

Analytics, Python

Descriptive

Predictive

Prescriptive

What has happened?

What could happen in
the future ?

What should a
business do ?



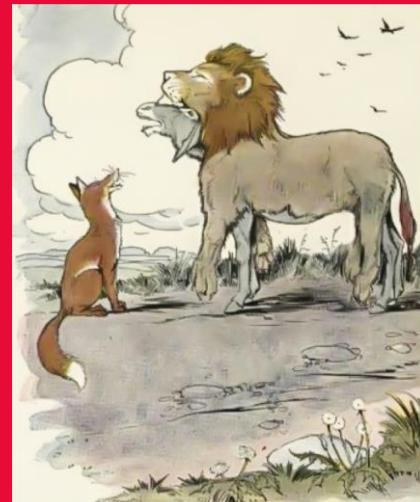
Descriptive



Creatures	Count	Place	Time	Event
Deer	2	North	Morning	Prey
Zebra	1	South	Evening	Prey
Deer	1	North	Noon	Escaped



Day - 1



Descriptive Example

- Summarizing past events such as **regional sales, customer attrition, or success of marketing campaigns.**
- Tabulation of social metrics such as **Facebook likes, Tweets, or followers.**
- Reporting of general trends on **product specification.**





Predictive Analytics Example

- Identify customers that are likely to abandon a service or product.
- Send marketing campaigns to customers who are most likely to buy.
- Improve customer service by planning appropriately.







Prescriptive Analytics Example

- Google's self driving car
- Robots
- Flying drones

How can we

Analytics

Human Input

Descriptive
What happened?

Diagnostic
Why did it happen?

Predictive
What will happen?

Prescriptive
What should I do?

Data

Decision

Action

Decision Support

Decision Automation

Difficulty

Supervised

Unsupervised

Reinforcement

Labelled Data
Predict the future outcome

No Labels
Find hidden structure

Learn from series of action
Decision process

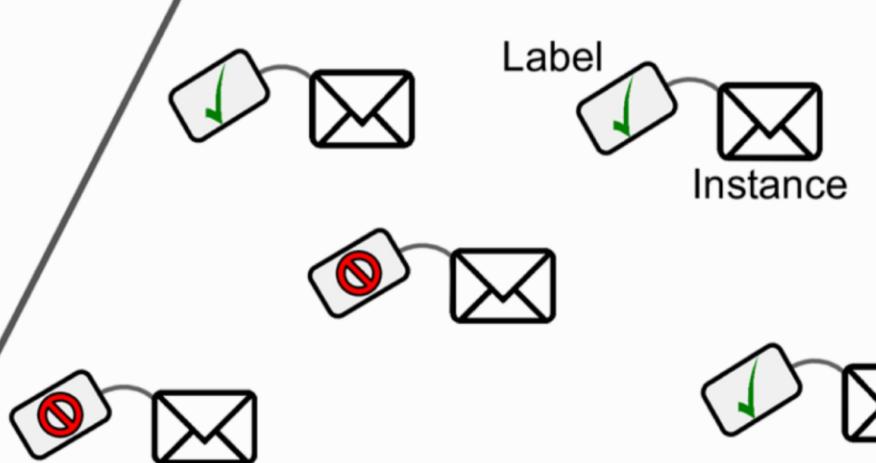


?



Spam or Ham?

Training set



Label

Instance

New instance



Unsupervised Example

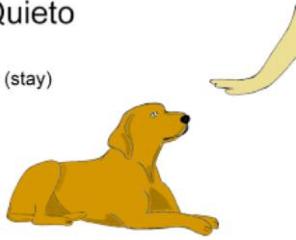


- Google photos segment
- Customer segmentation in marketing



Quieto

(stay)

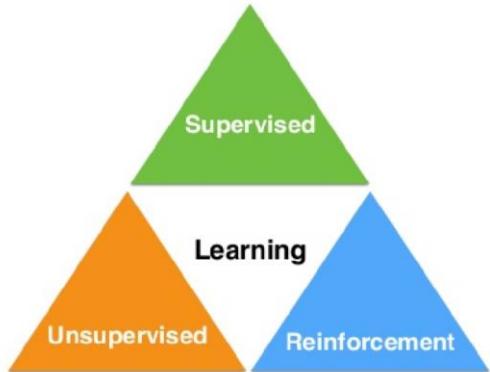




Reinforcement Learning Example







- Labeled data
- Direct feedback
- Predict outcome/future

Regression Systems

- ! Ticket volume forecasting
- ! Sales forecasting

Classification Systems

- ! Email spam detection
- ! Intent detection
- ! Churn prediction
- ! Ticket Field prediction
- ! Lead scoring

Clustering Systems

- ! Customer segmentation
- ! Grouping Similar issues

Recommender Systems

- ! Kbase Suggestion
- ! Friend Suggestion in Fb, Linkedin
- ! People who bought this also bought...

