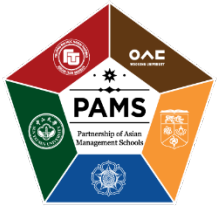
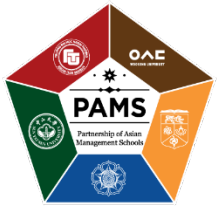


Introduction to Python

Mai Xuan Trang, Ph.D.

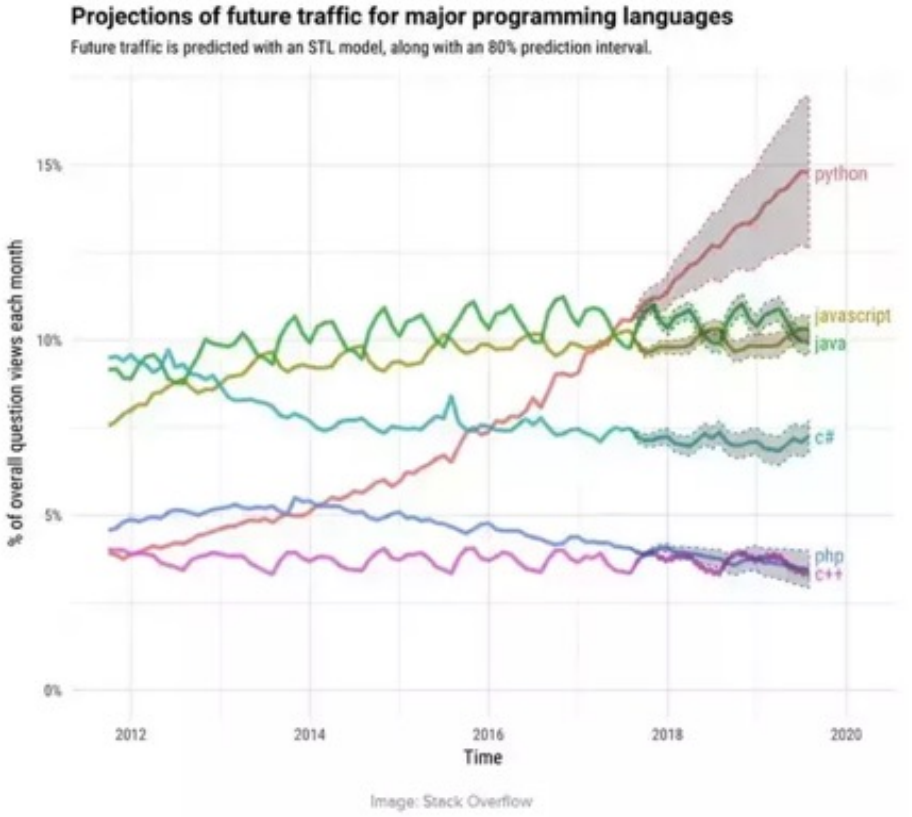


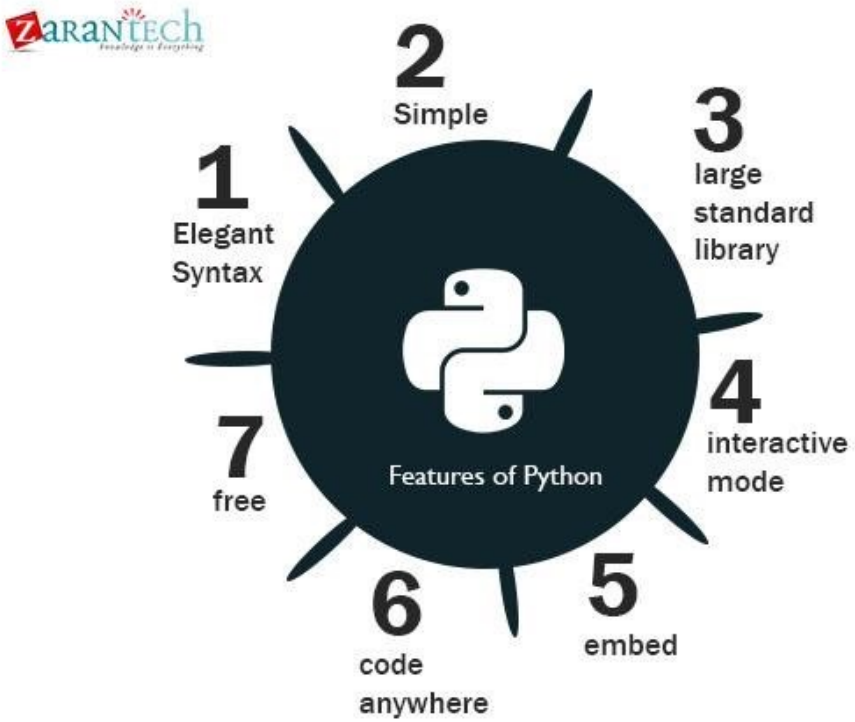
Brief History of Python

- Invented in the Netherlands, early 90s by Guido van Rossum
- Named after Monty Python
- Open sourced from the beginning
- Considered a scripting language, but is much more
- Scalable, object oriented and functional from the beginning
- Used by Google from the beginning
- Increasingly popular

Why Python?

- The most popular language programming
- Using in many fields, especially in data and AI





Why Python?

C++

```
#include <iostream>
int main() {
    std::cout << "Hello, world! ";
    return 0;
}
```

