA of 3.20
fx >> |
```

TASK 2 - Cell Arrays

- Create a cell array of the below information:

Harry	Janet	Philip	June
34	37	23	12

- Update the marks for June by adding 10 marks (Note: You need to use arithmetic functions to add values to cell arrays)

TASK 3 - Numerical Arrays

- Create a numerical array of the below information:

2	3	6	7	9	8	2	1

- Multiply all the values of the array by 6 and then find the square root of each value

TASK 4 - Loops & Conditions

- Write a script that keeps adding values entered by the user until the user types "stop"

```
Command Window
Please enter a number, otherwise type "stop": 3
Your new value is: 3
Please enter a number, otherwise type "stop": 5
Your new value is: 8
Please enter a number, otherwise type "stop": 2
Your new value is: 10
Please enter a number, otherwise type "stop": 7
Your new value is: 17
Please enter a number, otherwise type "stop": stop
fx >> |
```

TASK 5 - Loops & Conditions

- Write a script that takes 2 numbers (min and max value) from a user and calculates the sum of all the even numbers between that range and displays it back to the user

```
Command Window
  Please enter a min value: 1
  Please enter a max value: 7
  The sum of all the even numbers within your range is: 12
fx >>
```

TASK 6 - Functions

- Create a function **my_max** that takes 5 numbers as an input (**n1, n2, n3, n4, n5**), calculates the largest value out of the 5 numbers (use if and else) statements and returns it as an output (**max_num**)
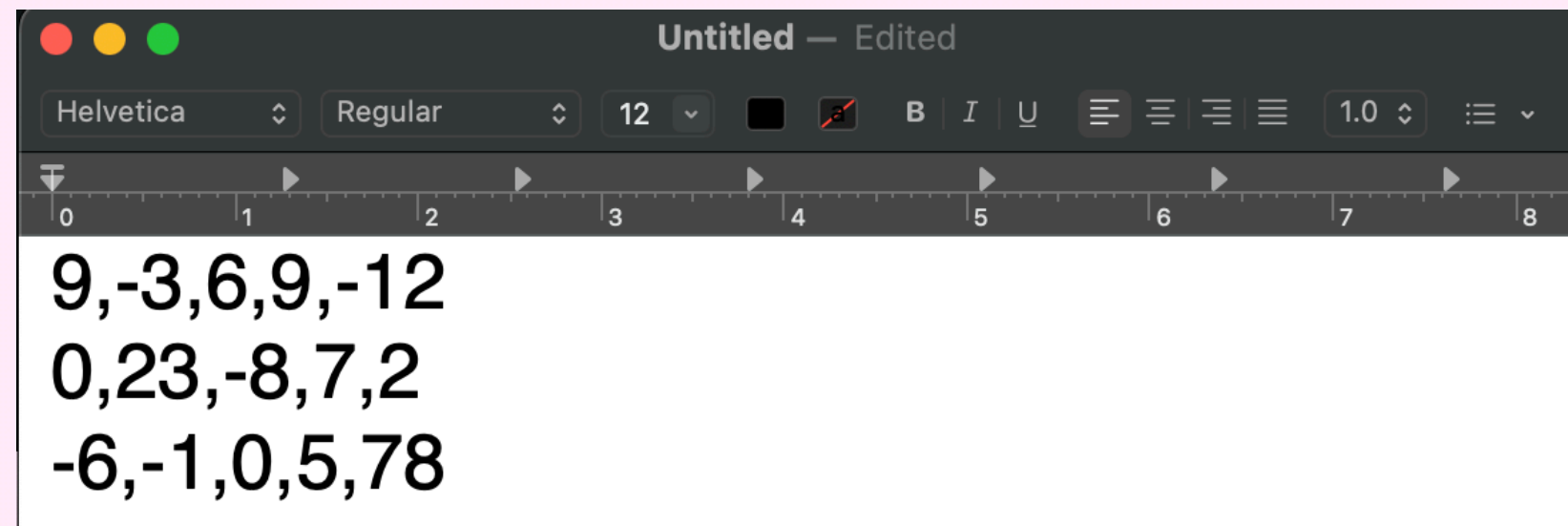
- <u>Test values for the report:</u> my_max(4,0,9,2,3)

Command Window

```
>> my_max(4,0,9,2,3)

ans =

        9
```

TASK 7 - I/O Functions

- On your PC, create a notepad file with the below information and save it as **task_7_example.txt**:

- In MATLAB, retrieve this file in a variable called `textfile` using the `readmatrix` function

- Once imported, change the following values: **textfile(1,2) = 45**, **textfile(1,4) = -7**

- Update all the values of the last row of the matrix to 3

- <u>**For your report:**</u>

  - Screenshot of the code/script, with comments

  - Screenshot of the original imported matrix from the workspace

  - Screenshot of the updated matrix from the workspace

TASK 8 - Plotting Graphs

- **GRAPH 1: 2D SUBPLOT**

  - Define x1 and y1 coordinates from -pi to pi, with a resolution of 0.01

  - Calculate the z1 value as **sin(x) - cos(y)**

  - Plot a 2D graph of x and z1 using plot

  - Format your plot: marker 'o', color 'b' & line style '-'

- **GRAPH 2: 3D SUBPLOT**

  - Define x2 and y2 coordinates from -7 to 7, with a resolution of 0.1

  - Calculate the meshgrid for x2 and y2

  - Calculate the z2 value as **cos(sqrt(x^2 + y^2))**

  - Plot a 3D graph of x2, y2 and z2 using surf

- **For your report:** Make sure you comment your code, add titles to each plot & axes labels. The subplots should be (2,1,*x*)