

# PROBLEM SET 0: GETTING STARTED

**Installation:** Go through the following installation and getting started steps:

1. **Installation:** Follow the [intallation guide](#) for *Anaconda*, *git* and *VSCode*.
2. **VSCode+Jupyter:** Create a *Jupyter Notebook* in *VSCode*.  
Copy in the code below and run it.

```
1 a = 1
2 b = 2
3 c = a + b
4 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](#).

**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**

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

- **references**

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

- **loops - break**

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

- loops - continue

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

- conditionals

```
1 x = 3
2 if x > 3:
3     print('too big')
4 elif x < 1:
5     print('too small')
6 else:
7     print('just right')
8
```

- functions and scope

```
1 a = 1
2 def f(x):
3     return x+a # a is global variable
4 def g(x,a=1):
5     return x+a # a is local variable
6 print(f(1))
7 print(g(1))
8 a = 2
9 print(f(1))
10 print(g(1))
```

- floating points

```
1 import numpy as np
2 print(0.1 + 0.2 == 0.3)
3 print(0.5 + 0.5 == 1.0)
4 print(np.isclose(0.1+0.2,0.3))
5 print(np.isclose(1e-200*1e200*1e200*1e-200,1.0))
6 print(np.isinf(1e-200*(1e200*1e200)*1e-200))
7 print(np.isclose(1e200*(1e-200*1e-200)*1e200,0.0))
```

- **numpy**

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

- **classes**

```
1 class SquareClass:
2     def __init__(self,length,width):
3         self.length = length
4         self.width = width
5     def size(self):
6         return self.length*self.width
7 square = SquareClass(2,2)
8 print(square.size())
```