Kmit

SONET

Data Science

(Level-I)

Ajeet K. Jain, M. Narsimlu

(ML TEAM)- SONET, KMIT, Hyderabad

Session - 2

This session deals with

- Anaconda features
- Introduction to Spyder and features
- Components-Core Building blocks
- Setting working Directory
- Why Python? And features
- Creating and saving a script file
- File execution, clearing console
- removing variables from environment, clearing environment

Anaconda Features

The World's Most Popular Python Data Science Platform

The open-source Anaconda Distribution is the easiest way to perform Python DS

And machine learning on Linux, Windows, and Mac OS X.

Over 15 million users worldwide. It is the Industry standard for developing

Manage libraries, dependencies, and environments with Conda

Analyze data with scalability and performance with NumPy, pandas

Visualize results with Matplotlib,Seaborn

Anaconda Environment

SONET

DATA SCIENCE

Anaconda Navigator

File Help

ANACONDA NAVIGATOR

Sign in to Anaconda Cloud

- Home
- Environments
- Learning
- Community

Applications on base (root) Channels Refresh

JupyterLab
0.35.3
An extensible environment for interactive and reproducible computing, based on the Jupyter Notebook and Architecture.
Launch

Notebook
5.7.4
Web-based, interactive computing notebook environment. Edit and run human-readable docs while describing the data analysis.
Launch

Qt Console
4.4.3
PyQt GUI that supports inline figures, proper multiline editing with syntax highlighting, graphical calltips, and more.
Launch

Spyder
3.3.2
Scientific PYthon Development EnviRonment. Powerful Python IDE with advanced editing, interactive testing, debugging and introspection features
Launch

Glueviz
0.13.3
Multidimensional data visualization across files. Explore relationships within and among related datasets.

Orange 3
3.17.0
Component based data mining framework. Data visualization and data analysis for novice and expert. Interactive workflows

RStudio
1.1.456
A set of integrated tools designed to help you be more productive with R. Includes R essentials and notebooks.

VS Code
1.36.1
Streamlined code editor with support for development operations like debugging, task running and version control.

Documentation

Developer Blog

Type here to search

ENG 12:36 31-07-2019

SONET

Libraries in Anaconda

DATA SCIENCE

jupyter

spyder

NumPy

SciPy

Numba

pandas

$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$

DASK

Bokeh

HoloViews

Datashader

matplotlib

scikit learn

H_2O.ai

TensorFlow

CONDA

Introduction to Spyder

Spyder is short for Scientific PYthon Development EnviRonment.

It is a free integrated development environment (IDE) that is included with Anaconda.

It includes editing, interactive testing, debugging and introspection features.

Spyder is a powerful scientific environment written in Python

Designed for python developer and for scientists, engineers and data analysts.

It offers a unique combination of the advanced editing, analysis, debugging,

and profiling functionality of a comprehensive development tool,

with the data exploration, interactive execution, deep inspection,

and beautiful visualization capabilities of a scientific package.

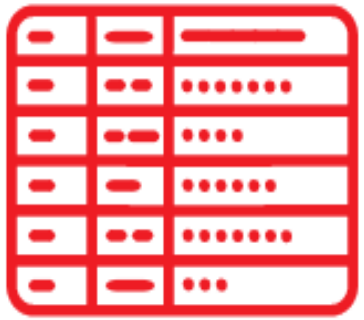
Components-Core Building blocks

Editor

Work efficiently in a multi-language editor with a function/class browser, code analysis tools, automatic code completion, horizontal/vertical splitting, and go-to-definition.

IPython Console

Harness the power of as many IPython consoles as you like within the flexibility of a full GUI interface; run your code by line, cell, or file; and render plots right inline.



Variable Explorer

Interact with and modify variables on the fly: plot a histogram or timeseries, edit a dateframe or Numpy array, sort a collection, dig into nested objects, and more!