Reinforcement Systems

- ! Game playing
- ! Drone flying

Real AI experts & practitioners to follow, to cut out noise



D J Patil
US Chief Data Scientist



Andrew N G
Chief Scientist at Baidu & Co-founder of Coursera



Daphne Koller
Expert at Probabilistic Graphical Models & Co-founder of Coursera



Yann LeCun
Director of Facebook AI Research



Jeff Dean
Co-creator of Tensorflow, MapReduce & Senior fellow in Google Brain



Fei-Fei Li
Director - Stanford AI Lab
Chief Scientist AI/ML - Google Cloud



Yoshua Bengio
Pioneer in ANN & Deep Learning



Peter Norvig
Director of Research at Google



Geoff Hinton
Godfather of Neural Networks



Sebastian Thrun
Brain behind Google's self driving cars & Co-founder of Udacity



Python

General purpose high level programming language

Who gifted Python?

Guido Van Rossum

1989

National Research institute in Netherland

Official Birthday - Feb 20 1991




```
1 class
2 {
3     public static void main(String[] args)
4     {
5         System.out.println("Hello World!");
6     }
7 }
8
```

```
>>> a,b=10,20
>>> print(a+b)
30
>>> a,b,c,d,e=10,20,30,40,50
1
```

Python 3.6.3 Shell

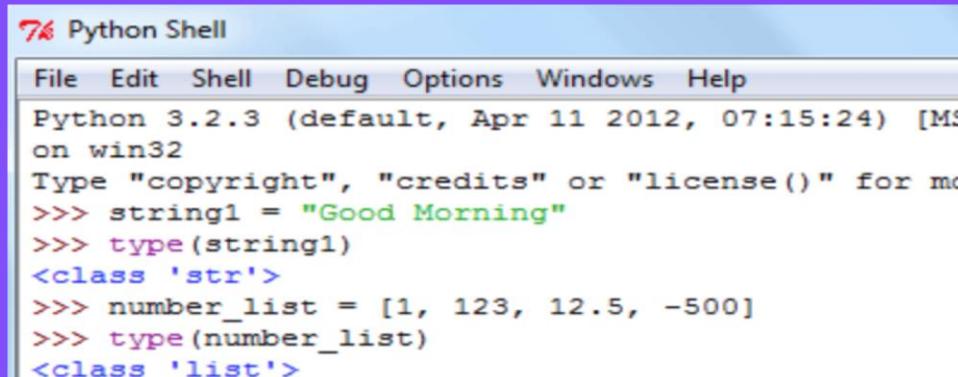
File Edit Shell Debug Options Window Help

Python 3.6.3 (v3.6.3:2c5fed8, on win32
Type "copyright", "credits" or
>>> print("Hello world")
Hello world
>>> |

Statically typed programming - C, Java

```
//Program entry
public static void Main(string[] args0)
{
    int a, b, result; //Integer variables
```

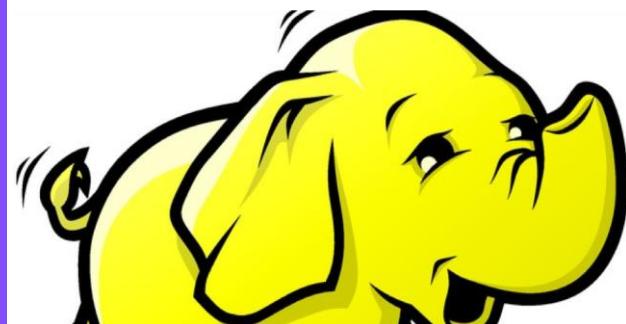
Dynamically typed programming - Python



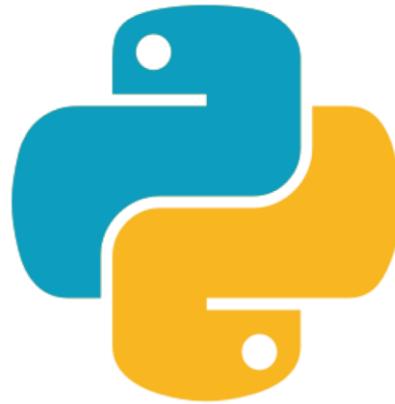
The screenshot shows a Python Shell window titled "Python Shell". The window has a menu bar with File, Edit, Shell, Debug, Options, Windows, and Help. The main area displays the Python interpreter's prompt (>>>) and some sample code demonstrating dynamic typing:

```
Python 3.2.3 (default, Apr 11 2012, 07:15:24) [MSC on win32]
Type "copyright", "credits" or "license()" for more information
>>> string1 = "Good Morning"
>>> type(string1)
<class 'str'>
>>> number_list = [1, 123, 12.5, -500]
>>> type(number_list)
<class 'list'>
```

