

Python

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What is Python?

Python is an High Level Object Oriented Programming Language with dynamic semantics. Includes Dynamic Typing and dynamic binding.



High Level Language?

Python is a high level language because it consists of code that is really easy to understand. Also high level languages are known to be really similar to human languages thus making it easier to understand what each line of code does.

Dynamic Typing

Enables the programmer to pass in different types of variables into functions. Whereas in other languages the parameter types for functions are set and only those specified types can be passed into the function.

Object Oriented Programming

Object Oriented Programming is a programming model that is organized by objects rather than actions, and data rather than logic

Syntax In Python

Variables

No identifier needed, just create a variable and whatever you make it equal to it will become that variable type

Types	Declaration
String	word = "Hello"
Integer	number = 1
Double	doubleNumber = 1.5
Char	character = 'a'

Decisions

If...Else...Elif

- Checks if the statement is true, if true then runs the code inside. If not it continues on to the next.

Example:

```
If<Condition>:
    <Statement>
Elif<Condition>:
    <Statement>
Else:
    <Statement>
```

Loops

A code that repeats for a given number of times:

For Loop:

The following loop will repeat 11 times

```
for i in range (0,10):
    <Statements>
```

While Loop:

The following loop will loop if condition is true.
To break out of loop you can add break

```
While <Condition>:
    <Statement>
```

Functions

Also known as methods, Functions help condense code down to avoid repeating code.

Example:

This function takes in a variable and then prints out the name. The parameter can be any type of variable because of the dynamic typing.

```
def (name):
    print ("Hello My Name is" + name)
```

Comments

Comment

"""

Block Comments

Can use multiple Lines!

"""

Arrays

An array is a series of data.

Example:

```
arrayOfString [] =
{"Hello", "Goodbye"}
Where arrayOfString[0] =
"Hello" and
arrayOfString[1] =
"Goodbye"
```

Operators

Operators are the constructs which can manipulate the value of operands.

Comparison Operators: ==, !=, <, >, <=, >=

Arithmetic Operators: +, -, *, /, %, **, //

Assignment Operators: =, +=, -=, *=, /=, %=, **=, //=

Basic Graphic User Interface

Process

Step 1: Import tkinter

```
from Tkinter import *
```

Step 2: Make a tkinter frame

```
frame = Tk()
```

Step 3: Add Label

```
label = Label(frame, text="This is a label")  
label.pack()
```

Step 4: Add Button

```
button = Button(frame, text="This is a button")  
button.pack()
```

Step 5: Make Button Do Something

First Make a Function:

```
def pressed():  
    Label(frame, text="Button Pressed").pack()
```

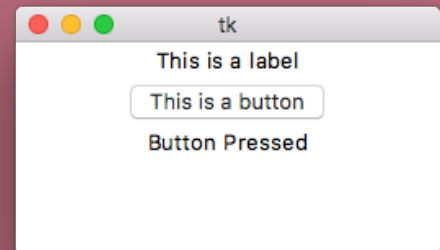
Then add command to the button code above:

```
button = Button(frame, text="This is a button", command=pressed())  
button.pack()
```

Step 3: Show the frame

```
frame.mainloop()
```

Output For Program:



Sample Code

```
"""  
Hello World  
"""  
import tkinter as tk  
class HelloWorld:  
    if __name__ == "__main__":  
        tkMessageBox.showinfo("Say Hello", "Hello World")
```

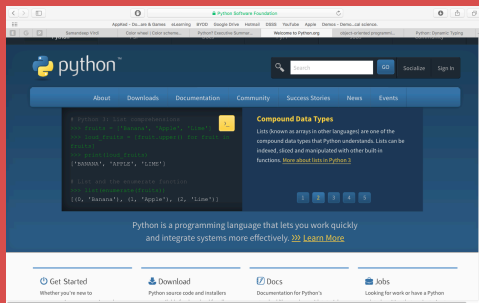
This program imports
tkMessageBox.

Then in the main method, a
tkMessageBox is made with the
two parameters. The first
parameter is the title and
the second parameter is what
it will actually say in the
dialog box.

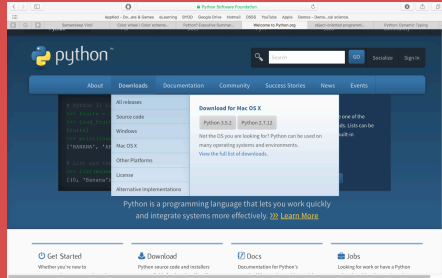
WARNING: An empty tk window
will also appear when this
program is launched!