DATA SCIENCE

Spyder (Python 3.7)

File Edit Search Source Run Debug Consoles Projects Tools View Help

E:\KMIT\SONET\NPTEL_Python_DS\Exercises

Editor - E:\KMIT\SONET\NPTEL_Python_DS\Exercises\fundas.py

fundas.py

```
1 # -*- coding: utf-8 -*-
2 """
3 Created on Wed Jul 31 11:30:47 2019
4
5 @author: Ammu
6 """
7 #%%
8 def disp():
9     print("Hello")
10 #%%
11 def disp1():
12     print("Welcome to display")
13 #%%
14
```

Open Editor

Variable explorer

Name	Type	Size	Value

IPython console

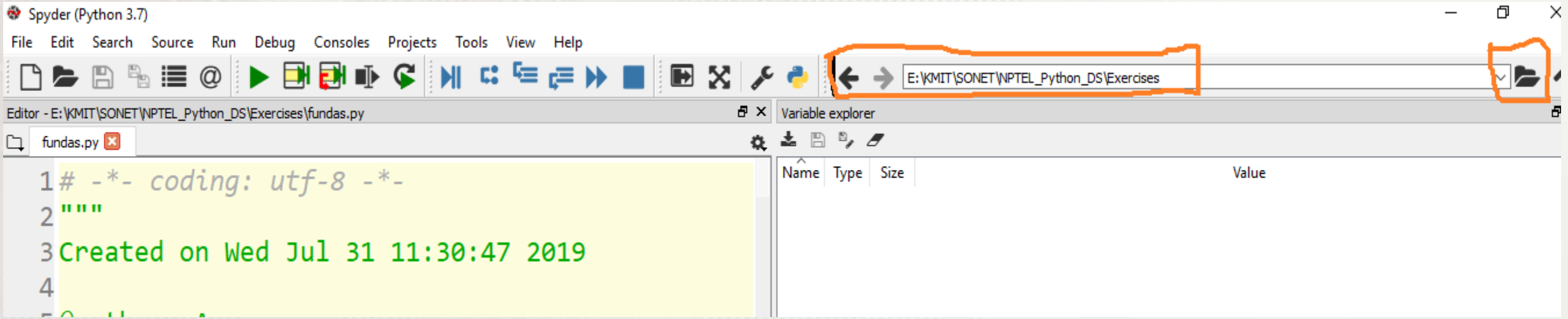
Console 1/A

```
In [2]: disp()
Hello

In [3]: runfile('E:/KMIT/SONET/NPTEL_Python_DS/
Exercises/fundas.py', wdir='E:/KMIT/SONET/
NPTEL_Python_DS/Exercises')
```

Setting Working Directory

We can create our own directory for saving files for feature reference



SONET

Why Python...!

DATA SCIENCE

Python is great for backend for web development, data analysis, artificial intelligence and scientific computing. Many developers have also used python

To build productivity tools, games, and desktop apps,

Kmit
SONET

Why Learning Python...!