HADOOP



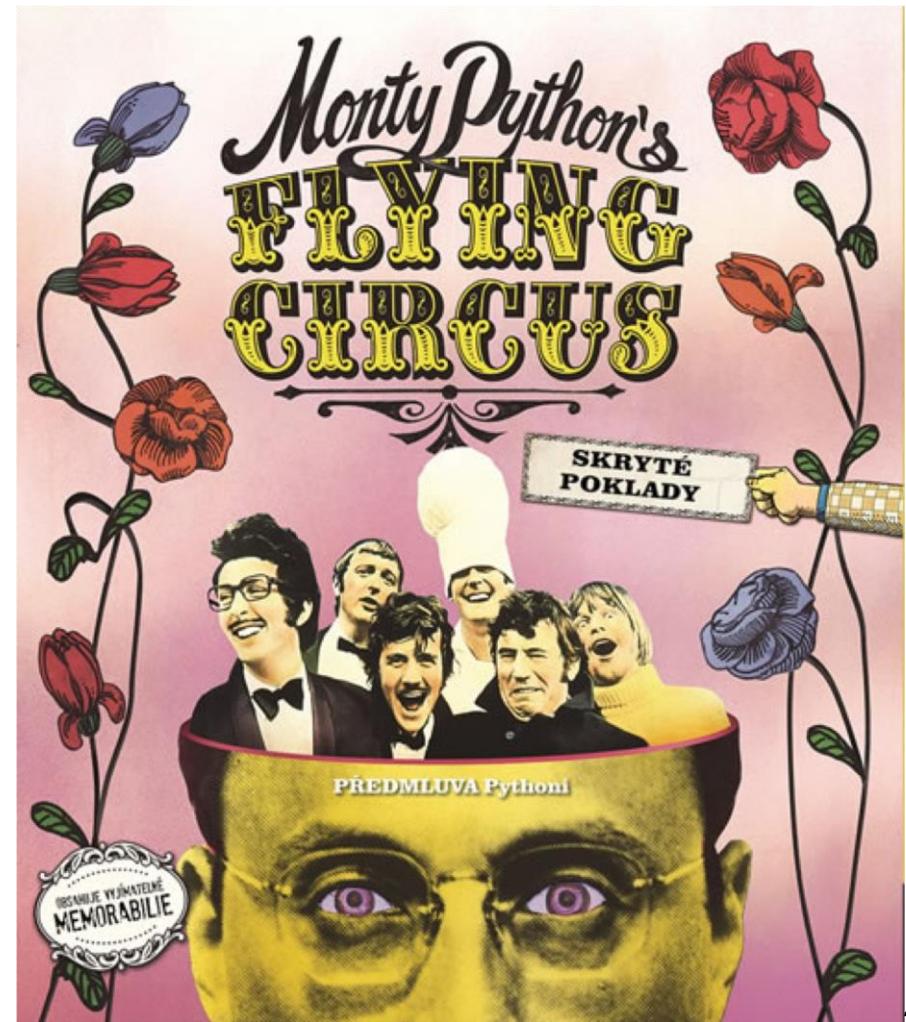
PYTHON



Why the name Python?

Monty Python circus

BBC from 1969 -1974



Borrowed all the concept

- Functional programming from C
- OOPs from C++
- Scripting from Perl and shell script
- Modular features from Modula 3
- Syntax from C and ABC Language

10. Simple & Easy To Learn



Open Source

```
a=3  
b=5  
Sum=a+b
```

High-level



Interpreted



Large community

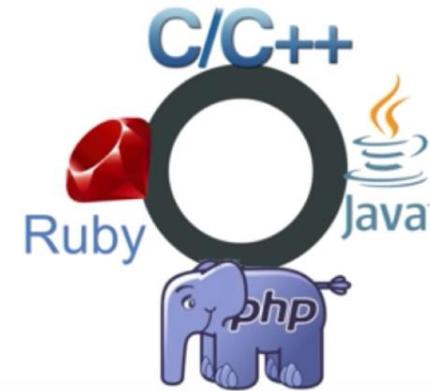
Java

```
public class HelloWorld {  
    public static void main(String[] args) {  
        System.out.println("Hello, world");  
    }  
}
```

