



PYTHON BASICS

In this module, the students will reinforce their knowledge of the core Python programming concepts. They will get hands on experience on activities to apply their understanding of basic data types, conditionals, loops, typecasting, basic data types, functions and variables.

SESSION	CONCEPT	SKILLS
01	Communication With The Computer - Basic Python Commands	Exploration, Sequencing Exploring Python Interface and basic input/output commands. Comments in Python.
02	Communication Wth The Computer - Basic Data Types, Variables And Typecasting	Numeracy, Logic Converting one datatype into another.
03	Conditionals - I - Operators	Decision Making Exploring the conditional operators.
04	Conditionals-II	Pattern Recognition, Decision Making Exploring if-else, if-elif-else.
05	Loops And Iterations - I	Pattern Recognition, Decision Making Exploring iterative statements.
06	Loops And Iterations - II	Pattern Recognition, Decision Making Exploring iterative statements.
07	Functions- I	Abstraction Create user defined functions.
08	Functions -II	Abstraction Create user defined functions.
09	Functions -III	Abstraction Create user defined functions.
10	Assessment	Assessment of Learning



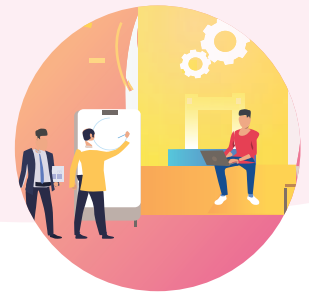
11	Practice Session	Problem Solving, Logic Practice problems on the concepts learned.
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PYTHON DATA STRUCTURES - I

In this module, the students will explore advance data structures of Python namely lists, dictionaries, tuples, strings, stacks and queues. they will be given practice to write code on how to manipulate data in these data structures using python functions.

SESSION	CONCEPT	SKILLS
12	Strings-I	Numeracy, Logic Work with strings and string manipulating functions.
13	String -II	Generalization, Abstraction Practice string manipulation functions.
14	Lists- I	Numeracy Create and traverse a list.
15	Lists- II	Numeracy Create and traverse a list.
16	2D Lists	Logic, Abstraction Learn how to create and use 2D lists.
17	Tuples	Pattern Recognition, Abstraction Create and traverse a tuple.
18	Sets-I	Numeracy Define sets and do operations on them.
19	Sets-II	Numeracy Define sets and do operations on them.

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20	Dictionaries-I	Numeracy, Logic Define and traverse a dictionary.
21	Dictionaries-II	Problem Solving Explore dictionary functions.
22	Formative Assessment	Assessment Of Learning
23	Practice Session	Problem Solving, Logic Practice problems on the concepts learned.

PYTHON DATA STRUCTURES - II

In this module, the students will learn how to search and sort data using python functions. Binary and Linear search algorithms will be explained for searching elements. Insertion and bubble sort algorithms will be explored to sort data.

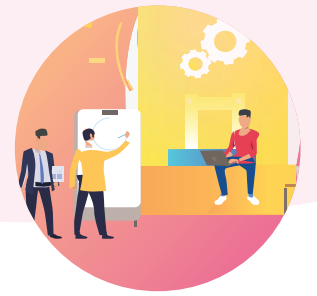
SESSION	CONCEPT	SKILLS
24	Searching-I	Problem Solving, Logic Search elements in lists, tuples and strings using linear search.
25	Searching-II	Problem Solving, Logic Search elements in lists, tuples and strings using linear search.
26	Practice Session	Problem Solving, Logic Practice problems on the concepts learned.
27	Sorting-I	Step-Wise Thinking, Logic Sort lists, tuples and strings using bubble sort.
28	Sorting-II	Step-Wise Thinking, Logic Sort lists, tuples and strings using selection sort.

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29	Sorting-III	Step-Wise Thinking, Logic Sort lists, tuples and strings using insertion sort.
30	Practice Session	Problem Solving, Logic Practice problems on the concepts learned.
31	Stacks-I	Generalization, Logic Create stacks, perform push and pop operations on stacks.
32	Stacks-II	Generalization, Logic Create menu driven programs for stacks.
33	Application Of Stacks - I	Numeracy, Decomposition Infix to postfix conversion, evaluation of postfix operation.
34	Application Of Stacks - II	Numeracy, Decomposition Infix to postfix conversion, evaluation of postfix operation.
35	Queue-I	Numeracy Create a simple queue, insert and delete elements from a queue.
36	Queue-II	Logic, Abstraction Circular queue, Priority queue.
37	Queue-III	Logic, Abstraction Create menu driven programs for queues.
38	Application Of Queues - I	Numeracy, Decomposition Deque, Perform operations on dequeue.
39	Application Of Queues-II	Numeracy, Abstraction Using a deque to solve a maze.

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40	Formative Assessment	Assessment Of Learning
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