How Install & Use Python

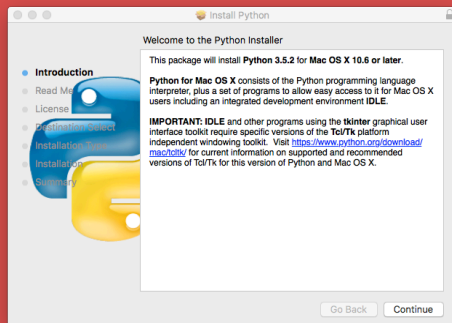
Step 1: Go To python.org



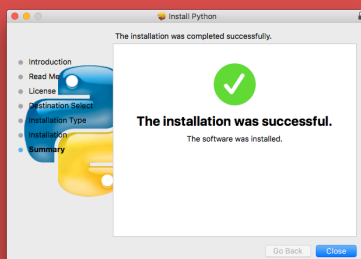
Step 2: Go to Downloads, Choose Python 3.5, and download the file for your operating system



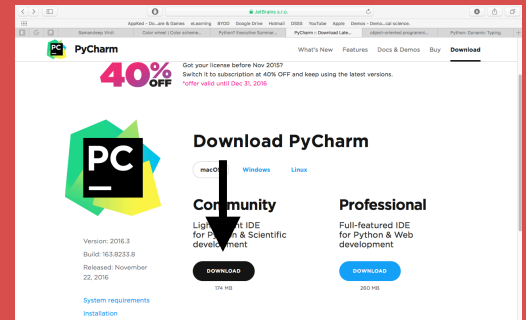
Step 3: Open The Installer



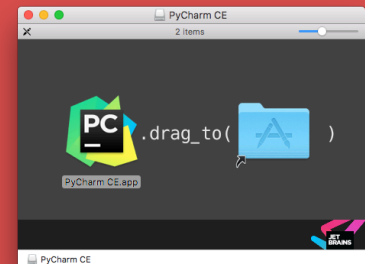
Step 4: Press Continue, Agree to the terms, Choose the drive to download it in, press install!



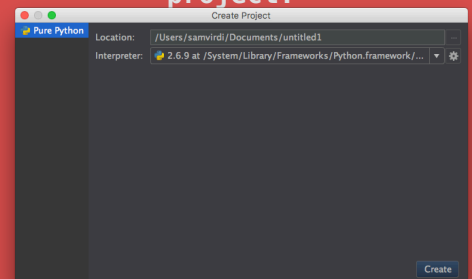
Step 5: Go to jetbrains.com/pycharm/download/. Click Download Community Version



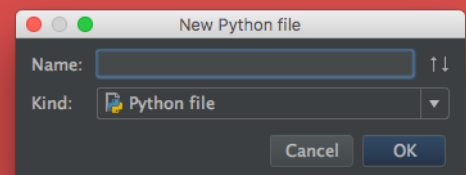
Step 6: Go to downloads and extract the file. The application will be there!



Step 7: Open PyCharm, Go to file, New Project and create your project.



Step 8: Go To File, New, Python File and create the file.



Applications

Websites

When it comes to developing websites, Python is great at handling http, but when you want more, there is Flask, Pyramid, and Django. Flask, Pyramid, and Django are web frameworks, which take care of much of the hassle of web development.



Gaming

In the gaming industry, Python is mainly used as a scripting language. For example, all the behaviours in The Sims games are scripted in Python. Python is good for low end games, but isn't good enough for the performance intensive parts of the game engines for higher end games.



Animation

In animation, companies use Python to script their animation production system. Also, is used to create scripts to facilitate moving images and data in and out of sequences. For example, Walt Disney uses python for 3rd party tools for the visual effects, which come with a Python API.



Universities & Colleges

Universities

Universities That Offer Python



University of Toronto:

Course Name: Software Design

Course Code: CSC 207



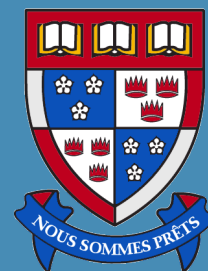
University of Waterloo:

Course Name: Intro to 3D Graphics

Course Code: CS488/688

Other Universities :

Wilfred Laurier
Simon Fraser
Laval
University of Alberta
McMaster



Bibliography

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