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SMARTBTR INSTITUTE OF TECHNOLOGY INTERNATIONAL



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Course Title : Python Programming

Course Duration: 6 months

Course Fees: INR. : Rs. 6,000

Eligibility: 12th passed

Prerequisites: No experience required

TOPICS

1. Installation
2. First Step To Coding
3. Fundamentals
4. Data Types, variables
5. Basic Syntax
6. Boolean Data Types and Examples
7. String Data Types and Examples
8. Operators
9. Arrays
10. Functions
11. Conditionals
12. Loop
13. Class Structure in python Programming language
14. Introduction to classes and objects
15. Exception
16. Object Oriented Programming (OOPS) Concept
17. Basic Fundamental of Data Structure

Session-1: Installation

- Install tools and software, Setup IDE, Setup coding environment, Getting Started code with IDE

Session-2: First Step To Coding

- Python Introduction, Project Files, FAQ regarding Python, First Step to Coding, Using Quotation Marks in Python Coding, How Should the Coding Form and Style, Quiz

Session-3: Fundamentals

- Basic Fundamental, needed topic to learn, Write your first python code, Quick print out, Python syntax, Execute Python Code

Session-4: Data Types, variables

- Different kind of data types in python, exploring and writing code using datatypes, Variables in python, More on Datatypes and Variables, Storing data in variable, use variable's data

Session- 5: Basic Syntax

- Basic syntax in python, Comments, Print Statement

Session-6: Boolean Data Types and Examples

- Boolean Logic Expressions, Order Of Operations In Boolean Operators, Practice with Python, Quiz

Session-7: String Data Types and Examples

- Examining Strings Specifically, Accessing Length Information (Len Method), Search Method In Strings Startswith(), Endswith(), Character Change Method In Strings Replace(), Spelling Substitution Methods in String, Character Clipping Methods in String, Indexing and Slicing Character String, Complex Indexing and Slicing Operations, String Formatting with Arithmetic Operations, String Formatting With % Operator, String Formatting With String.Format Method, String Formatting With f-string Method, Quiz

Session-8: Operators

- Boolean Logic Expressions, Order Of Operations In Boolean Operators, Practice with Python, Quiz

Session-9: Arrays

- Section Overview, Built-in Arrays, Multi-dimensional Arrays, Quiz, Section Wrap-Up, Iterating Array, Getting Array Elements

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Session-10: Functions

- Section Overview, Function Prototypes and Definitions, Function Return Types and Parameters, Parameter Passing: Pass-by-Value and Pass-by-Reference, Variable Scope and Lifetime, Function Overloading, Recursion, Project - Return the Product of Three Parameters, Project - Return the Sum of Built-in Array Elements, Project - Return the Sum of Array Object Elements, Functions Quiz, Section Wrap-Up

Session-11: Conditionals

- Section Overview, Introduction to Control Statements, Selection Control Statements, Repetition Control Statements, Break and Continue, Random Numbers (Side Topic, Project - Odds and Evens, Project - Guess the Number, Control Statements Quiz, Section Wrap-Up

Session-12: Loop:

- Loop Code Structure, While loop, for loop, for each loop

Session-13: Class Structure in python Programming language

- Local and Global Variables, Features of Class, Instantiation of Class, Attribute of Instantiation, Write Function in the Class, Inheritance Structure, Creating custom class

Session-14: Introduction to classes and objects

- Section Overview, Basics of OOP, Creating Class, Object Creation of any class, object structure, Constructors and Destructors, A Rectangle Class, A Book Class, Project - A Bank Account Class, Custom classes and objects, Project - A, Pizza Class, Project - A Circle Class, more on Classes and Objects, Quiz, Section Wrap-Up

Session- 15: Exception

- (Section Overview, Exceptions and the Exception Hierarchy, Logic Errors, Runtime Errors and Throwing Exceptions, Rethrowing Exceptions, Custom Exceptions, Testing and Debugging, Project - Throwing and Handling an out_of_range Exception, Project - Creating and Using Your Own Exception, Exceptions and Debugging Quiz, Section Wrap-Up)

Session-16: Object Oriented Programming (OOPS) Concept

- Section Overview: An introduction to what will be covered in the section.
- Object Oriented Programming: Basic concepts and principles of OOP.
- Basics of Inheritance: Introduction to inheritance.
- Polymorphism: Explanation of polymorphism and its applications.
- Encapsulation: Concepts of encapsulation and data hiding.
- Parent and Child Classes: Explanation and examples of parent and child classes.
- Inheritance (Part 1): Detailed explanation of inheritance.
- Inheritance (Part 2): Continuation of inheritance concepts and examples.
- Polymorphism and Late Binding: Explanation of polymorphism with a focus on late binding.
- Enumerated Types (Side Topic): Introduction to enumerated types in Python.

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- **Inheritance and Polymorphism Quiz:** A quiz to test understanding of inheritance and polymorphism.
- **Section Wrap-Up: Summary and conclusion** of the section.

This structure is well-organized and covers the key aspects of OOP in Python.

Session-17: Basic Fundamental of Data Structure in python:

- Data Structure overview, types of data structure, basic data structure like array, linkedlist, map, set queue, stack, Write programme to understand this data structures



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