Goals for this hour

- A quiz
- Do a few exercises.
- Play around.
- You can work alone, in pairs, in triples,...
Consider the following code:

class Point2(object):
    def __init__(self, x, y):
        self.x = x
        self.y = y

    def dist2(self):
        return self.x**2 + self.y**2

p = Point2(2, 2)
print p.dist2()
p.y = 0
print p.dist2()
print p.x
print p.y

This code prints four numbers. What are they:

a  8, 8, 2, 0
b  8, 8, 2, 2
c  8, 4, 2, 0
d  8, 4, 2, 2
Write a piece of code that writes the string ”Hello World” to a file called ”hello”.

What happens if you use your code above when a file called hello already exists?
What does the following code do?

```python
from random import choice
print(choice(range(30)))
```

For this, you might want to read the Python documentation.
You will sometimes see the following programming idiom:

```python
import numpy as np
mystery = np.uint32(-1)
```

Remember:

- `uint32` is short for **unsigned integer of 32 bits**.
- Unsigned means that it should be interpreted as a positive number.
- So, `mystery` cannot have the value $-1$!

What is the value of `mystery`? Why would we be interested in this particular value? (Hint: think of its bit representation).
What is a text file?

1. A file with an extension TXT (for example file.txt)
2. A file whose content can be interpreted as printable characters.
4. A file with text in a human language (like English).
Factorial

Write a factorial function.

\[ N! = N \cdot (N - 1) \cdot (N - 2) \cdots 1 \]
Factorial

Write a factorial function.

\[ N! = N \cdot (N - 1) \cdot (N - 2) \cdots 1 \]

\[ N! = \begin{cases} 
1 & \text{if } N = 0 \\
N \cdot (N - 1)! & \text{otherwise.} 
\end{cases} \]
Write a factorial function.

\[ N! = N \cdot (N - 1) \cdot (N - 2) \cdots 1 \]

\[ N! = \begin{cases} 
1 & N = 0 \\
N \cdot (N - 1)! & \text{ow.} 
\end{cases} \]

def factorial(n):
    assert n >= 0, 'factorial is only for n >= 0'
    if n == 0: return 1
    return n * factorial(n-1)
Fibonacci

Write a Fibonacci function

\[ F_0 = 1 \]
\[ F_1 = 1 \]
\[ F_{n+2} = F_{n+1} + F_n \]