DATA SCIENCE

Python can do

Desktop apps & Web apps

Data mining

Scientific computing

Career Opportunities

Salary information from gooroo.io

Salary Range

43K - 135K

Average Salary

$94,053

Popular sites built with Python

Google

Dropbox

Pinterest

Instagram

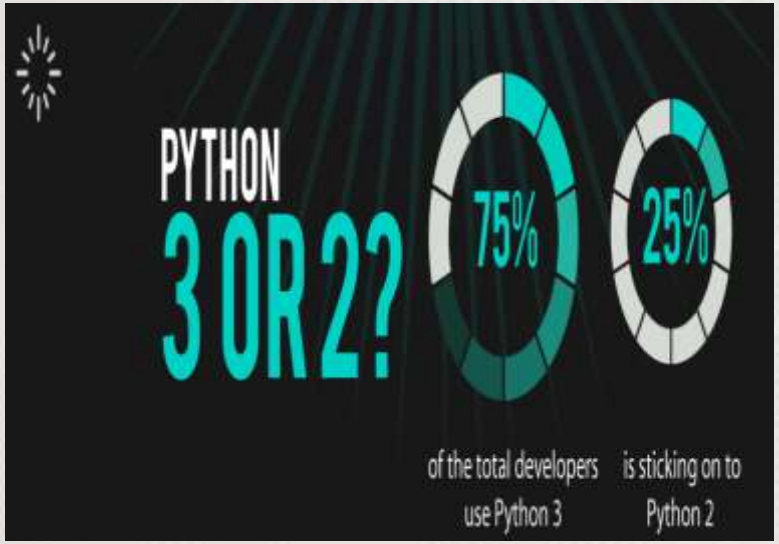
Future

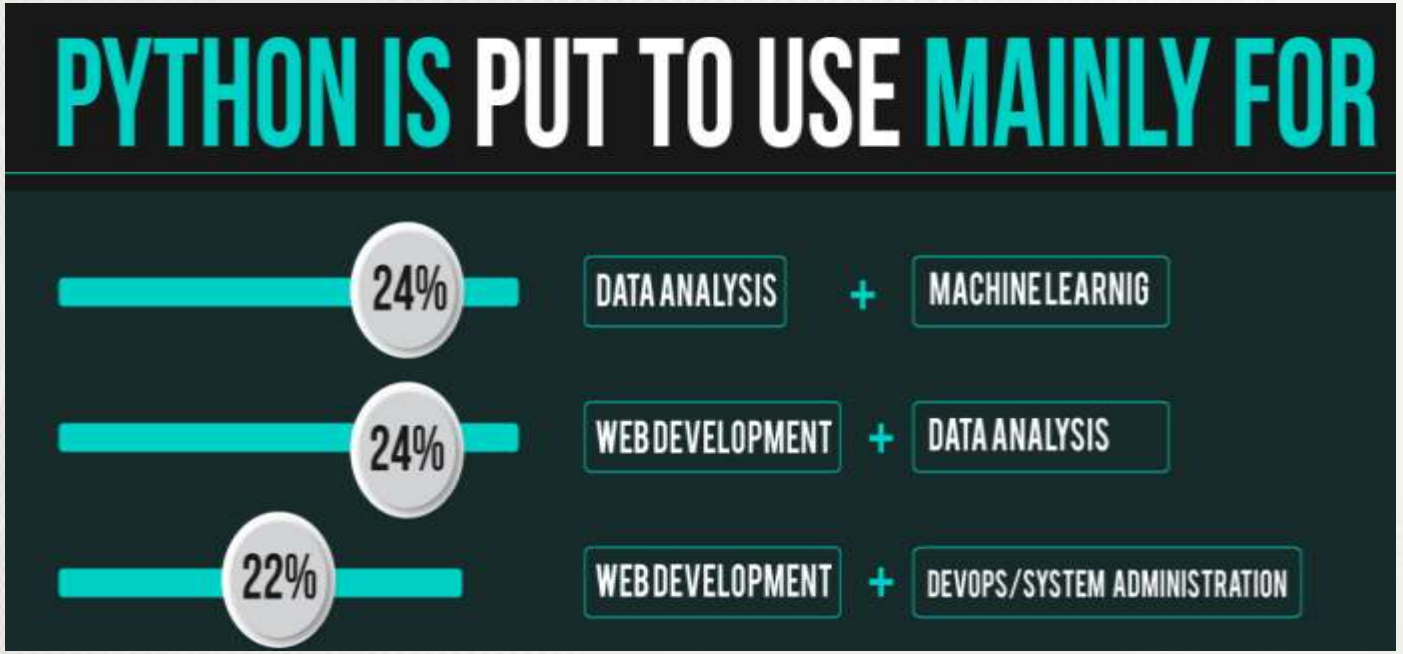
According to the TIOBE index, Python is the 4th most popular programming language out of 100

Kmit
SONET

PYTHON DEVELOPMENT TRENDS - 2018

DATA SCIENCE





SONET

PYTHON DEVELOPMENT TRENDS -2018

DATA SCIENCE

OS DEVELOPERS PREFER

- Windows 49%
- MacOS 15%
- Linux 19%
- Other 17%

MOST PREFERRED FRAMEWORK FOR WEB DEVELOPMENT

django | Flask

IDE'S PREFERRED-

PyCharm Professional Edition, PyCharm Community Edition, Sublime Text, Vim, VS Code

SONET

Trend for Python...!

