CLASS - XII

1. PYTHON REVISION TOUR - I

- 1.1 Introduction
- 1.2 Tokens in Python
 - 1.2.1 Keywords
 - 1.2.2 Identifiers (Names)
 - 1.2.3 Literals / Values
 - 1.2.4 Operators
 - 1.2.5 *Punctuators*
- 1.3 Barebones of a python program
- 1.4 Variables and Assignments
 - 1.4.1 Dynamic Typing
 - 1.4.2 Multiple Assignments
- 1.5 Simple Input and Output
- 1.6 Data Types
- 1.7 Mutable and Immutable Types
- 1.8 Expressions
 - 1.8.1 Evaluating Arithmetic Operations
 - 1.8.2 Evaluating Relational Expressions
 - 1.8.3 Evaluating Logical Expressions
 - 1.8.4 Type Casting (Explicit Type Conversion)
 - 1.8.5 Math Library Functions
- 1.9 Statement Flow Control
- 1.10 The if Conditionals
 - 1.10.1 Plain if Conditional Statement
 - 1.10.2 The if-else Conditional Statement
 - 1.10.3 The if-elif Conditional Statement
 - 1.10.4 Nested if Statements

- 1.10.5 Storing Conditions
- 1.11 Looping Statements
 - 1.11.1 The for Loop
 - 1.11.2 The while Loop
- 1.12 Jump Statements- break and continue
- 1.13 More on Loops
 - 1.13.1 Loop else statement
 - 1.13.2 Nested Loops

2. PYTHON REVISION TOUR - II

- 2.1 Introduction
- 2.2 Strings in Python
 - 2.2.1 Item Assignment not Supported
 - 2.2.2 Traversing a String
 - 2.2.3 String Operators
 - 2.2.4 String Slices
 - 2.2.5 String Functions
- 2.3 Lists in Python
 - 2.3.1 Creating Lists
 - 2.3.2 Lists in Strings
 - 2.3.3 List Operations
 - 2.3.4 List Manipulation
 - 2.3.5 Making True Copy of a List
 - 2.3.6 List Functions
- 2.4 Tuples in Python
 - 2.4.1 Creating Tuples
 - 2.4.2 Tuples vs. Lists
 - 2.4.3 Tuple Operations
 - 2.4.4 Tuple Functions and Methods

- 2.5 Dictionaries in Python
 - 2.5.1 Creating a Dictionary
 - 2.5.2 Accessing Elements of a Dictionary
 - 2.5.3 Characteristics of a Dictionary
 - 2.5.4 Dictionary Operations
 - 2.5.5 Dictionary Functions and Methods
- 2.6 Sorting Techniques
 - 2.6.1 Bubble Sort
 - 2.6.2 Insertion Sort

3. WORKING WITH FUNCTIONS

- 3.1 Introduction
- 3.2 Understanding Functions
 - 3.2.1 Calling / Invoking / Using a Function
 - 3.2.2 Python Function Types
- 3.3 Defining Functions in Python
 - 3.3.1 Structure of a Python Program
- 3.4 Flow of Execution in a Function Call
 - 3.4.1 Arguments and Parameters
- 3.5 Passing Parameters
 - 3.5.1 Positional / Required Arguments
 - 3.5.2 Default Arguments
 - 3.5.3 Keyword (Named) Arguments
 - 3.5.4 Using Multiple Argument Types Together
- 3.6 Returning Values From Functions
 - 3.6.1 Returning Multiple Values
- 3.7 Composition
- 3.8 Scope of Variables
 - 3.8.1 Name Resolution (Resolving Scope of a Name)

- 3.9 Mutable / Immutable Properties of Passed Data Objects
 - 3.9.1 Mutability / Immutability of Arguments / Parameters and Function Calls

4. USING PYTHON LIBRARIES

- 4.1 Introduction
- 4.2 What is a Library?
 - 4.2.1 What is a Module?
- 4.3 Importing Modules in a Python Program
 - 4.3.1 Import Entire Module
 - 4.3.2 Importing Select Objects from a Module
 - 4.3.3 Python's Processing of import <module> Command
- 4.4 Using Python Standard Library's Functions and Modules
 - 4.4.1 Using Python Built- in Functions
 - 4.4.2 Working with Some Standard Library Modulus
- 4.5 Creating Python Library
 - 4.5.1 Structure of a Package
 - 4.5.2 Procedure for Creating Packages
 - 4.5.3 Using / Importing Python Libraries

5. FILE HANDLING

- 5.1 Introduction
- 5.2 Data Files
- 5.3 Opening and Closing Files
 - 5.3.1 Opening Files
 - 5.3.2 Closing Files
- 5.4 Working with Text Files
 - 5.4.1 Reading from Text Files
 - 5.4.2 Writing onto Text Files
 - 5.4.3 The flush() Function

