CBSE - XI Computer Science (083)

Computer Science with Python

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A FOSS Scripting Language

python™

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python

- Installation of Python Interpreter
- https://www.python.org/

0 A Python Software Foundation [US] | https://www.python.org

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```
TT:
          s    n s
>>> 'Fruits = ['Banana', 'Apple', 'Lime']
I
>>> loud_fruits = [fruit.upper() for fruit
in fruits]
>>> print(loud_fruits)
['BANANA', 'APPLE', 'LIME']

# List and the enumerate
function >>>
list(enumerate(fruits))
[(0, 'Banana'), (1, 'Apple'), (2, 'Lime')]
```

Compound Data Types

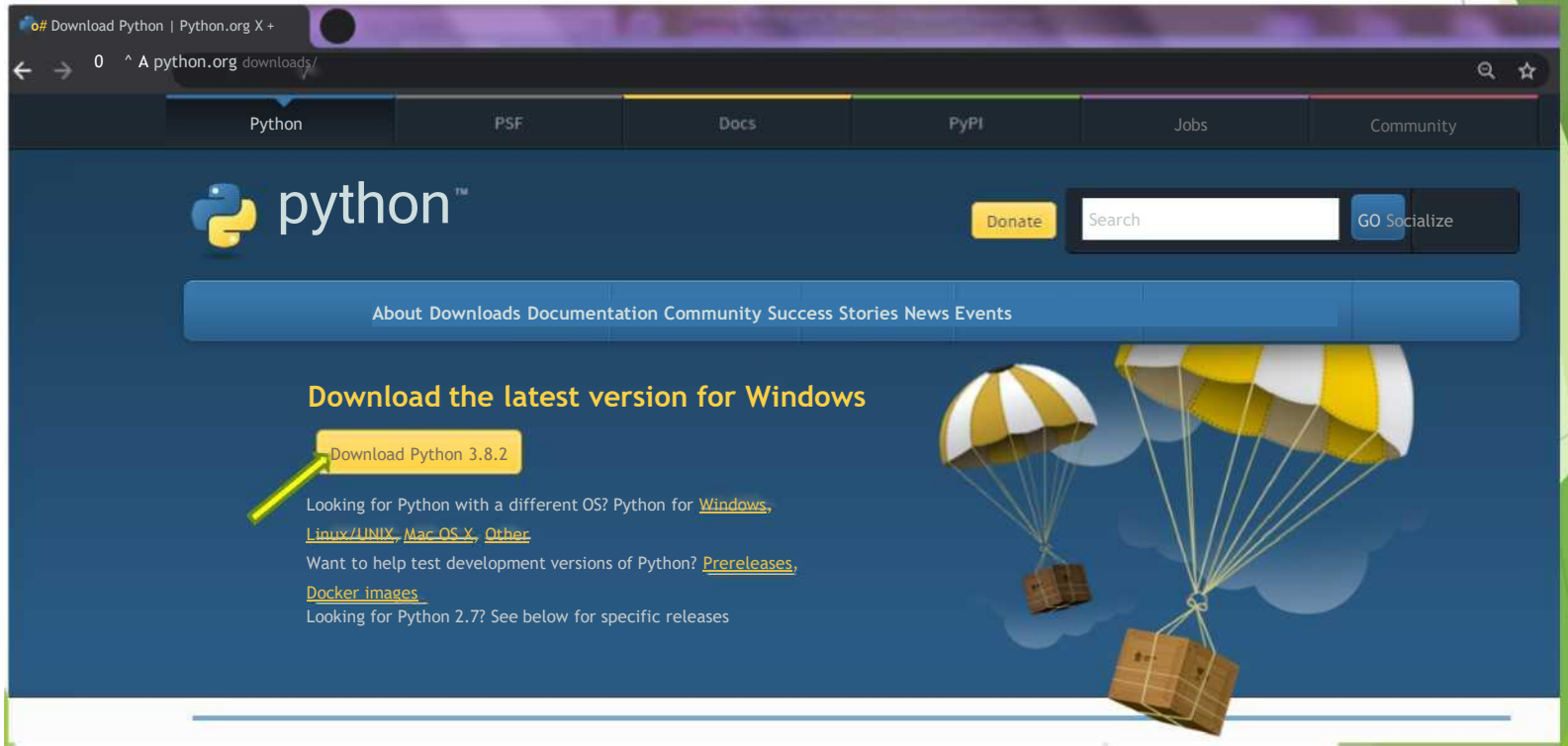
