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PYTHON

CORE PYTHON

INTRODUCTION TO PYTHON

- What is python
- Python use cases
- The Birth of Python
- Python Timeline
- Features of Python
- Versions of Python
- Python distributions

INTRODUCTION TO SCRIPT

- What is script
- What is program
- Types of script
- Types of programming languages

THE PYTHON ENVIRONMENT

- Installation of Python on windows, MAC, LINUX
- Setting path for Python
- Python Documentation
- Getting Help
- Python Command line Shell, Editors and IDE's
- Basic Syntax
- Running Python Script on WINDOWS
- Running Python Script on LINUX
- Working with IDLE

GETTING STARTED

- Keywords v Data Types
- Static Data Types versus Dynamic Data Types
- Fundamental Data Types
- Collection Types
- Number systems
- Mutable objects versus Immutable Objects
- Variables
- Naming Conventions
- Print(), Type() and Id() Functions
- Input() and raw_input() functions
- Type Conversion functions

OPERATORS

- Arithmetic Operators
- Relational Operators
- Logical Operators
- Assignment Operators
- Short Hand Assignment Operators
- Bitwise Operators
- Membership Operators
- Identity Operators
- Precedence of operators
- Evaluating expressions

FLOW CONTROL

- About Flow Control
- Elements of flow control
- Block/Clause
- Conditional Statements
 - > Simple if
 - > if...else,
 - > if...elif...else
- Looping Statements
 - > while loop
 - > while ... else
 - > for loop
 - > for ... else
 - > using range() in for loop
 - > working with infinite loops and nested loops
- Break statement
- Continue statement
- Pass statement

STRING HANDLING

- What is String?
- Single-quoted string literals
- Triple-quoted string literals
- String Indexing
- String Slicing
- Working with String Functions
- Working with String Methods
- Reversing a string
- String multiplication and concatenation

COLLECTIONS

LIST :

- Lists are mutable
- Getting to lists
- List indices
- Traversing a list
- List operations
- List slices
- List methods
- Map, Filter and reduce
- Deleting elements
- Lists and strings

TUPLE:

- Advantages of Tuple over List
- Packing and Unpacking
- Comparing Tuples
- Creating nested tuple
- Using tuples as keys in dictionaries
- Deleting tuples
- Slicing Of Tuple
- Tuple Membership Test
- Built-in function with Tuple
- Dotted Charts

SETS:

- How to create a set?
- Iteration Over Sets
- Python set Methods
- Python Set Operations
- Union Of sets
- Built-in Functions with set
- Python Frozenset

DICTIONARY :

- How to create a dictionary?
- Python Hashing?
- Python Dictionary Methods
- Copying Dictionary
- Updating dictionary
- Delete keys from the dictionary
- Dictionary items() Method

FUNCTIONS

- Defining a function

- Calling a function
- Function Parameters
- Types of parameters
 - > default parameters
 - > non default parameters
 - > key word arguments
 - > non key word arguments
 - > arbitrary arguments
- Return statement in functions
- Handling return values
- Global variables and Local variables
- Scope of global variables and local variables
- Passing collections to a function

LAMBDA FUNCTIONS

- Lambda functions/ anonymous functions
- Filter()
- map()
- Reduce()

MODULES

- What is a module?
- Types of modules
- The import statement
- Module Aliases/renaming a module
- From ... Import
- Reloading a module
- Built in properties of a module
- Dir() function
- Creating user defined modules
- Module search path
- Command line arguments
- Working with pre defined Standard modules (Math, Random, Datetime, Os, Sys, String,...)
- Packages
 - Introduction to packages
 - __init__.py file
 - Defining packages
 - Importing from packages
 - Defining sub packages
 - Importing from sub packages
 - Differences between 2.X and 3.X packages

ADVANCE PYTHON

OOPS concepts

- Introduction to OOPS programming
- OOPS principles
- Encapsulation
- Defining Classes
- Creating objects

- Class variables
- instance variables
- Parameters
- Local variables
- Defining methods
- Differences between functions and methods

- Instance method
- Static method
- Class method
- Difference static and class methods
- Constructors
- destructors
- Inheritance
- Types of inheritances
- Polymorphism (over loading & over riding)
- Super() statement
- Built in properties of class
- Inner classes

EXCEPTION HANDLING

- Syntax Errors
- Runtime Errors
- What is BUG?
- What is Exception?
- Need of Exception handling
- Predefined Exceptions
- Predefined Exceptions Hierarchy
- try, except and finally clauses
- Named except block
- Default except block
- Handling Multiple Exceptions
- Nested try, except and finally blocks
- User defined Exceptions
- Raise, assert statements

FILE HANDLING

- What is a file?
- Opening a file
- Reading data from a file
- Writing data to a file
- Closing a file
- Working with the methods of file object
- Replacing the content of file
- Working with Directories
- Handling IO Exceptions

REGULAR EXPRESSIONS

- Introduction to regular expression
- Simple character matches
- Special characters
- Character classes
- Quantifiers
- Forming regular expressions
- Matching at beginning or end
- Greedy matches

- Compiling regular expressions
- Grouping
- Match Objects
- Match(), Search() and sub() functions
- Matching versus searching
- Splitting a string
- Replacing text
- Flags

DATABASE ACCESS

- Introduction to RDBMS
- Cursor object
- Executing SQL queries
- Executing SQL queries with bind variables
- Execution of PL/SQL procedures and functions
- Installation of mysql database
- Creating databases in mysql
- Creating users and assigning privileges to the users in mysql
- Installation of mysql python modules
- Establishing connection with mysql
- Closing mysql database connections
- Execution of insert, update, delete and select queries
- Handling db errors

ADVANCED CONCEPTS

- Python Iterator
- Python Generator
- Python Closure
- Python Decorators
- Python Property
- PIP
- Installation of external modules using PIP
- Working with csv, xml and json files
- Debugging using IDE
- Test cases implementations

DATA ANALYTICS

- Introduction to big data
- Pandas
- Numpy Matplotlib
- Hadoop word count example

PYTHON WEB DEVELOPMENT

- Introduction to web application
- Architecture of web application
- Introduction to DJANGO framework
- Introduction to FLASK framework

D JANGO

- Introduction to Web development
- Introduction to Django
- MVT pattern
- Flow in Django Project
- Virtualenv
- Installing Django
- Creating a Django Project
- What is a view
- Functin based Views
- Class based Views
- Http Response
- URL route configuration
- CSRF
- HTML and Django
- About templates
- Django template syntax
- Static Files
- Loading templates
- Context in Templates
- Sending Data
- Forms overview
- GET and POST
- The form Class
- Processing the Form
- Validation
- Forms in templates
- Database Setup
- Creating Models
- Activation Models
- Activating Models
- Admin Site
- One-to-Many Relation
- Many to One Relation
- One-to-One Relation
- Pagination
- Generic Views
- List Vies
- Detail View
- Create View
- Update View
- Delete View
- Cookies in Django
- Django Session Framework
- Caching
- File Uploading & Downloading
- Deployment on Apache
- Sending Email
- Other Email Functions
- Security with User Authentication
- Automated Testing
- When to Create tests
- Using Django's test Framework
- Using the test Client
- Running tests
- Checking Code Coverage

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