Python !?

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Who is using Python ?

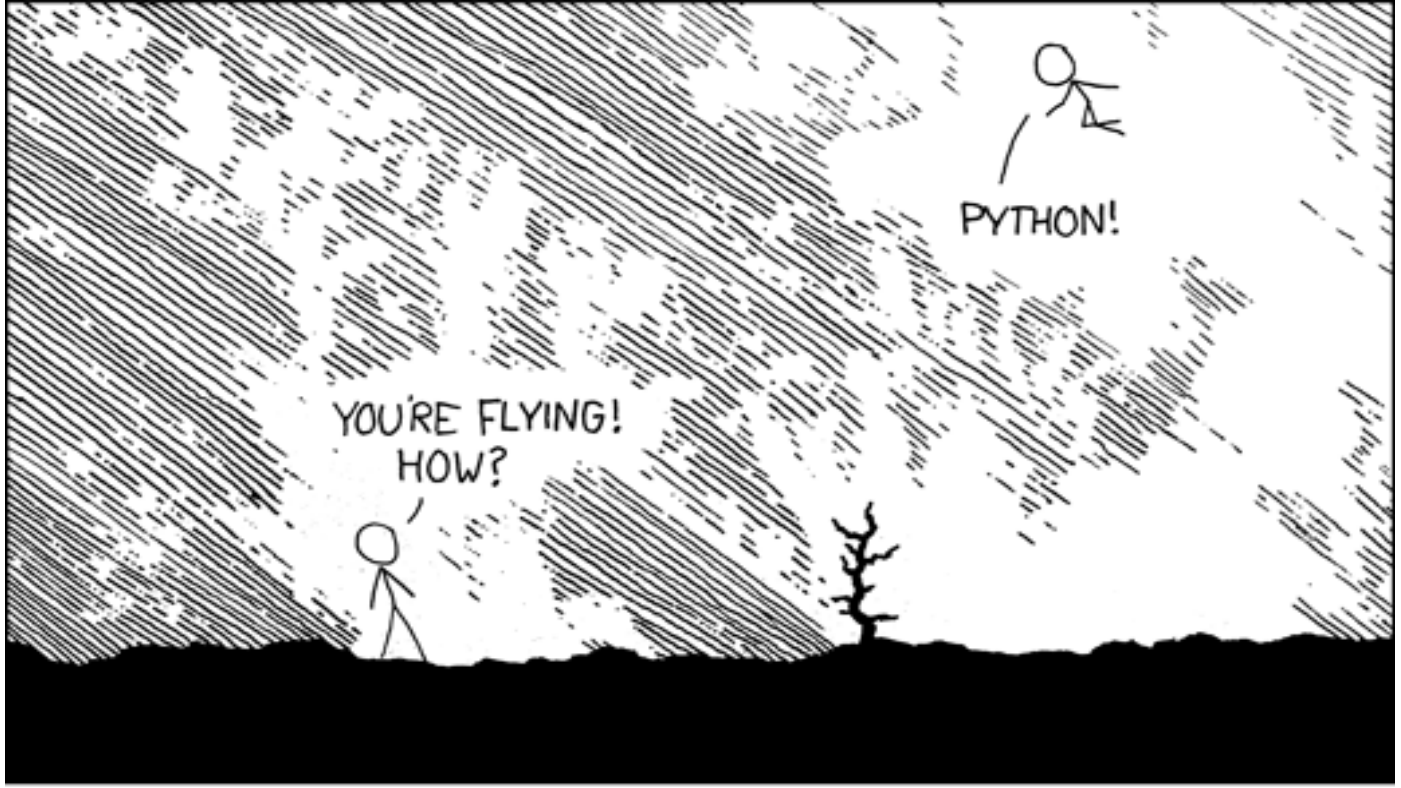
- YouTube
- Google
- Dropbox
- Yahoo Maps, Yahoo Groups
- Walt Disney Feature Animation
- NASA
- Nokia
- IBM
- CIA
- Disqus
- and many more.. [1]

Where does Python work ?

- works on Windows, Linux and Mac
- also works on Nokia S40 and S60
- you can execute Python on Android using SL4A
- Python interpreters can be found for iOS devices also.