Lists (known as arrays in other languages) are one of the compound data types that Python understands. Lists can be indexed, sliced and manipulated with other built-in functions.

More about lists in Python 3

Python is a programming language that lets you work quickly and integrate systems more effectively. >>> Learn More

Getting Started with Python

- Python 3.8.2 Released on February 24, 2020
- One can download Python Versions as per his/her Machine's Configuration & OS



Getting Started with Python

- IDLE (Integrated Development & Learning Environment) the most popular and standard Python development environment.
- Python can be used in two ways: Interactive(shell) & Script mode
  - Interactive mode allows to interact with operating system
  - Script mode allows to create and edit python source file

Python - Interactive Mode (Offline)

- Launch Python IDLE installed on your Computer System
- Note the welcome message
- Python Primary prompt '>>>'
- Try the following - credits(), copyright(), license(), help(), exit()

Python - Interactive Mode

- Interactive mode allows users to interact with Operating System

```
>>> a = 3 >>> b = 4 >>> a * b
```

- 12

```
>>> 20 * a #For Multiplication *
```

- 60

```
>>> b ** 3 #For raise to the Power **
```

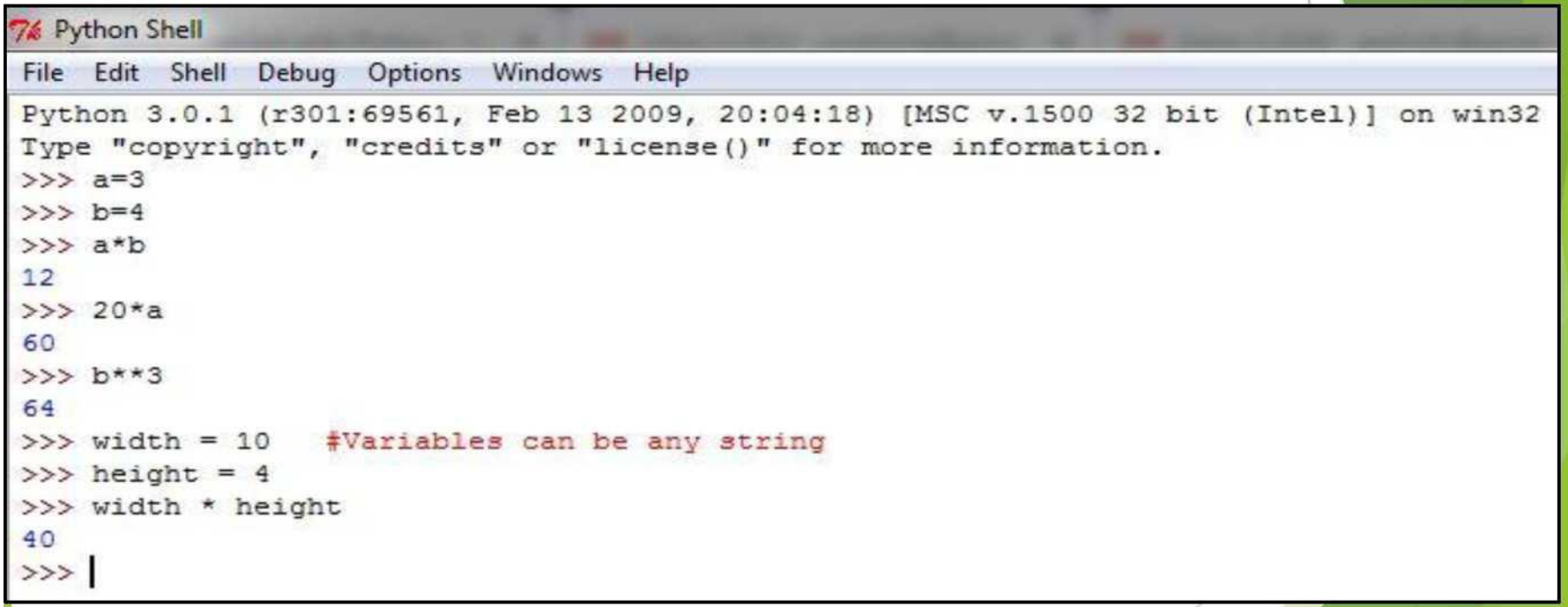
- 64

```
>>> width = 10 #Variables can be any string >>> height = 4 >>> width * height
```

- 40

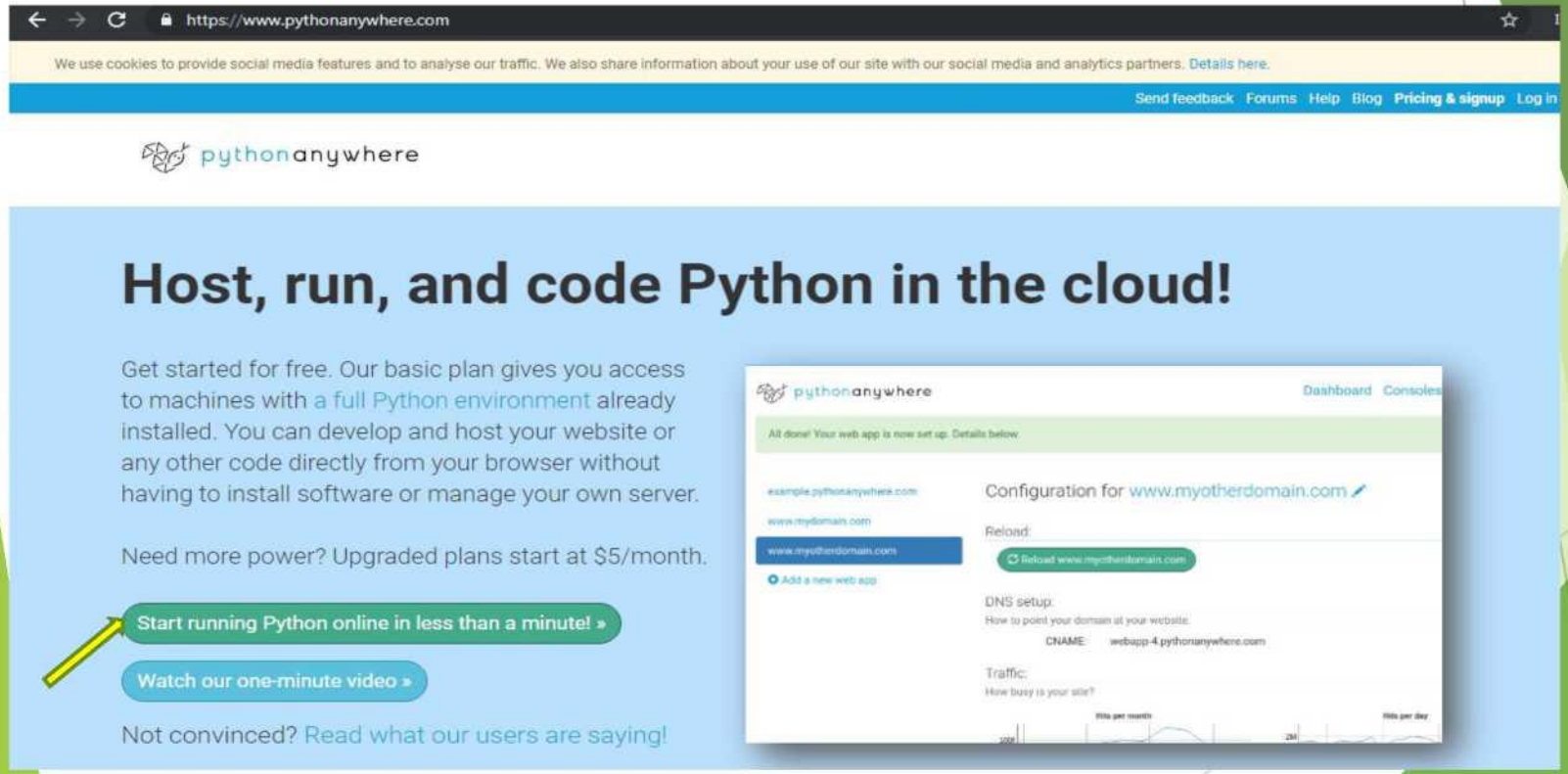
Python - Interactive Mode (Offline)

- Write your **Python Program** in **IDLE** installed



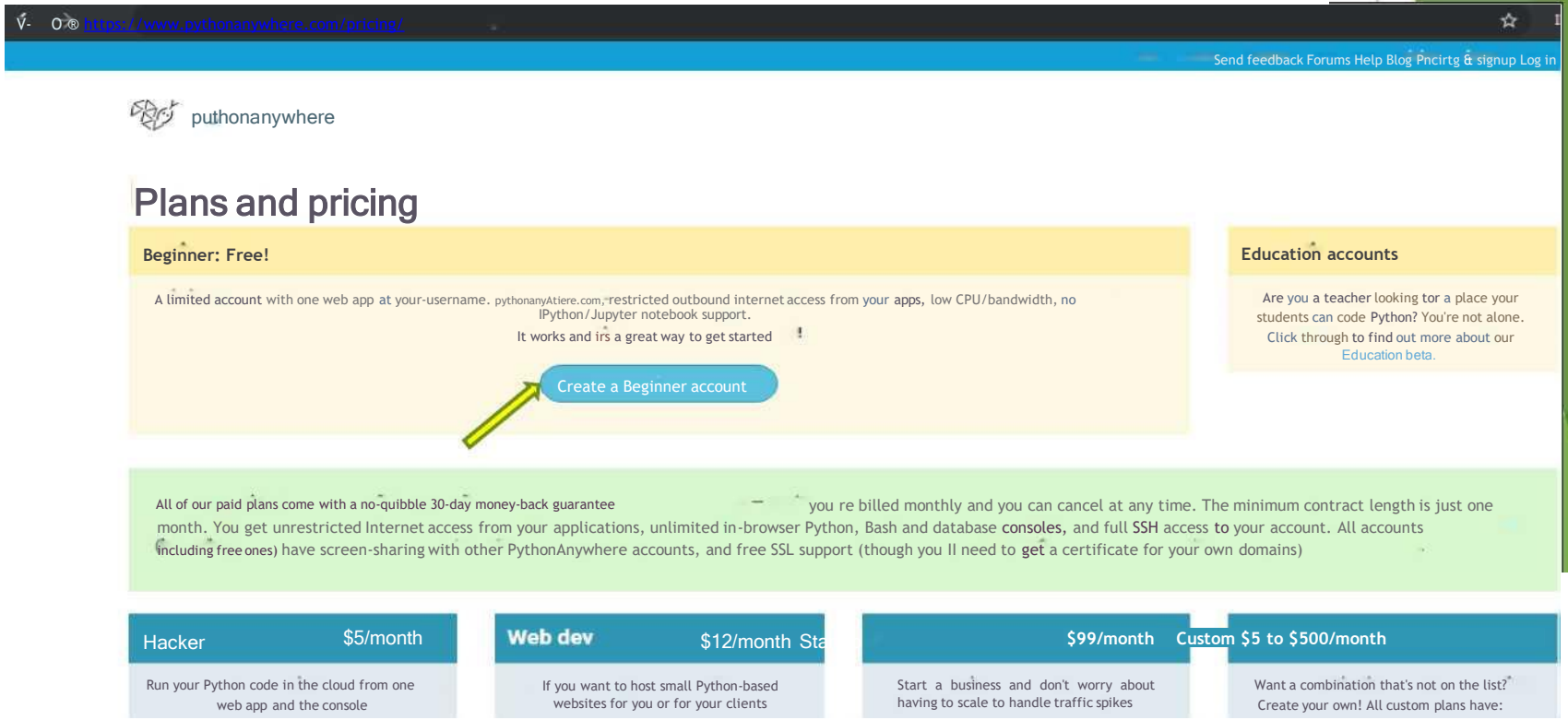