DATA SCIENCE

MOST PREFERRED PYTHON FRAMEWORK, LIBRARIES AND TECHNOLOGIES

Django – **41%**

NumPy, Pandas, Matpotlib or similar ones – **39%**

Requests – **34%**

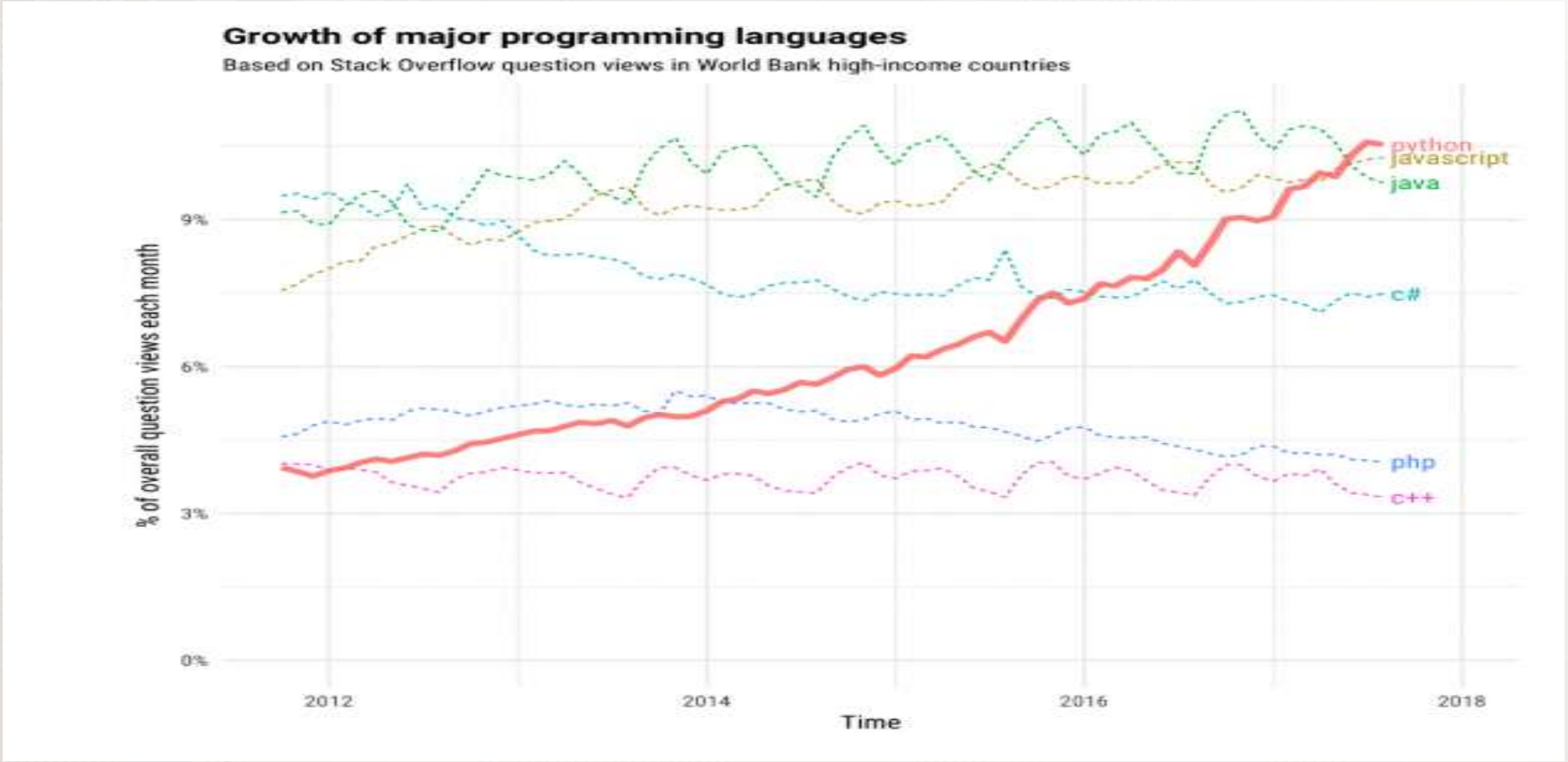
Flask – **32%**

Keras, Theano, scikit-learn or similar ones – **17%**

Kmit
SONET

Trend for Python...!

DATA SCIENCE



Python Features...!