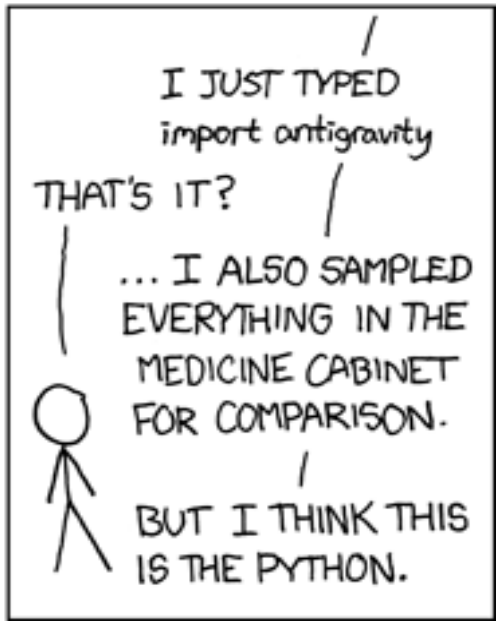
Why Python ?

- significantly reduces both development time and source code size
- Python programs are typically:
  - 3-5 times shorter than equivalent Java programs
  - 5-10 times shorter than equivalent C++ programs
- excellent language for prototyping


PYTHON!
YOU'RE FLYING! HOW?


I LEARNED IT LAST NIGHT! EVERYTHING IS SO SIMPLE!
HELLO WORLD IS JUST print "Hello, world!"


I DUNNO... DYNAMIC TYPING? WHITESPACE?
COME JOIN US! PROGRAMMING IS FUN AGAIN! IT'S A WHOLE NEW WORLD UP HERE!
BUT HOW ARE YOU FLYING?


I JUST TYPED import antigravity
THAT'S IT?
... I ALSO SAMPLED EVERYTHING IN THE MEDICINE CABINET FOR COMPARISON.
BUT I THINK THIS IS THE PYTHON.

Source: xkcd

About Python

- created by Guido van Rossum
- named after BBC show ‘Monty Python’
- first version written in 1989
- considered 8th most popular language[4]
- won the 2007 and 2010 “Programming Language of the Year”

Why Python ?

- free and open source
- cross platform
- it has a clear and readable syntax
- rapid application development
- its “batteries included” with a great “Standard Library”
- works great with C, Java, .NET and other technologies
- automatic garbage collection
- and many more..[2]

Why not Python ?

- often just considered as a scripting language
- slower than compiled languages
- However, slower parts can be compiled to C, so that they are fast !

Python for Learning ?

- Everybody is using to teach programming
  - Udacity
  - edX
  - Khan Academy
  - MIT

“Udacity’s courses so far have been using Python because it is overall, ***the most convenient language for teaching and learning****. The* ***natural syntax*** *means students* ***spend less time*** *grokking code than with terser languages.”*

-- Chris Chew, Software Engineer, Udacity Inc.[3]

What can I do with Python ?

- Web development
- Database Access
- Desktop GUIs
- Scientific and Numeric computing
- Network programming
- Games and 3D graphics
- … sky is the limit !

Enough talking !!

SHOW ME THE CODE !

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Hello World

```
print(“Hello World”)
```

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Hello World

C++

```
#include <iostream>
using namespace std;
int main (int argc, char** argv)
{
  cout << "Hello World!";
  return 0;
}
```

Java

```
public class HelloWorld {

    public static void main(String[] args) {

System.out.println("Hello World");
    }
}
```

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Reading a file

```
for line in open(“filename”):
    print(line)
```

Reading a file

C++

```
#include <iostream>
#include <fstream>
#include <string>
using namespace std;
int main () {
  string line;
  ifstream myfile (”filename");
  if (myfile.is_open())
  {
    while ( myfile.good() )
    {
      getline (myfile,line);
      cout << line << endl;
    }
    myfile.close();
  }
  else cout << "Unable to open file";
  return 0;
}
```

Java

```
import java.io.*;
class FileRead
{
 public static void main(String args[])
  {
  try{
  FileInputStream fstream = new
FileInputStream("textfile.txt");
  DataInputStream in = new
DataInputStream(fstream);
  BufferedReader br = new BufferedReader(new
InputStreamReader(in));
  String strLine;
  while ((strLine = br.readLine()) != null)   {
  System.out.println (strLine);
  }
  in.close();
    }catch (Exception e){
  System.err.println("Error: " + e.getMessage());
  }
  }
}
```

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Swapping variables

```
a, b = b, a
```

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Computing list of squares

```
squares = [x**2 for x in range(10)]
```

That gives you an idea

Lets look at what all things Python offers

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Data Types

- None
  - None
- Number
  - int
  - long
  - float
  - complex
  - bool (True, False)
- Sequences
  - str
  - unicode
  - basestring
  - list
  - tuple

Data Types

- Mapping types
  - dict
  - set
  - frozenset

Demos

- Lists
- any
- all
- sum

TO BE CONTINUED…

DURING THE HANDS ON LAB

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References

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4. http://www.tiobe.com/index.php/content/paperinfo/tpci/index.html