Python - Interactive Mode (Online)

- https://www.pythonanywhere.com/



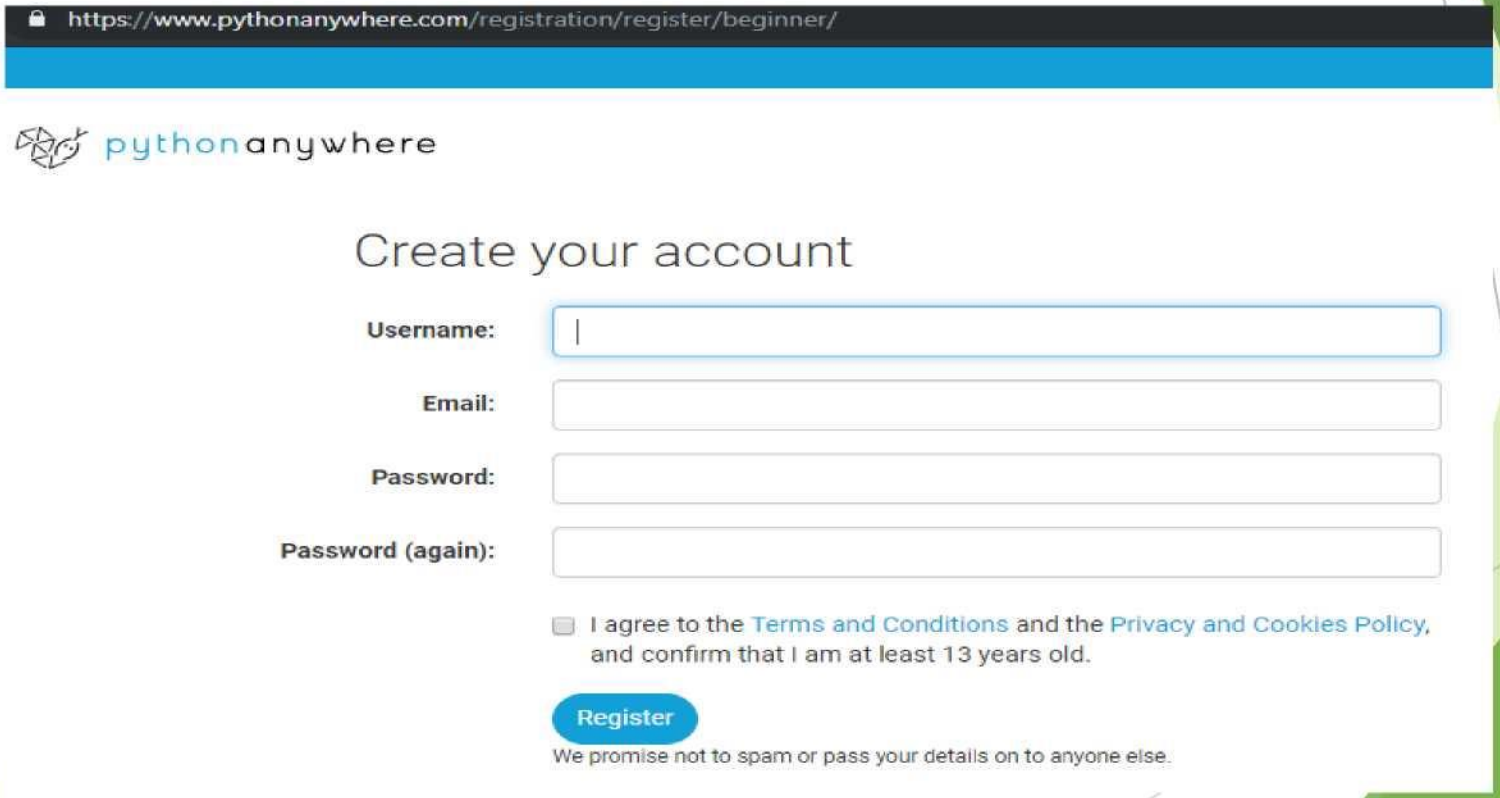
Python - Interactive Mode (Online)

- Create a Beginner Account



Python - Interactive Mode (Online)

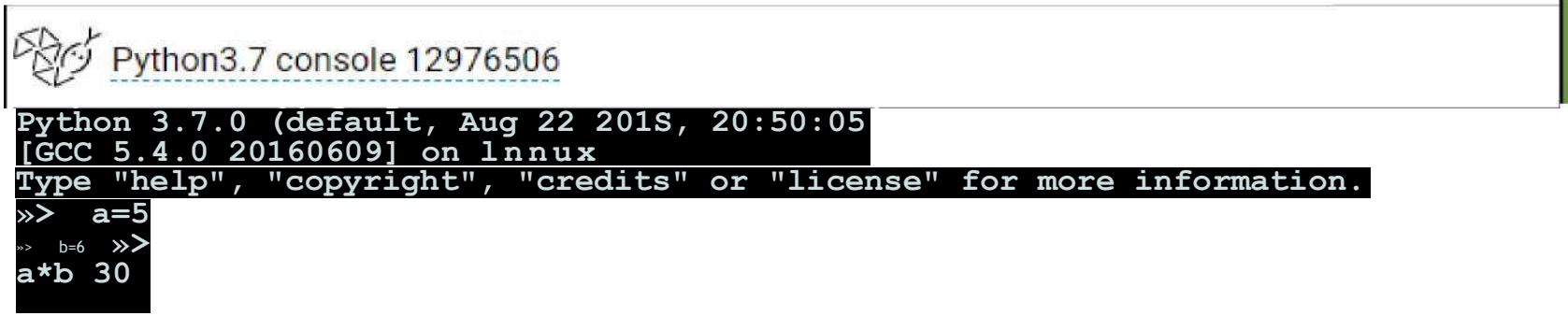
- Create a Beginner Account



Python - Interactive Mode (Online)

Write your Python Code Online

0 A https://www. python a nywhere.com/Lser/abcuser/consoles/1297 6506/



Python - Libraries

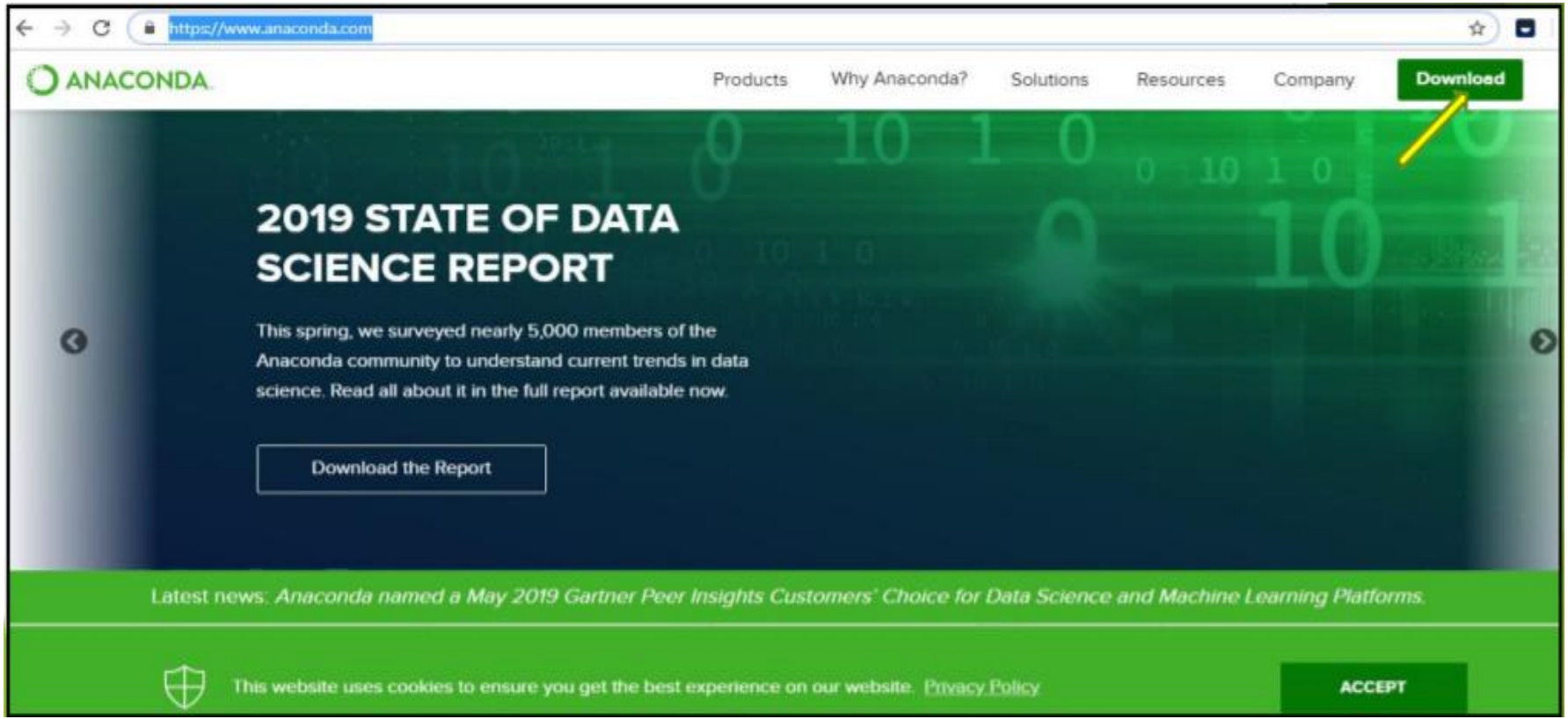
- NUMPY - Numerical Python
  - Complex Matrices & Multi-dimensional array based problems
- SCIPY - Scientific Python
  - Optimization, Linear Algebra, Integration, Interpolation, Special functions, FFT, Signal and Image Processing
- MATPLOTLIB - Visualization
  - Graphical representation of data
