Problem Set 0 - Getting Started

1 Task 1: Installation

Go through the following installation and getting started steps:

1. **Installation:** Follow the intallation guide for *Anaconda*, *git* and *VSCode.*
   Also sign up for *Github Copilot Pro.*
2. **VSCode+Jupyter:** Create a *Jupyter Notebook* in *VSCode.*
   Copy in the code below and run it.

```
a = 1
b = 2
c = a + b
print(c)
```

3. **More VSCode:** Try out the tips for *VSCode* found here.
   (creating the *Restart-and-Run-All* short cut will be very useful)
4. **Git:** Download the course content from *VSCode* using *git* as explained here.

2 Task 2: Understanding code

Consider the code snippets below. For each, write down your expected outcome on paper. Run the code and check whether you were correct.

- **slicing**

```
x = [0,1,2,3,4,5]
print(x[:2])
print(x[2:])
```

- **references**

```
x = [1,2,3]
y = x
y[-1] = 4
print(x)
```

- **loops - break**

```
for i in range(5):
    if i >= 2: break
    print(i)
```

- **loops - continue**

```
for i in range(5):
    if i == 2: continue
    print(i)
```

- **conditionals**

```
x = 3
if x > 3:
    print('too big')
elif x < 1:
    print('too small')
else:
    print('just right')

```

- **functions and scope**

```
a = 1
def f(x):
    return x+a # a is global variable
def g(x,a=1):
    return x+a # a is local variable
print(f(1))
print(g(1))
a = 2
print(f(1))
print(g(1))
```

- **numpy**

```
import numpy as np
x = np.array ([1,2,3])
y = x
x += 1
print(y)
x[:] = x + 1
print(y)
x = x + 1
print(y)
```

- **classes**

```
class SquareClass:
    def __init__(self,length,width):
        self.length = length
        self.width = width
    def size(self):
        return self.length*self.width
square = SquareClass(2,2)
print(square.size())
```

3 Task 3: Try Copilot

1. **Automatic:** Type in the code below and wait for the copilot to suggest the next lines of code.

   Accept: Tab

   Reject: Esc

```
import numpy as np
x = np.array([2,5,10,2,4])
# sort and print
```

2. **Chat:** You can toggle the right hand side chat window by pressing Ctrl+Alt+B. Try this and then write in the chat: "plot x vs log(x)".