Python

```
print("Hello, world")
```

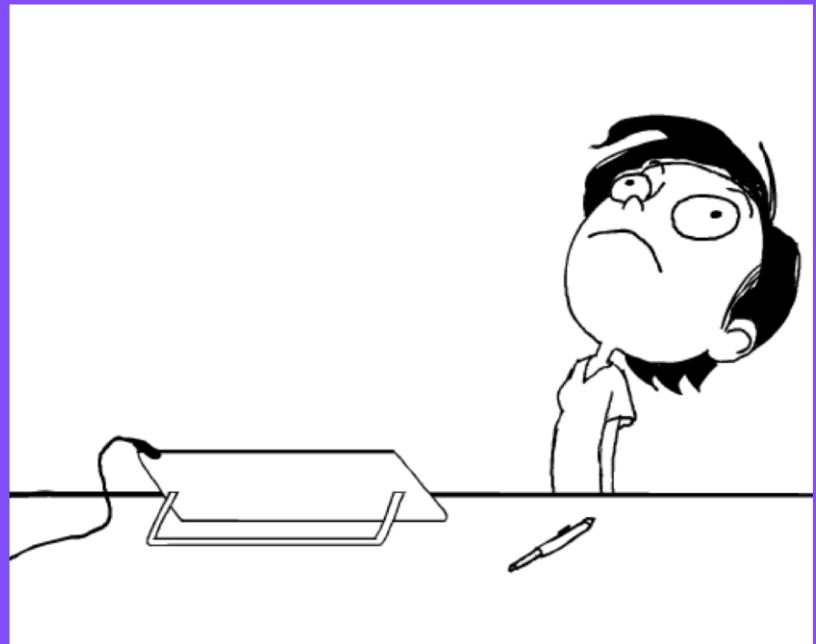
It's that **SIMPLE!**



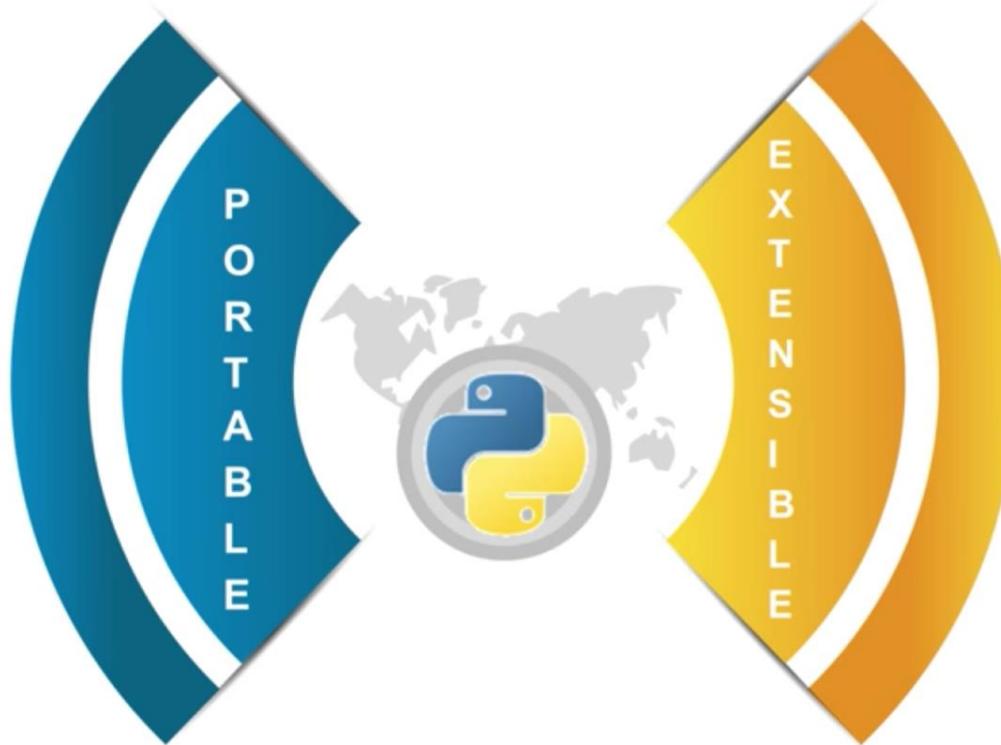
Programmer



Non Programmer



9. Portable & Extensible



8. Web Development



- Develop web applications
- Scrape websites

Frameworks

django

 Flask

 Pylons™

WEB2PY

7. Artificial Intelligence

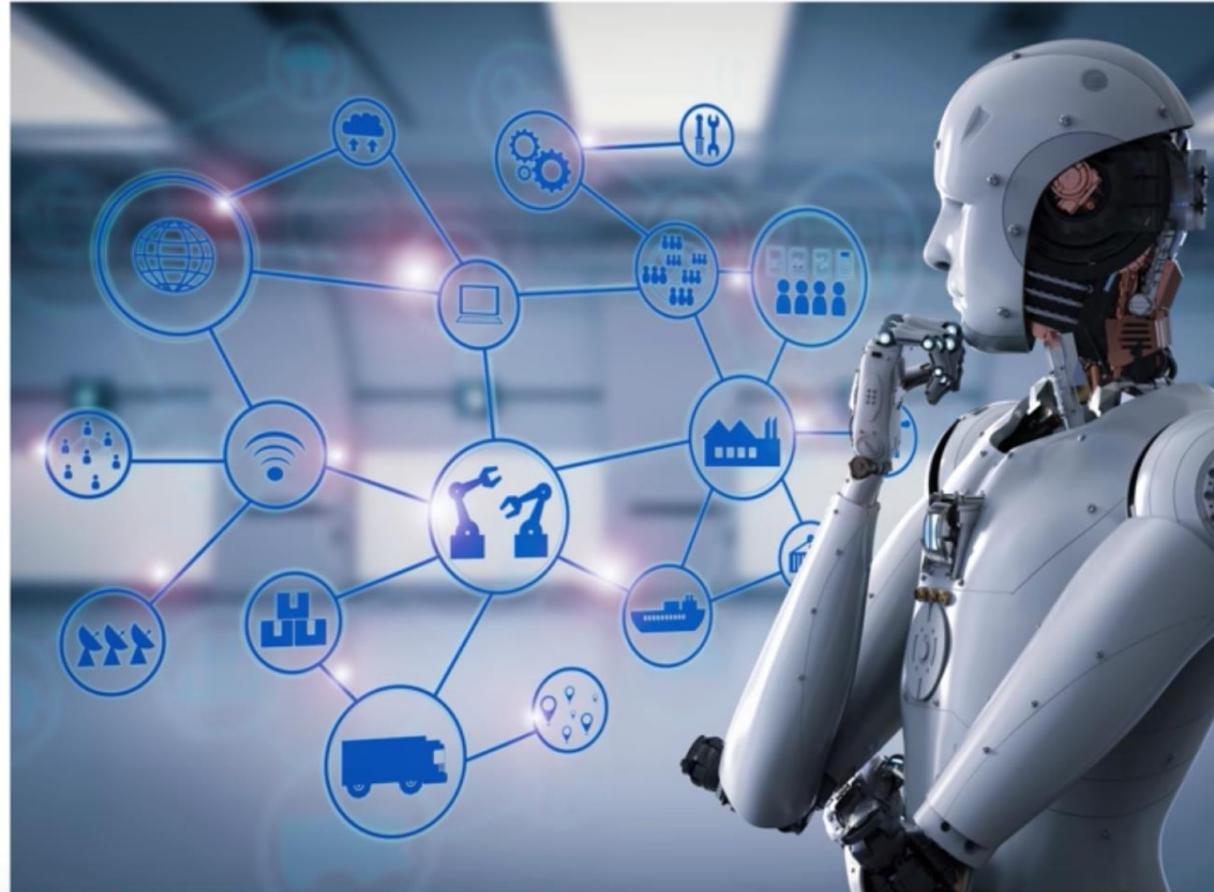
Libraries

 Scikit-learn

 Keras

 Tensorflow

 OpenCV



6. Computer Graphics

➤ Graphical User Interface

➤ Desktop applications

➤ Game development

Libraries

TK
Tkinter

Jython

wxPython
Cross-Platform GUI Library

Pygame



5. Testing Frameworks

- Python supports testing with cross-platform & cross-browser
- Built in testing framework which covers debugging time and fastest workflows

Tools



Splinter

Framework



4. Big Data

- Python handles **BIG DATA!**
- Python supports parallel computing
- You can write **MapReduce** codes in Python

Libraries



3. Scripting: Automation



- It is the most popular **scripting** language in the industry
- **Automate** certain tasks in a program
- They are **interpreted** rather than being compiled



Scripts



Machine reads
& interprets



Runtime error
check

2. Data Science



- Well-suited for data **manipulation & analysis**
- Deals with **tabular** data with heterogeneously-typed columns
- Arbitrary **matrix** data
- Observational/ **statistical** datasets