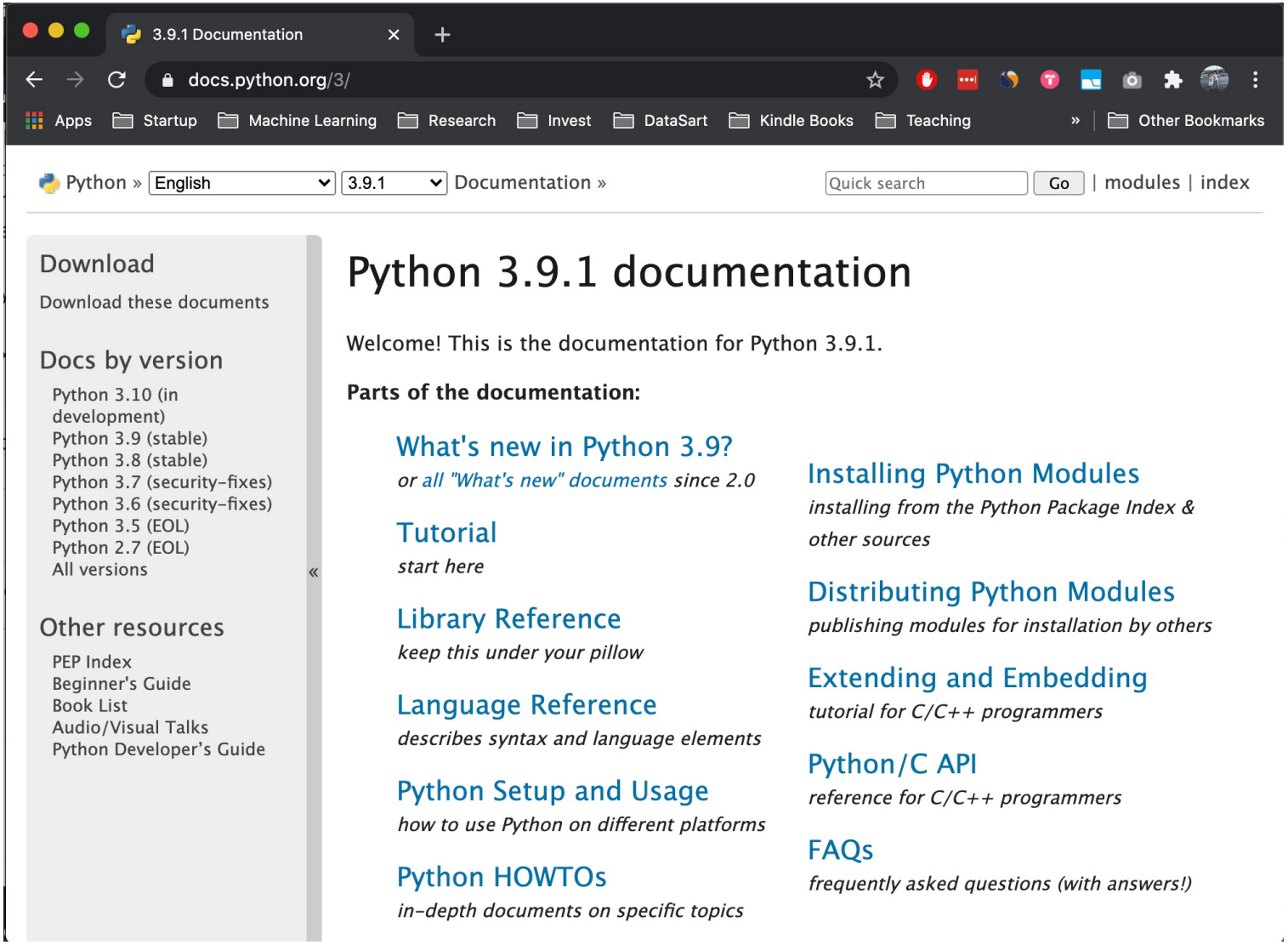
Java

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

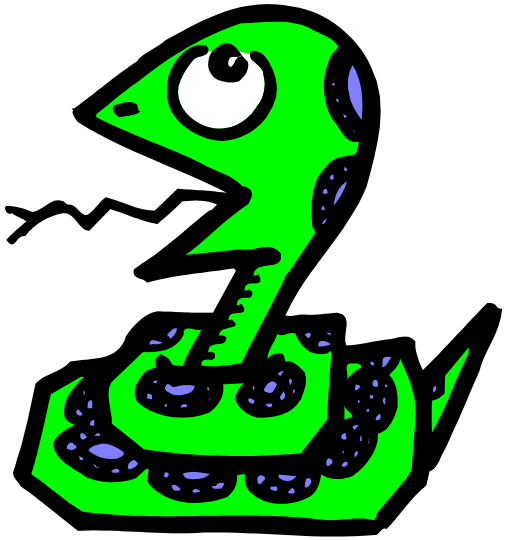
Python

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

http://docs.python.org/



Running Python



Where should you run Python

- It’s best to install it on your own computer
  - You’ll have more control, can run Jupyter notebooks and learn more about it
- You can also run it on Jupyterhub unix system
- You can also use remote notebook servers: Google Colab, …

Installing Python 3

- Using Anaconda (Minicona): A distribution of the Python (good for AI & data science).
- How to install
- Install Anaconda (Miniconda) on your computer.
- Running it on your own computer makes it easier to install packages, IDEs, and use notebooks
- And will give you more experience

Running Interactively on Python Shell

On command line tool (Terminal, Prompt,…)

```
% python
>>> 3+3
6
```

- Python prompts with '>>>'.
- To exit Python:
  - In Unix, press CONTROL-D
  - In Windows, press CONTROL-Z + <Enter>
  - run exit() or quit()