DATA SCIENCE

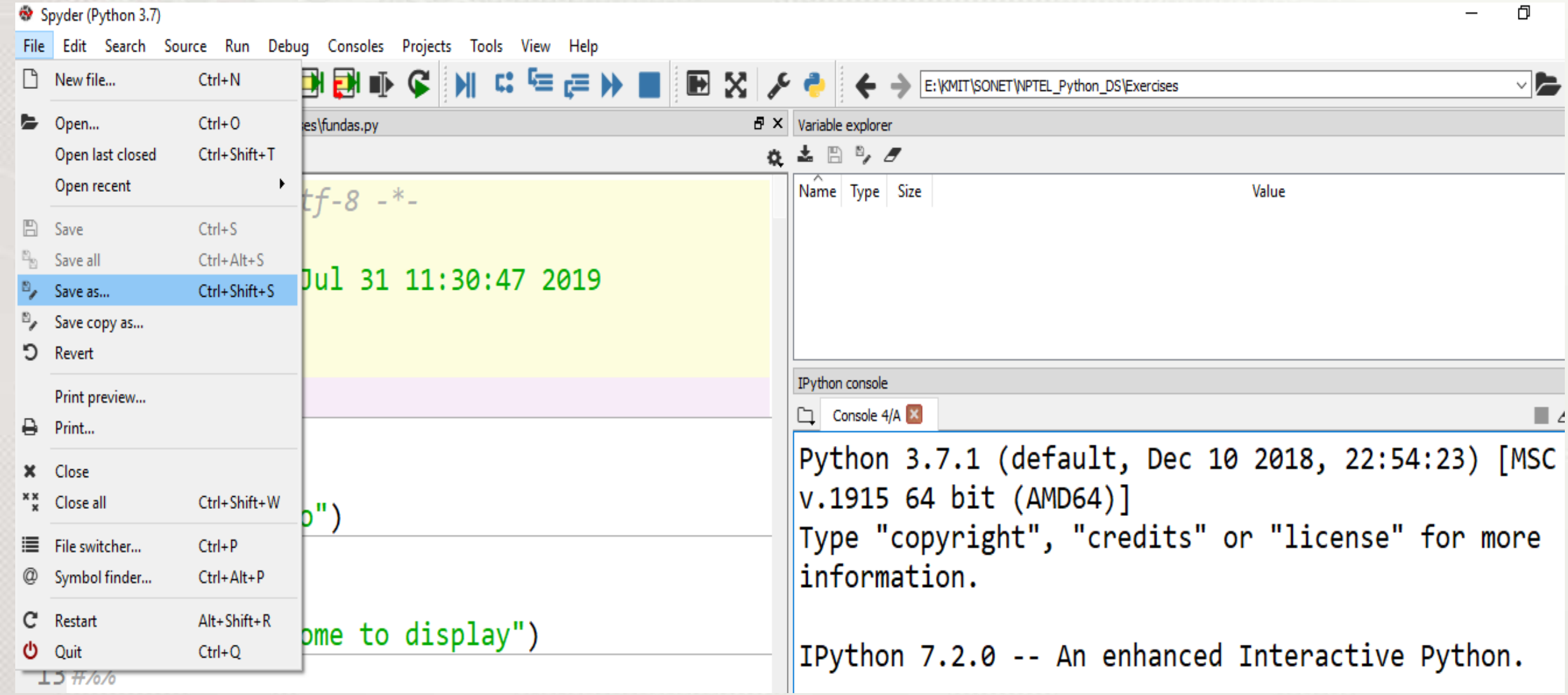
Python is a general-purpose interpreted and high-level programming language