Libraries



NumPy



Pandas

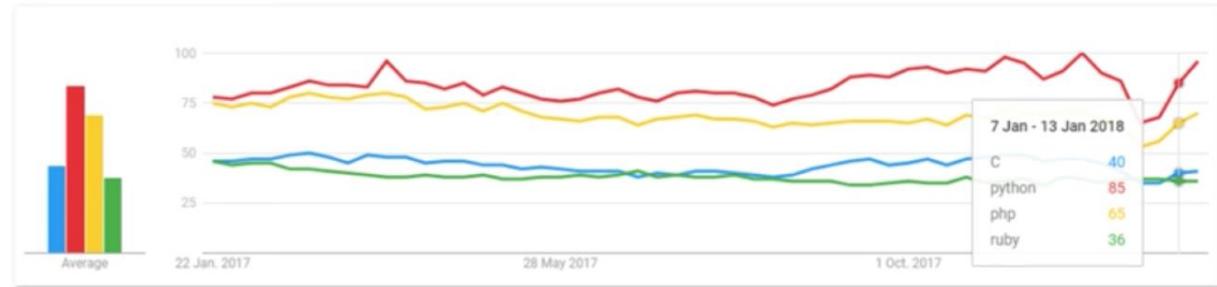


matplotlib

seaborn

1. Popularity & High Salary

USD \$116,028



Big Giants

Google

YouTube

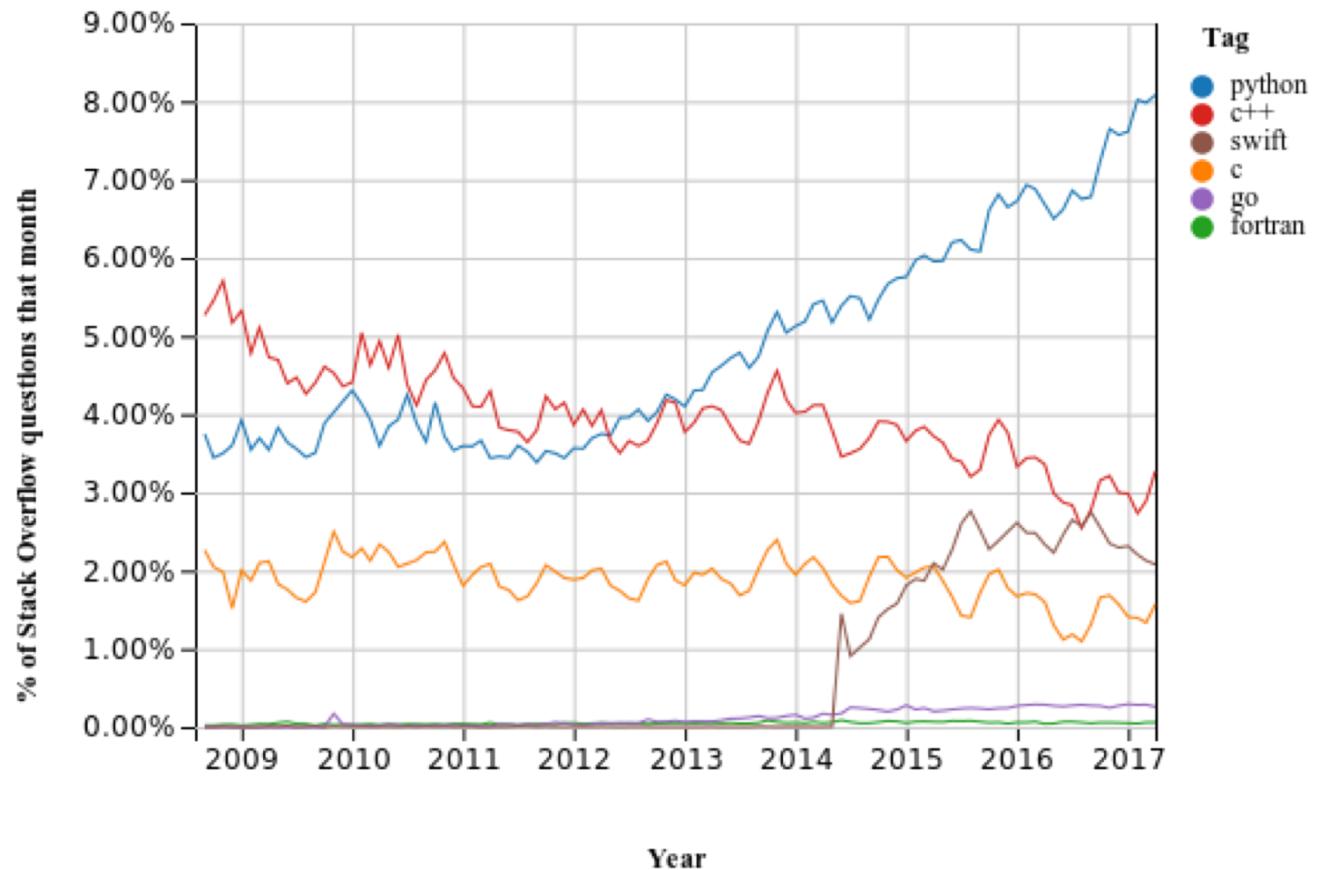


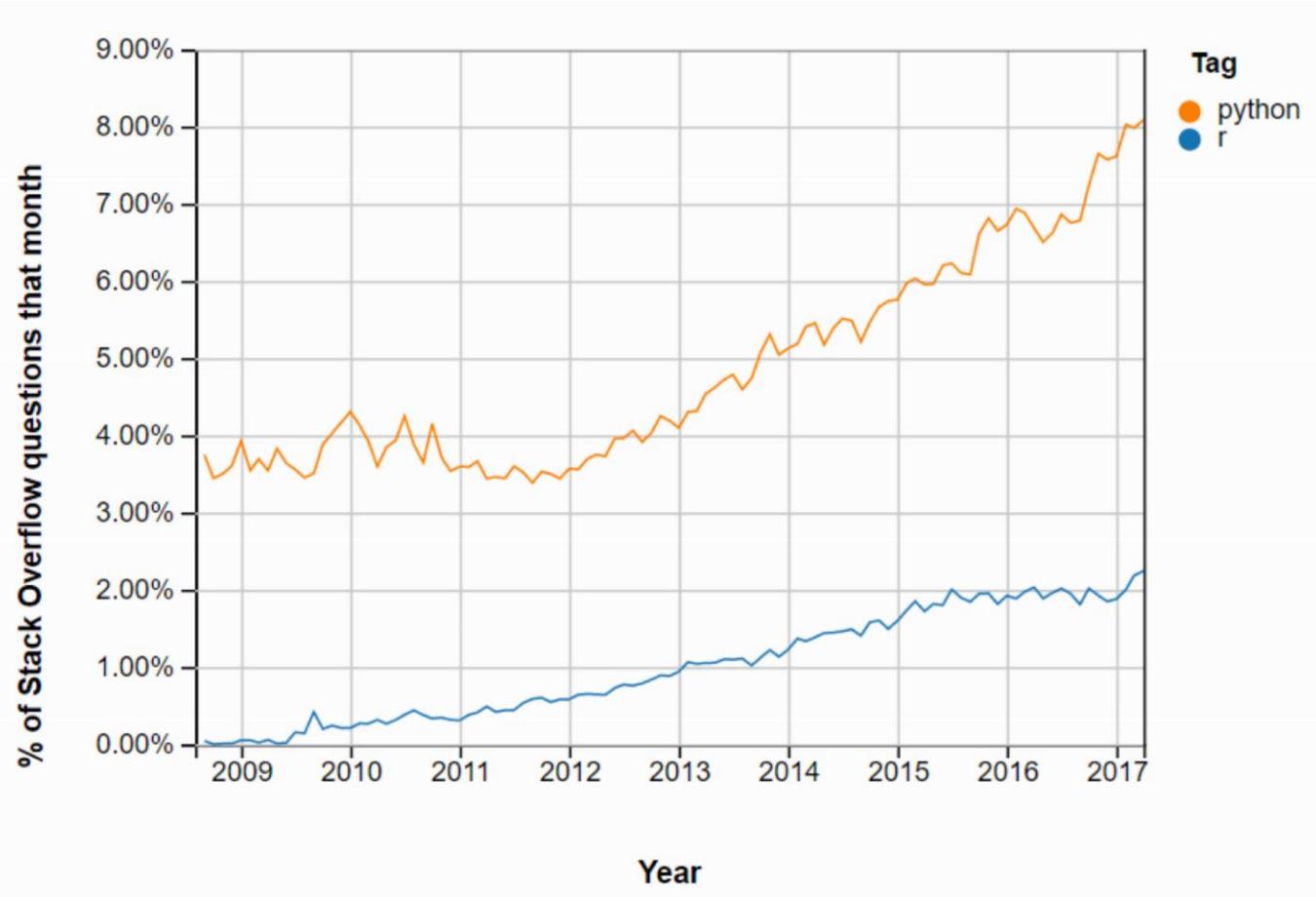
IBM



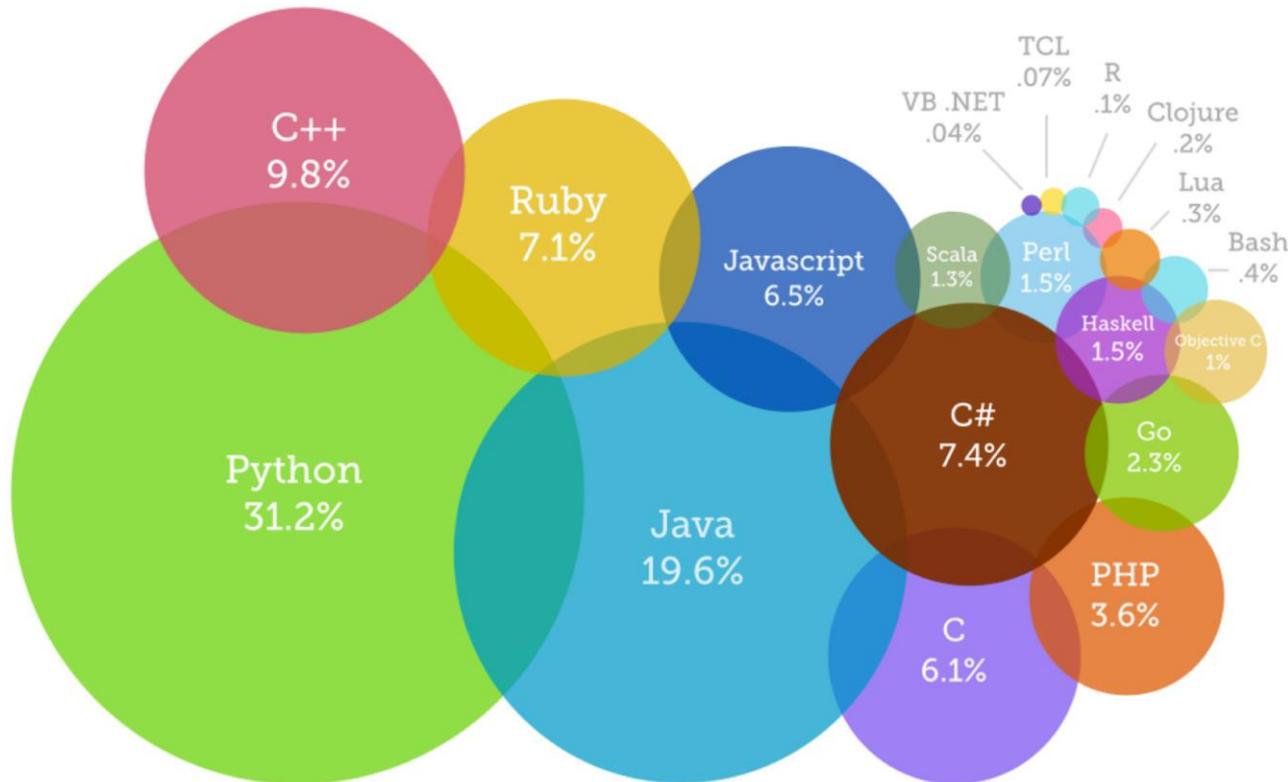
facebook.







Most Popular Coding Languages of 2015



Which companies using python?

Who all are using Python?



YAHOO!

Google

YouTube



reddit

BitTorrent™

IBM

Dropbox



redhat

CANONICAL

NETFLIX

Quora



Flavours of Python



- CPython – Cython
- JPython – Jython
- IronPython
- PyPy - Performance using JIT
- RubyPython
- Anaconda
- Stackless(Python for concurrency)

Version of Python

- Python 1 introduced in Jan 1994
- Python 2.0 introduced in Oct 2000
- Python 3.0 introduced in Dec 2008

Any new version should provide support for old version program
Exception in python

Python 3 is not backward compatibility with Python 2

Python 2 support is not supported after 2020

Disadvantages of Python

- Weak in mobile computing
- Get slow in speed
- Run time errors
- Underdeveloped Database access layers

trying to learn any programming language 100%

come on

just a little
bit more

almost there

oh crap...

Anaconda Installation

Environment to run Python

- Immediate mode - cmd
`python`
- Script mode - `python file.py`
- IDE - Integrated Development environment
`spyder, pycharm, jupyter notebook`



For coding
refer GitHub repository