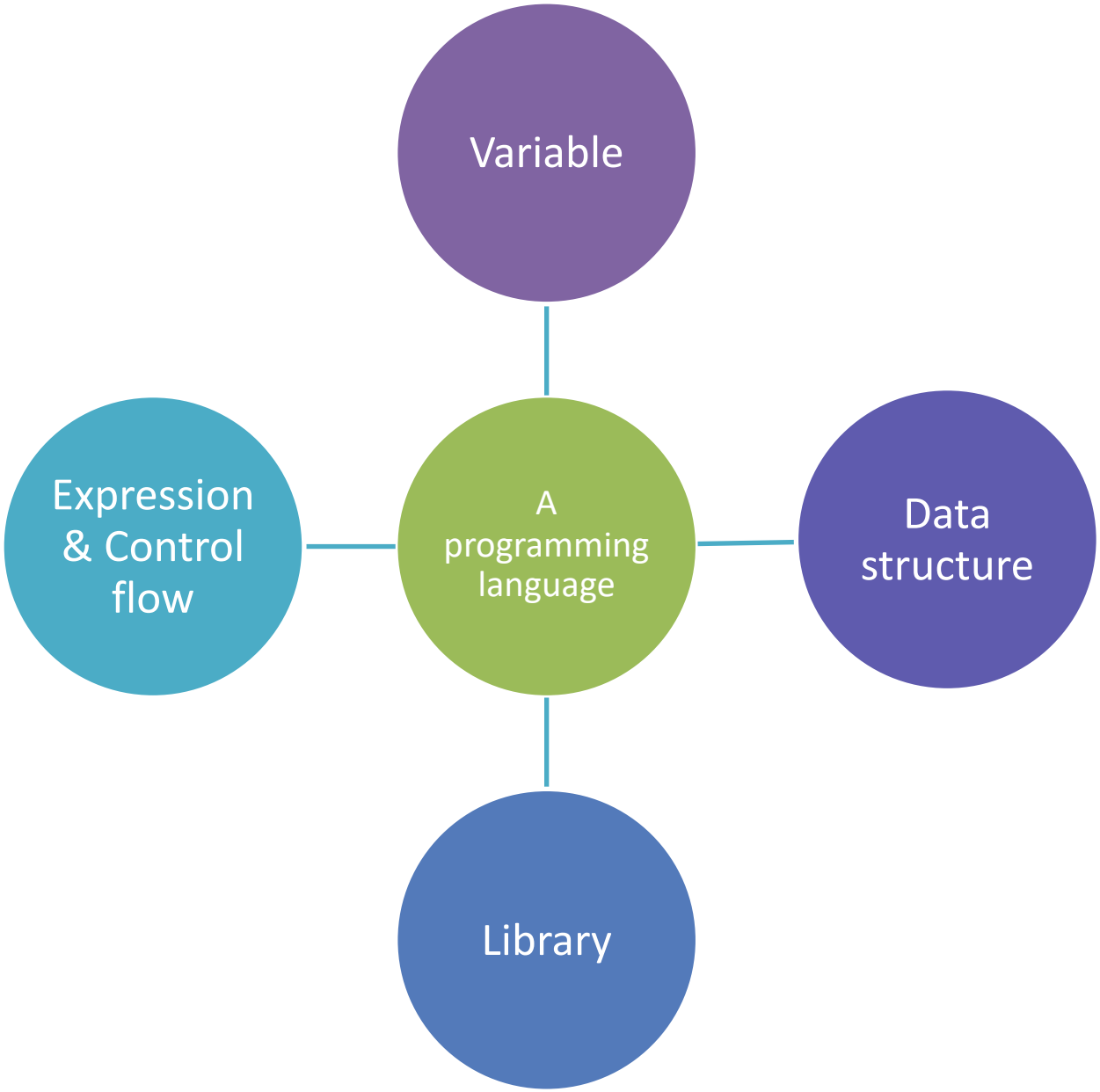
Example ‘script’: fact.py

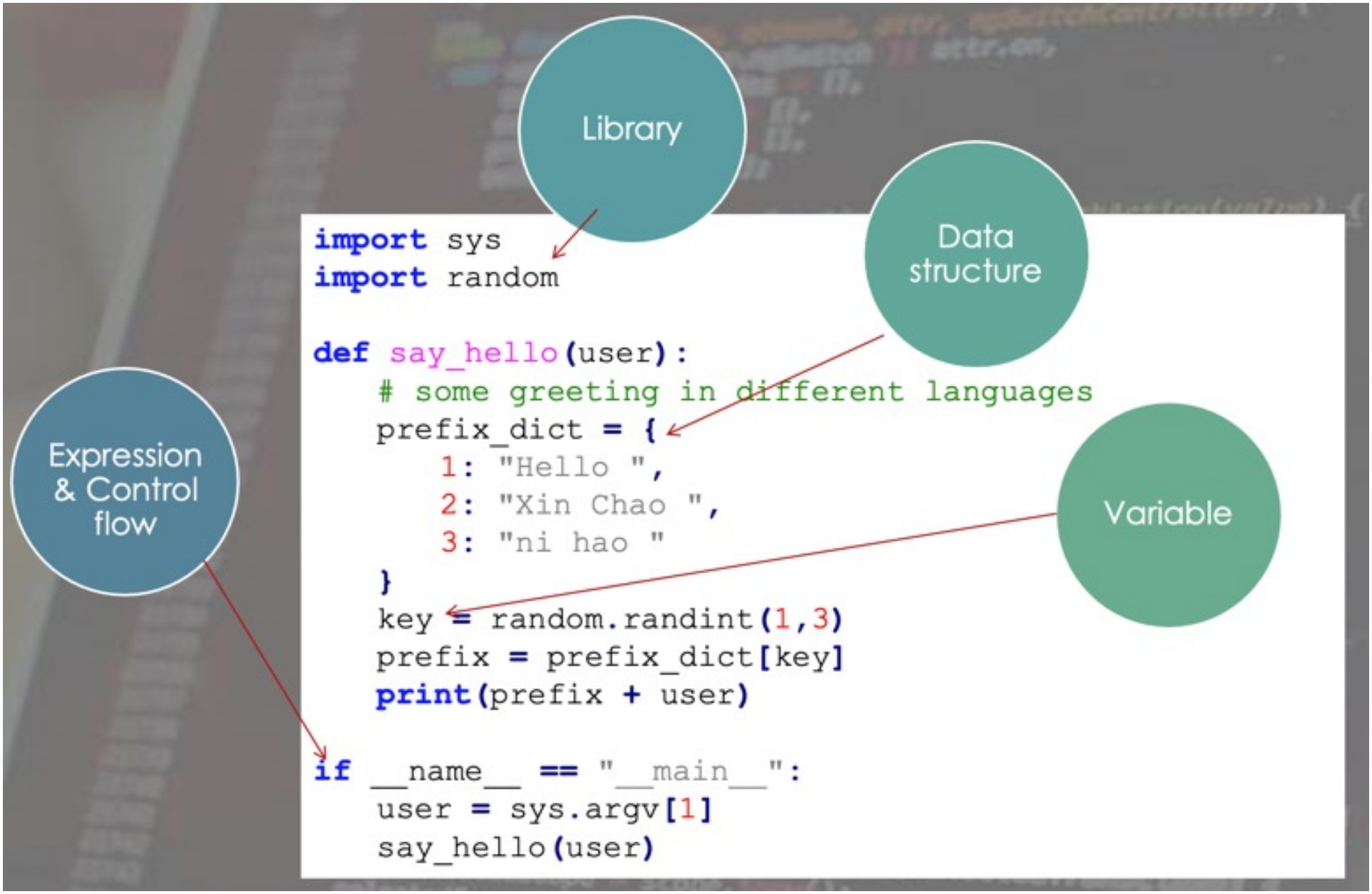
```
#! /usr/bin/python
def fact(x):
    """Returns the factorial of its argument, assumed to be a posint"""
   if x == 0:
      return 1
   return x * fact(x - 1)
print (‘N fact(N)’)
print(“---------”)
for n in range(10):
   print(n, fact(n))
```

- Run the script with python interpreter

```
% python fact.py
```

Write your first Python Program




Library
Data structure
Expression & Control flow
Variable
import sys
import random
def say_hello(user):
# some greeting in different languages
prefix_dict = {
1: "Hello ",
2: "Xin Chao ",
3: "ni hao "
}
key = random.randint(1,3)
prefix = prefix_dict[key]
print(prefix + user)
if __name__ == "__main__":
user = sys.argv[1]
say_hello(user)

Jupyter Notebooks

Using Google Colab

Resources

- Official Website: https://www.python.org/
- Python tutorials for beginners: https://thepythonguru.com/
- Many guides for beginners: https://wiki.python.org/moin/BeginnersGuide
- Good book: Python for Data Analysis