- PANDAS - Data Manipulation and Analysis
  - Offers data structures and operations for manipulating numerical tables and time series

Python - Libraries

- We need to install all the libraries one by one using PIP Installer and then Import the Library to use its functions
- The Installation and Import procedure for each Library may be avoided if we download and install - **ANACONDA**
- Anaconda is the entire suite containing Basic Python, Numpy, Scipy, Matplotlib and Pandas

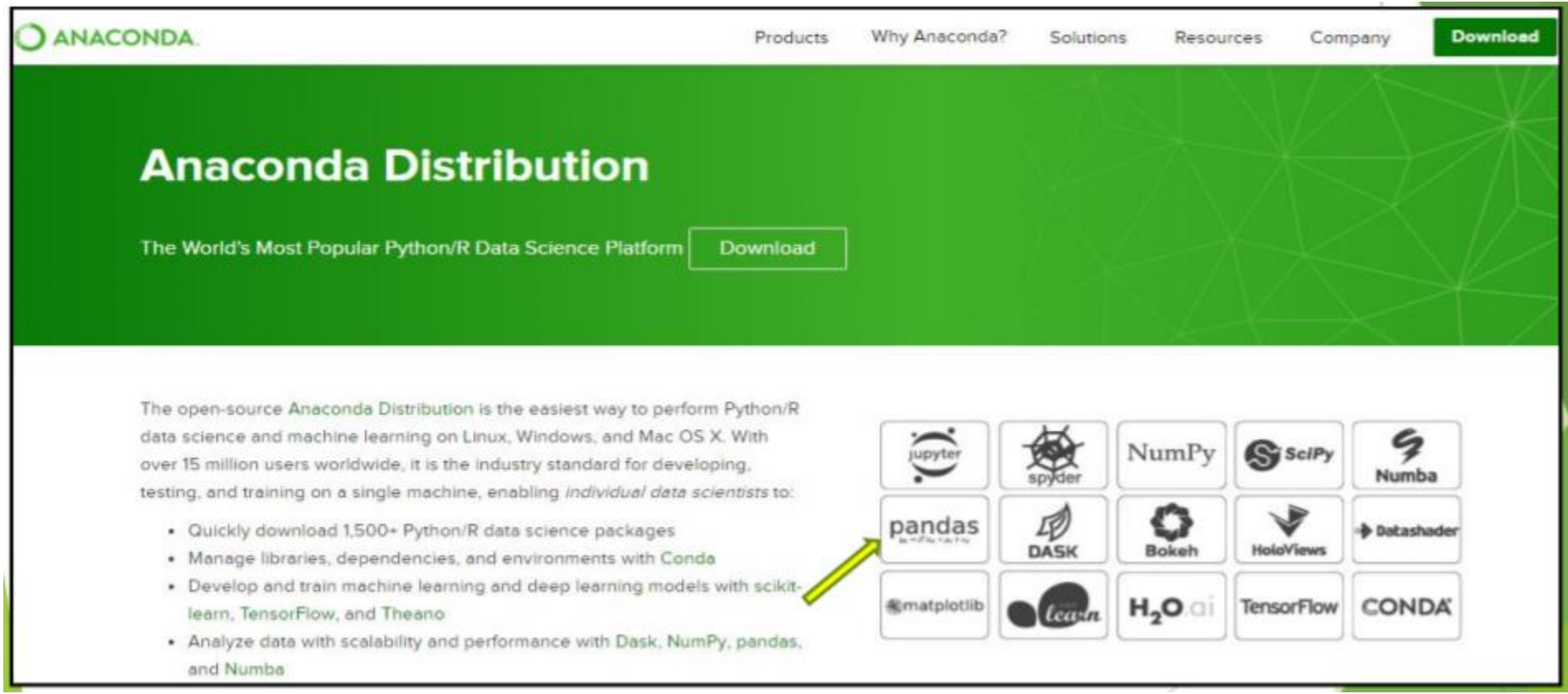
Python - Anaconda

- https://www.anaconda.com/



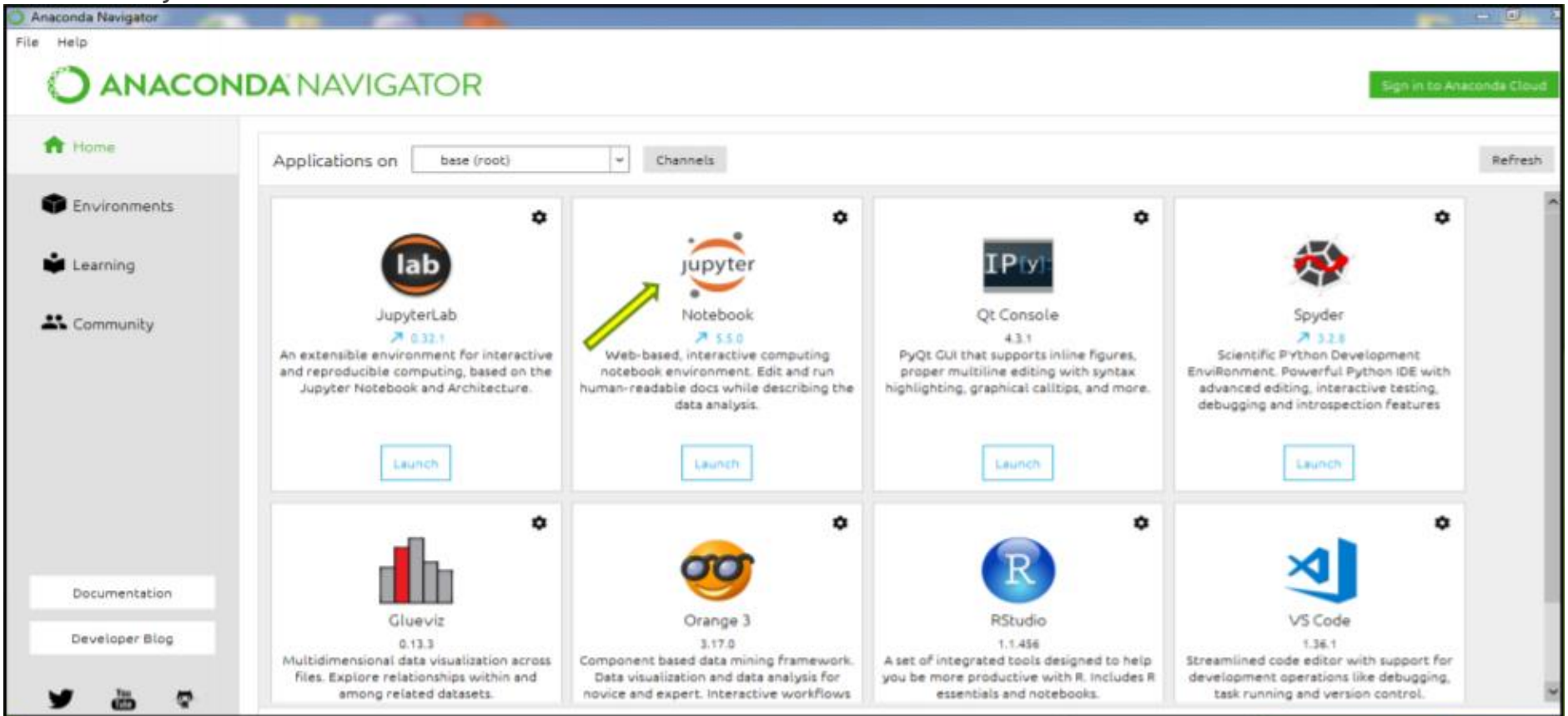
Python - Anaconda

- https://www.anaconda.com/



Python - Anaconda

- Launch **Anaconda Navigator**
- Many **IDEs** visible



Python - Anaconda

