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Thursday, 2nd March 2023

#> Python

Python is a high-level interpreted, and easy-to-learn programming language used to develop applications such as websites, data analysis automation, AI and software programs.

Pros

- Easy to learn & Use
- Readable Code
- Interpreted Language
- Library supports
- Platform Independent
- Used in many fields.

Cons

- Slower Execution speed
- High memory usage
- Not best for mobile apps
- Runtime Errors
- Limited Low-level Control.



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Tuesday, 28th February 2023

#> How to setup Python on your laptop / PC.

*Step 1: Install Python

- Python must be installed first to run Python programs.
- It provides the Python interpreter, which executes Python code line by line.
- During installation, we must check "Add Python to PATH".

*Step 2: Choose a Code Editor

A code editor or IDE is an application used to write, edit, run and manage Python programs.



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* Popular Application for Python :

- Visual Studio Code (VS code)
- PyCharm
- Jupyter Notebook
- Spyder
- IDLE (Python Default Editor)

You can use any one editor to learn Python.

Python code works the same everywhere, - only the editor changes.



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#> Virtual Environment

A virtual environment is an isolated workspace where you can install Python packages only for one project without affecting other projects.

Why Virtual Environment are Important?

- Without a virtual environment
 - All projects share the same packages.
 - version conflicts occur easily.

*> A separate box for each project where only required libraries are kept.



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#> Basic Virtual Environment

Creating Codes.

- python -m venv ~~folder_name~~ foldname
- folder_name\Scripts\activate ↗ for creating space
- pip install package name
- deactivate ↗ for activation

Requirements.txt

→ Used to store project dependencies:

pip freeze > requirements.txt

→ Install later using.

pip install -r requirements.txt



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#) Python Course

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#) What We Learn in this Course :-

*) Variables

*) Data Types

*) Input / Output

*) Operators

*) If / else

*) Loops

*) Functions

*) List, Tuple, Dictionaries

*) Sets

*) file Handling

**) Error Handling

**) OOP (Classes & Objects)

**) Modules & Packages

**) Mini Projects *

**) Without modules & Packages, Python development is impossible.



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Saturday, 14th January 2023

17 Variables :-

A variable is simply a name that stores a value in the computer's memory.

It is like giving a label to a box so that we know what inside it.

Why do we use Variables?

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Variables help us save data so we can use it later in the program.

Without variables, we would have to rewrite values again and again.



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#> Data Types

Data types tell what kind of values a variable stores.

like:-

Just like we use different containers from different items, Python uses different data types to store different kind of data.

Data Types :-

» Int (Integer)

→ Whole numbers (without decimal)

» Float (Decimal numbers)
Numbers with decimal points



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3> str (String)

→ Text data written inside quotes.

4> Bool (Boolean)

→ Represents True or False.

5> List

→ Ordered, changeable collection of items.

6> Tuple

→ Ordered but unchangeable collection

7> Set

→ Unordered collection with unique values.

8> Dict (Dictionary)

→ Stores data in key-value pairs.



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#> Input / Output*) Output :-

→ Output means showing something on the screen.

*) Input :-

→ Input means taking value from the user during program execution.

→ Everything received from input() is a string by default.

Print → gives output

Input → takes input from the user.

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#> Operators

operators are symbols
that perform actions
on values.

They help Python do
calculations, comparisons
and logical decisions.

Types of operators:

- *> Arithmetic
- *> Comparison / Relational
- *> Logical ~~op.~~
- *> Assignment
- *> Bitwise
- *> Membership
- *> Identity



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#> If-Else (Condition statements)

→ If-Else is used to make decision in Python.

It helps your program choose what to do based on a condition.

Just like :-

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if rains → take umbrella
else → go without umbrella

Why we use?

To run different code depending on whether a condition is True or False.



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#> If - else Statement
in Python :-

→ What is if - else ?

If - else is a decision making statement.

It helps Python choose what to do based on a condition.

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"If this is true, do this. Otherwise, do that."

Syntax :

If condition :

code runs if condition True

else :

code runs if condition False



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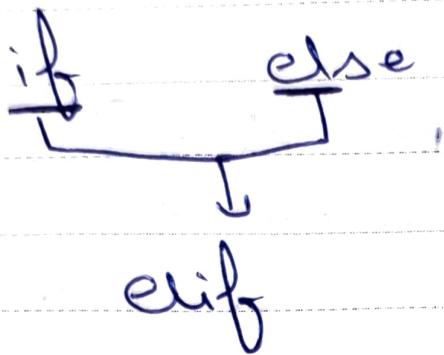
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*> if - elif - else



Used when there are more than two choices.

*> Nested if (if inside if)

An if statement inside another if.



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#> Loop :-

→ Loop allows us to repeat a block of code multiple times.

→ Two types of loop:-

*> While

*> for

#> for Loop :-

A for loop is used when you know how many times you want to repeat your code or when you want to repeat code of each item of a sequence.



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Syntax:

for variable in sequence:

Statement

*) range function

range (start, stop, step)

→ While Loop

Repeats code as long as condition is True.

Syntax:

While condition:

Statement



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*> Loop Control Statements

→ break - Stops the loop completely

→ continue - skips the current iteration.