It was created by Guido van Rossum during 1985- 1990

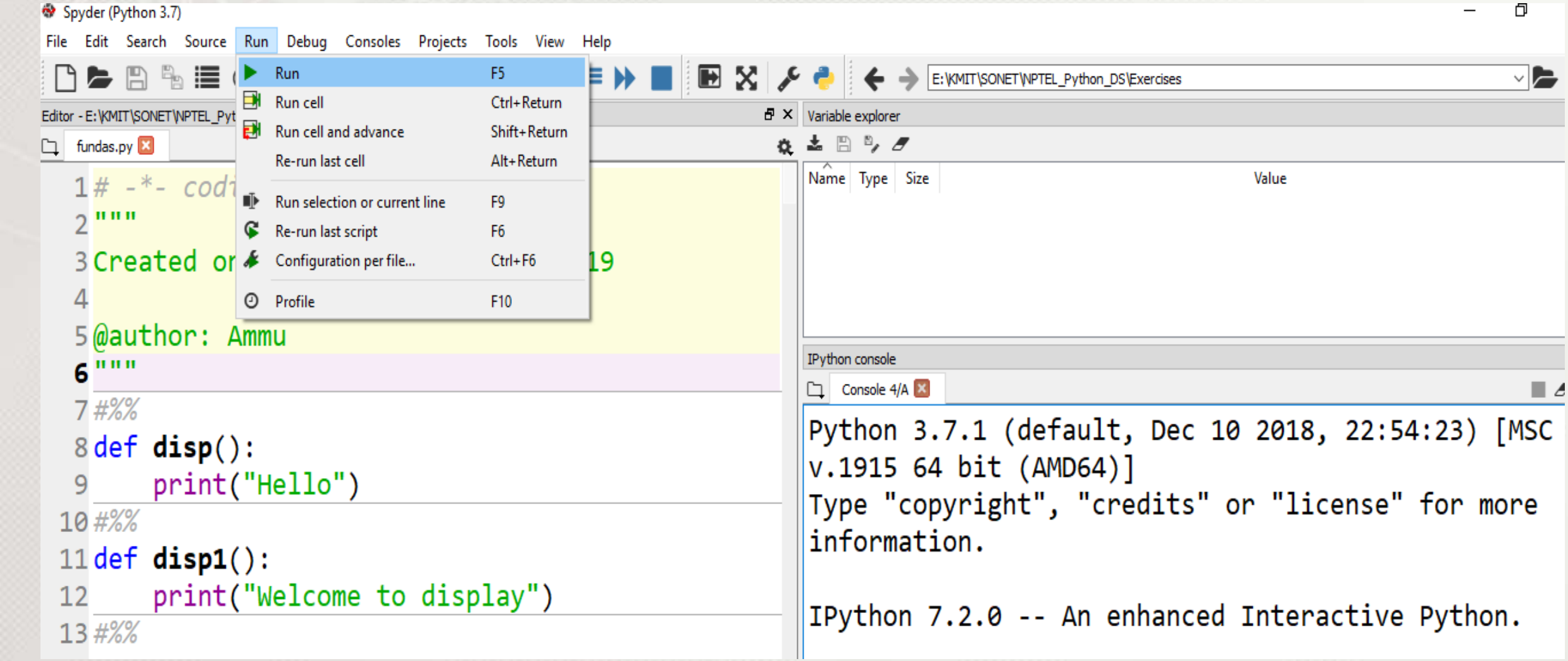
Python Features

- Easy to Learn and Easy to read
- Easy to Maintain
- Scripting
- Object Oriented
- Portable and Scalable
- Broad Standard Libraries
- GUI Programming
- Interactive Mode and Extendable
- It Supports all Databases
- It Beginner's Language

SONET Creating and Saving a script file DATA SCIENCE



File Execution,Clearing Console



Removing ,Clearing Variables from Environment

Name	Type	Size	Value
a	int	1	10

IPython console

Console 5/A

```
Python 3.7.1 (default, Dec 10 2018, 22:54:23) [MSC
v.1915 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more
information.

IPython 7.2.0 -- An enhanced Interactive Python.

In [1]: a=10

In [2]:
```

Name	Type	Size	Value

IPython console

Console 5/A

```
Python 3.7.1 (default, Dec 10 2018, 22:54:23) [MSC
v.1915 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more
information.

IPython 7.2.0 -- An enhanced Interactive Python.

In [1]: a=10

In [2]: del a
```

Exercises-1

Create a script for the following data:
A=34
B=24.32
C=45.23
S1="python"
S2="welcome to Data Science"
And remove A,C and s1 through console

Exercises-2

Create a script for the following data:
A=34
B=24.32
C=45.23
S1="python"
S2="welcome to Data Science"
And remove all variables from the console

Exercises-3

Create a script for the following data:
A=34
B=24.32
C=45.23
S1="python"
S2="welcome to Data Science"
And perform following operations and save it in a file by creating directory as py_for_DS
1.a1=A+B
2.a2=A+B+C
3.s12=S1+S2

Conclusion

You are aware of

- Anaconda and Spyder Importance
- Spyder Environment
- Why Python and Python Trend

We will proceed with

- Python Basics

Kmit

SONET

DATA SCIENCE

THANK YOU