

# Python

## Kom i gang

Installér et passende Python setup. Der findes masser af guides og hjælp på nettet.

Jeg vil anbefalde at hente *PyCharm Community Edition*

<https://www.jetbrains.com/pycharm/download/other.html>

Vil man starte med at lege med Python uden at installere software lokalt, findes der services som f.eks.

<https://www.programiz.com/python-programming/online-compiler/>

Start med at lave det klassiske Hello World

```
print ("Hello World from Python")
```

Definér en funktion med to argumenter og én retur værdi

```
# Import the sqrt function from the math module to calculate the square root.
from math import sqrt

# Calculate the length of the hypotenuse using the Pythagorean theorem.
def hypotenuse(a_val, b_val: int) -> float:
    c_val = sqrt(a_val**2 + b_val**2)
    return c_val

# Prompt the user to input the lengths of the shorter triangle sides.
print("Input lengths of shorter triangle sides:")

# Read and convert the input for side 'a' to a floating-point number.
a = float(input("a: "))

# Read and convert the input for side 'b' to a floating-point number.
b = float(input("b: "))

c = hypotenuse(a, b)
# Print the calculated length of the hypotenuse.
print("The length of the hypotenuse is:", c)
```

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## Exercise: Geometric Shapes (vores første OOP program i Python)

Define a base class called Shape.

- The Shape class should have a method called area that returns 0.0.
- The Shape class should also have a method called perimeter that returns 0.0.

Create two subclasses: Circle and Rectangle.

- Both Circle and Rectangle should inherit from Shape.

Circle:

- The Circle class should have a constructor that takes the radius as a parameter.
- It should override the area method to calculate and return the area of the circle.
- It should also override the perimeter method to calculate and return the circumference of the circle.

Rectangle

- The Rectangle class should have a constructor that takes the length and width as parameters.
- It should override the area method to calculate and return the area of the rectangle.
- It should also override the perimeter method to calculate and return the perimeter of the rectangle.

The main part of the script:

1. Create an instance of the Circle class with a radius of 5.0.
2. Print the area and perimeter of the circle.
3. Create an instance of the Rectangle class with a length of 4.0 and a width of 6.0.
4. Print the area and perimeter of the rectangle.

**Make sure to use appropriate data types and formatting for your calculations.**

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## Installer og brug pakker

Python miljøet er stærkt i form af pakker og udvidelser til alt muligt.

Det er vigtigt at have styr på hvilke pakke og måske endnu hvilke versioner man bruger.

Eksempel:

```
#TO_DO
```