→ pass - Does nothing (placeholder)

*> Disadvantage of While loop

Runs forever if condition never becomes False.



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#> List, Tuple, Dictionary
Sets.

- List is a collection of data that can change.
- Tuple is a collection of data that cannot change.

Once created

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you cannot change add
remove or modify.

*> Mutable / Immutable

mutable → Mutable means
changeable.

you can add, remove
delete.



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Set
List, ~~tuple~~ and
Dictionary are
mutable.

Immutable → Once created
the data cannot
be ~~not~~ modified.

#> Q&A :-

In Python, a set is a built-in data type used to store a collection of unique elements.

A set is an unordered mutable collection that does not allow duplicate values.



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#) Dictionary:

Stores data in
key : value pairs.

- ordered

- Mutable

- Keys are unique



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→ function

Thursday, 26th January 2023

#> A function is a small block of code that does a specific job.

Example:

- ① you give input
- ② it works on it
- ③ It gives something back output.

#> why do we use function?

Just like you don't wash clothes by hand again and again. - you use a washing machine.



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#> Human - Relatable Example

- 1 → you give ingredients
- 2 → boils, mixes, prepares
- 3 → output → Tea



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#> functions :-

Syntax

```
def function_name (Parameter):  
    # Function Body  
    return Value
```

*> Parameter Vs Arguments

Parameter → Variables written in the function definition.

Arguments → Value passed when calling the function.



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Types of function Arguments :-

→ Positional Arguments

Values are passed in order

→ Keyword Arguments

Arguments passed using Parameter names.

→ Default Arguments

Default Value is used if argument is not provided.

* *args (Arbitrary Positional Arguments)

Used when numbers of arguments is unknown.



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*> ** kwargs (Arbitrary Keyword Arguments)

Used to pass - value pairs.

*> Why we use Return Statement?

Used to send a value back from function.

*> Lambda function :-

Anonymous function → ~~function~~

An anonymous function is a function without a name.

In Python, it is created



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using the lambda keyword.

*> Local & Global Variables

A local variable is a variable that is defined inside a function and can be used only within the function.

A global variable is a variable that is defined outside any function and can be accessed anywhere in the program.



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*> Docstring (function Documentation)

A docstring is a string literal used to describe what a function, class or module does.

It is written inside triple quotes and helps other (and you) understand the code easily.

Syntax :-

```
def fx_name():
    """ doc_string -- """

```



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#> file Handling:-

file handling in Python refers to the process of creating, opening, reading writing and modifying files in Python code.

Why file Handling?

- To store data permanently
- To read or write data from text files, log files, databases etc.

Mode	Meaning
r	Read mode
w	Write mode
a	Append mode
x	Create mode
r+	Read & Write
b	Binary



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#> Error Handling

Error Handling (Exception Handling) in Python is way to manage errors during program execution without stopping the program.

Why Use Error Handling?

- Prevents program crash
- Handles runtime errors gracefully
- Can show meaningful messages to users.

Key word

try
except
finally
else
raise

Use

Block where code can error
Handles the error if it occurs
Executes whether error or not
Runs only if no except manually raise an exception

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Thursday, 2nd February 2023

#> OOP (Object Oriented Programming)

It is programming approach in Python the focuses on creating objects using classes, allowing code to be more reusable, organized and easier to maintain. It models real-world entities like student, cars etc.

Ex:

A class is a blueprint or template used to create objects. It contains variables (data) and functions (methods)



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#) Constructor (`__init__`)

A constructor is special function that runs automatically when an object is created.

#) Encapsulation

Encapsulation means ~~being~~ binding data and methods together and hiding sensitive data.

#) Inheritance

Inheritance allows one class to use the properties of another class.



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#> OOP

→ What is an Object?

An object is an instance of class

→ Why constructor important in Python?

A constructor is important because it automatically initialized (setup) an object when it is created in Python, the constructor is the `__init__()` method.



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→ Why Encapsulation
is important?

Encapsulation means
wrapping data and methods
together and protecting
data from direct access.

Syntax:

Class name:

Sunday, 19th February 2023

```
def fx_name(self, x)
    self.__name = x
```

Private

→ Why Inheritance is
Important?

Inheritance allows a class
to reuse properties of



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another class.

Types of inheritance :-

- Single
- Multiple
- Multilevel
- Hierarchical

→ Why self is used
in Python?

self refers to the
current object of the
class.



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#) why OOP is important?

- Code reusability
- Easy maintenance
- Real World modelling
- Cleaner and structured code.

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#> APIs

What is an API?

(Application Programming Interface) is like a waiter in a restaurant.

You (client) ask for something,



The API takes your request,



The server prepares that data,



The API gives the response back

→ Real - World Example

#> Weather APP

App → asks for temp.

Weather API → gives data

App → shows weather



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How API works (flow)

User → App → API Request → Server
User ← App ← API Response ← Server

Types of APIs :-

- REST API
- Public API
- Private API
- Web API

#> How to use APIs ?

With the help of request library. We can use APIs



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Saturday, 25th February 2023

#7 Request Library:

→ Types of API Requests

*> HTTP Methods

- Get → Get Data
- Post → Send data
- Put → Update data
- Patch → Update part of data
- Delete
 - ↳ Remove data

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requests is a Python library used to send HTTP requests easily.



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