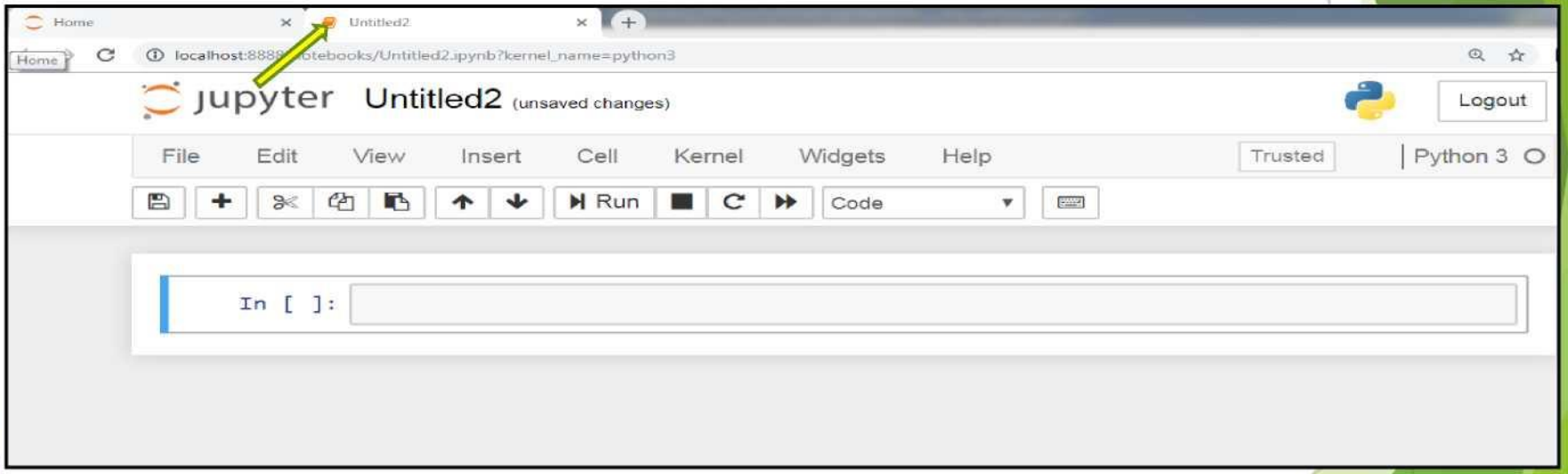
- Launch Zupyter Notebook 5.5.0
- It will Open in default Browser & shows root directory/path(localhost:8889/tree)

Python - Anaconda

- Click **New -> Python 3** to open a new **Zupyter Notebook**

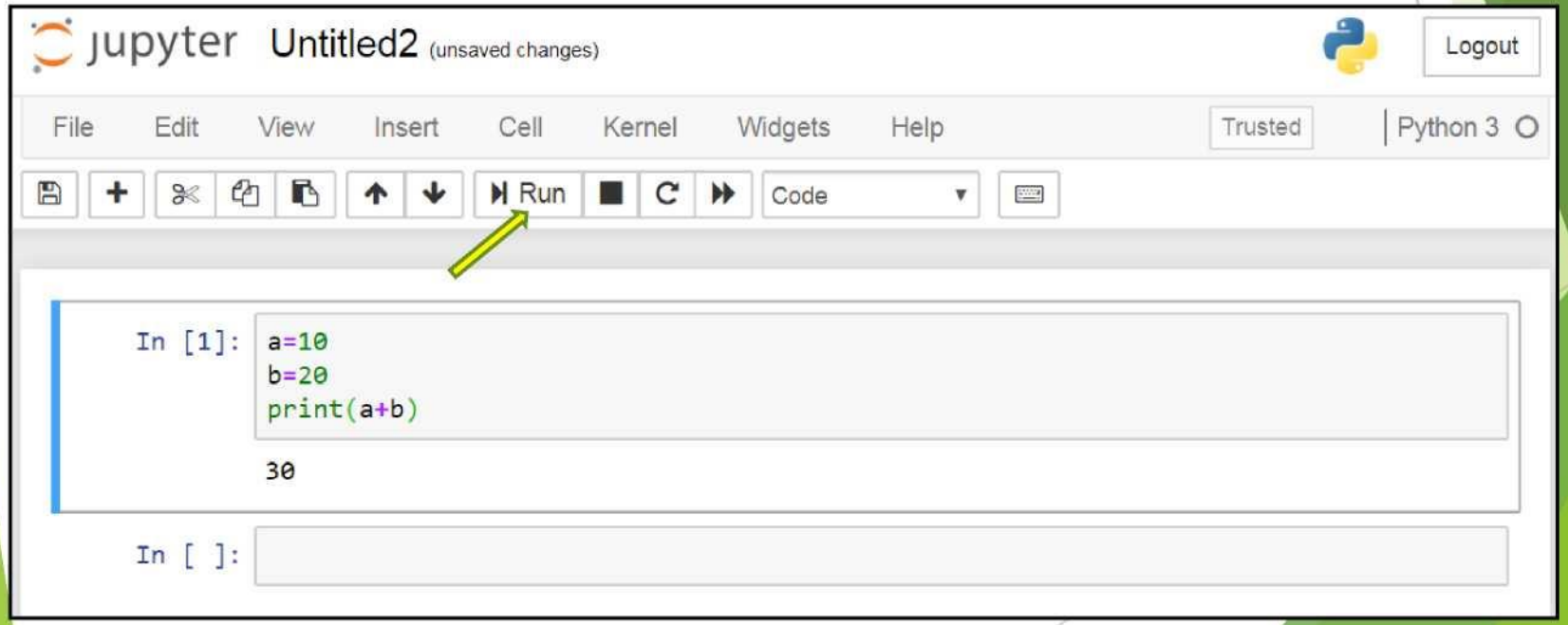
Python - Anaconda

- The new Zupyter Notebook will open in the new Browser Window



Python - Anaconda

- Type the code in the Input Block of the Zupyter Notebook (Interactive Mode) and get the Output in separate block by pressing Run Button or SHIFT+ENTER Key

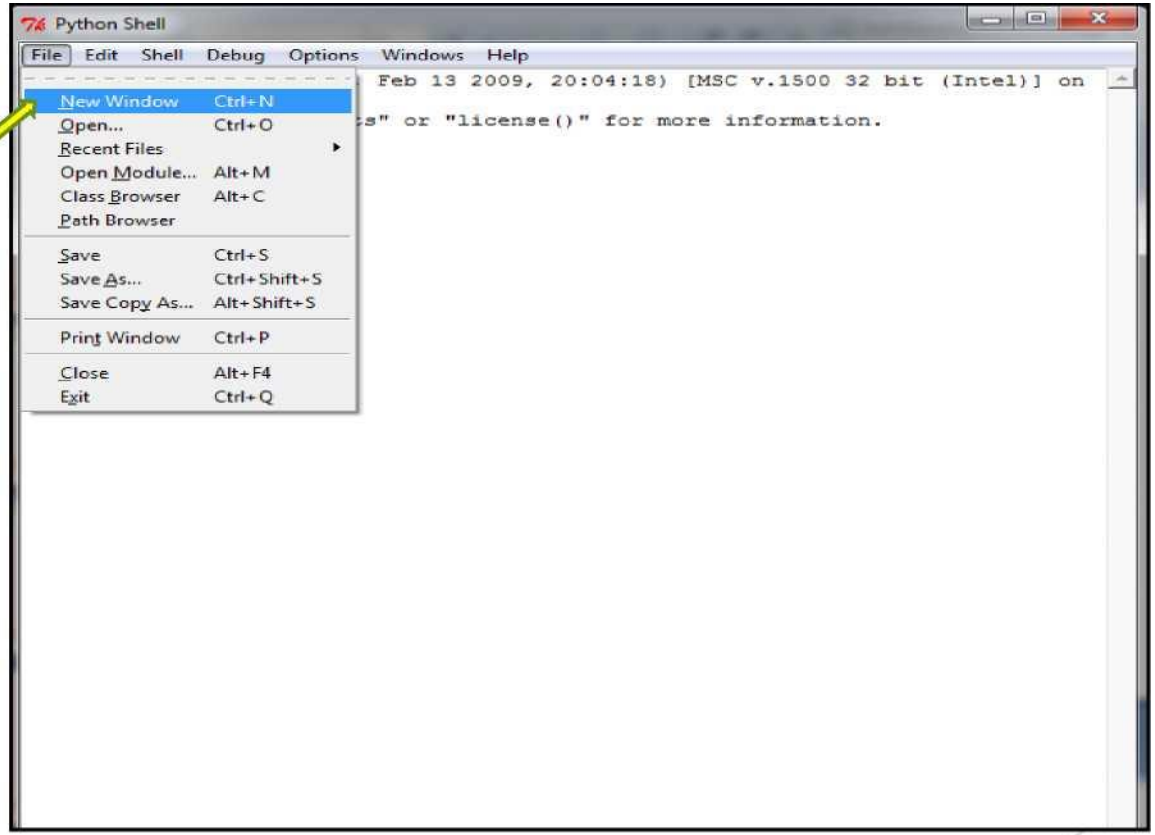


Python - Script Mode

- Script Mode allows the user to type Python program in a file and use interpreter to execute content of file.
- 3>tart comments with #
  - the rest of line is ignored.

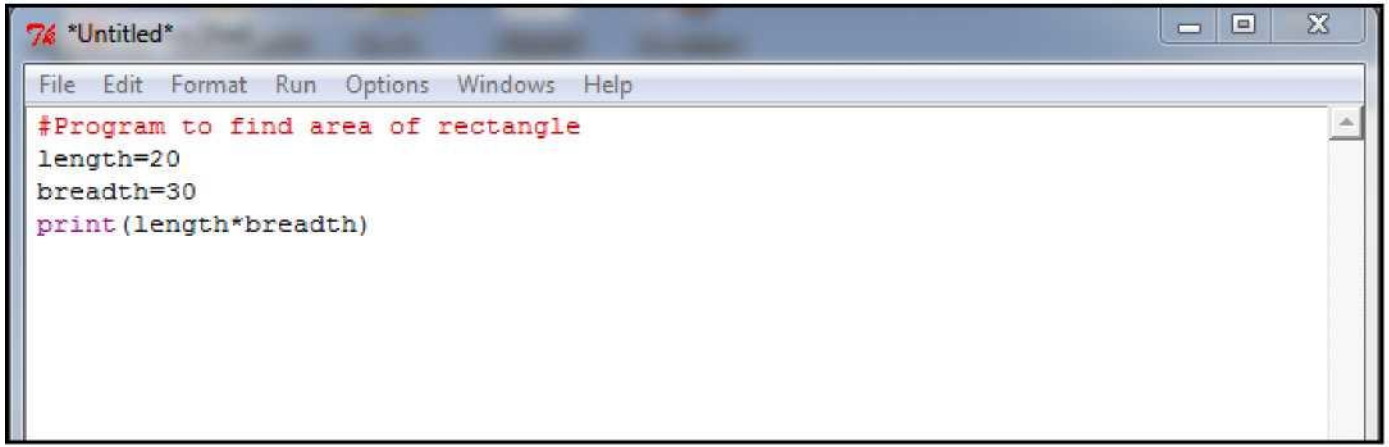
Python - Script Mode

- Open New Window from File Menu



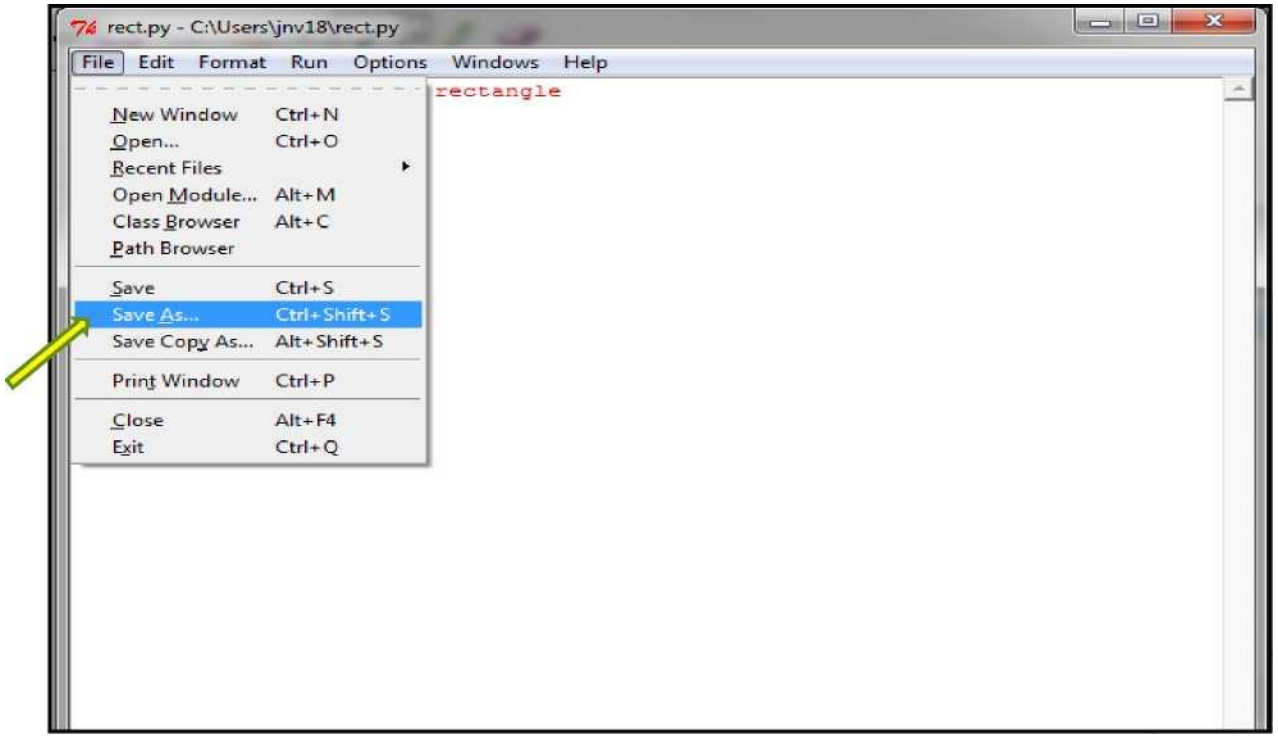
Python - Script Mode

- Type your Python Code in the **New Window**



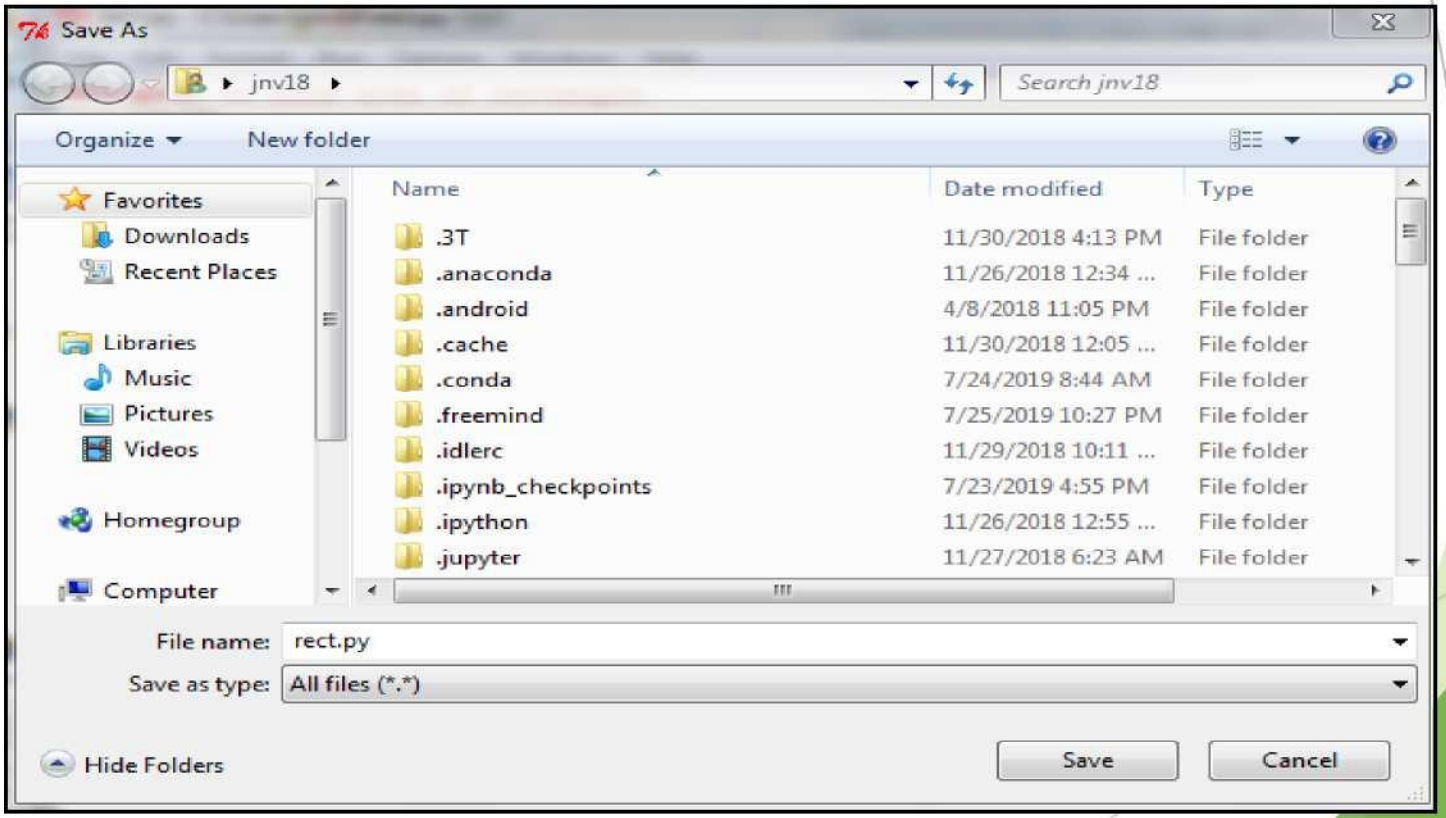
Python - Script Mode

- Save the Python code file: **File -> Save As...**



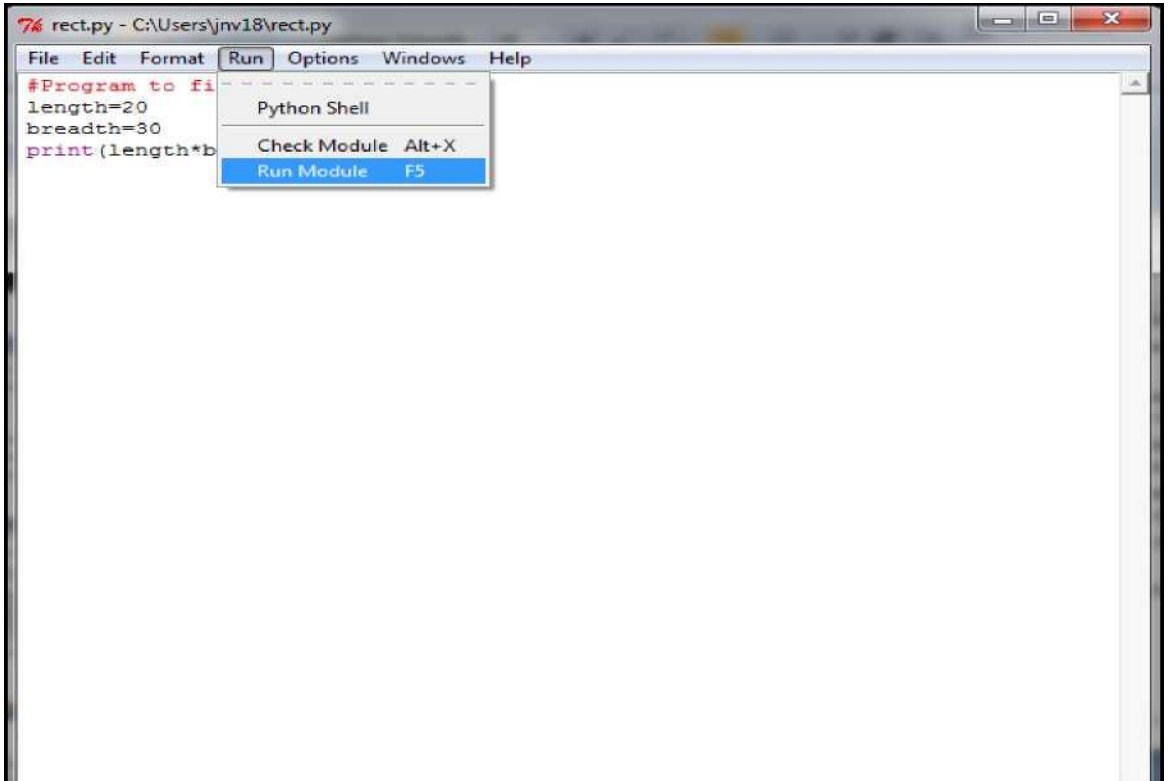
Python - Script Mode

- Save the **Python code file** with an extension **.py**



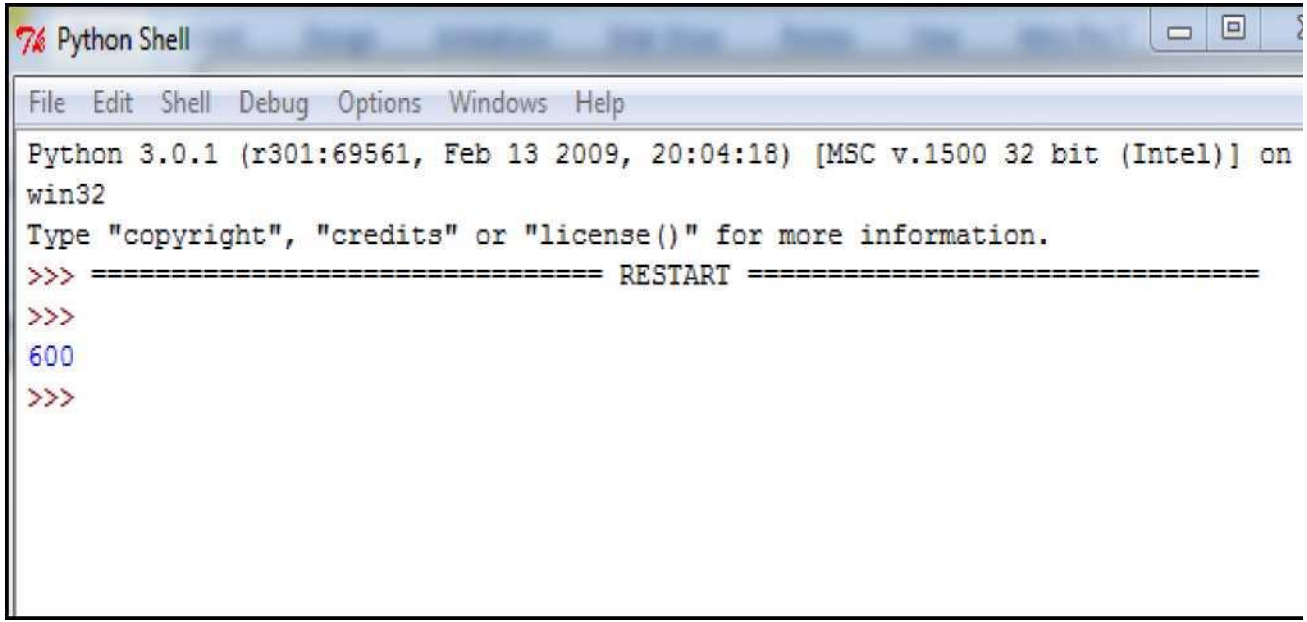
Python - Script Mode

- Run the Python code by pressing **F5** or **Run -> Run Module**



Python - Script Mode

- The **Output** of the Python Code will be displayed in the **Interactive Code Window**



Python - Script Mode (Alternate)

- Go to Command Prompt in Windows (cmd.exe) and just type your python file name e.g. rect.py and press enter to run it