- 5.4.4 Removing Whitespaces after Reading from File
- 5.4.5 Significance of File Pointer in File Handling
- 5.5 Standard Input, Output and Error Streams
- 5.6 Working with Binary Files
 - 5.6.1 Creating / Opening / Closing Binary Files
 - 5.6.2 Writing onto a Binary File Pickling
 - 5.6.3 Reading from a Binary File UnPickling
 - 5.6.4 Searching in a File
 - 5.6.5 Updating in a Binary File
- 5.7 Working with CSV Files
 - 5.7.1 Opening / Closing CSV Files
 - 5.7.2 Writing in CSV Files
 - 5.7.3 Reading in CSV Files

6. RECURSION

- 6.1 Introduction
- 6.2 Recursive Function
- 6.3 How Recursion Works
- 6.4 Recursion in Python
 - 6.4.1 Some Recursive Codes
 - 6.4.2 Binary Search
 - 6.4.3 Recursive Binary Search
- 6.5 Recursion vs. Iteration

7. IDEA OF ALGORITHMIC EFFICIENCY

- 7.1 Introduction
- 7.2 What is Computational Complexity?
- 7.3 Estimating Complexity of Algorithms
 - 7.3.1 Big-O Notation

7.3.2 Guidelines for Computing Complexity

7.4 Best, Average and Worst Case Complexity

8. DATA STRUCTURE - I: LINEAR LISTS

- 8.1 Introduction
- 8.2 Elementary Data Representation
- 8.3 Different Data Structures
 - 8.3.1 Linear Lists Arrays
 - 8.3.2 Stacks
 - 8.3.3 Queues
 - 8.3.4 Linked Lists
 - 8.3.5 Trees
- 8.4 Operations on Data Structures
- 8.5 Linear Lists
- 8.6 Linear List Data Structure
 - 8.6.1 Searching in a Linear List
 - 8.6.2 Insertion in a Linear List
 - 8.6.3 Deletion of an element from a Sorted Linear List
 - 8.6.4 Traversal in a Linear List
 - 8.6.5 Sorting in a Linear List
- 8.7 Nested / Two Dimensional Lists in Python
 - 8.7.1 Two Dimensional Lists

9. DATA STRUCTURE - II: STACKS AND QUEUES USING LISTS

- 9.1 Introduction
- 9.2 Stacks
 - 9.2.1 Implementing Stack in Python
 - 9.2.2 Stack Application
- 9.3 Queues

- 9.3.1 Implementing Queues in Python
- 9.3.2 Variations in Queues
- 9.3.3 Queue Applications

10. COMMUNICATION AND NETWORK CONCEPTS

- 10.1 Introduction
- 10.2 Computer Networks- An Introduction
 - 10.2.1 Components of a Computer Network
- 10.3 Types of Network
 - 10.3.1 Types of Networks based on Geographical Spread
 - 10.3.2 Types of Networks by Component Roles
- 10.4 Evolution of Networking
 - 10.4.1 ARPANET
 - 10.4.2 The Internet
 - 10.4.3 The Interspace
- *10.5* Switching Techniques
 - 10.5.1 Circuit Switching
 - 10.5.2 Message Switching
 - 10.5.3 Packet Switching
- 10.6 Data Communication Terminologies
- 10.7 Transmission Media
 - 10.7.1 Twisted Pair Cable
 - 10.7.2 Coaxial Cable
 - 10.7.3 Optical Fibres
 - 10.7.4 Guided Media Compared
 - 10.7.5 Micro Wave (Terrestrial Microwave)
 - 10.7.6 Radio Wave
 - 10.7.7 Satellite (Satellite Microwave)
 - 10.7.8 Other Unguided Media

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10.8 Network Topologies

10.8.1 Point-to-Point Link

10.8.2 The Star Topology

10.8.3 The Bus or Linear Topology

10.8.4 The Ring or Circular Topology

10.8.5 The Tree Topology

10.8.6 Mesh Topology

10.8.7 Fully Connected

10.8.8 Factors to consider for Topology Selection

10.9 Network Devices

10.9.1 Modern

10.9.2 RJ-45
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10.9.3 NIC (Network Interface Card)

10.9.4 Hub

10.9.5 Switch

10.9.6 Repeater

10.9.7 Bridge

10.9.8 Router

10.9.9 Gateway

10.9.10 WiFi Card

10.9.11 Network Devices and Components Checklists

10.10 Network Protocols

10.10.1 HTTP (Hyper Text Transfer Protocol)

10.10.2 FTP (File Transfer Protocol)

10.10.3 TCP / IP (Transmission Control Protocol / Internet Protocol)

10.10.4 SLIP / PPP

10.10.5 Protocols used in Email

10.11 Wireless / Mobile Computing

10.11.1 Wireless vs. Mobile Computing

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10.11.2
             Wireless / Mobile Computing Technologies
10.12 Internetworking Terms and Concepts
   10.12.1
             WWW (World Wide Web)
   10.12.2
             Telnet
   10.12.3
             Web Browser and Web Server
   10.12.4
            Web Sites, Web Addresses and Web Pages
   10.12.5
            URL and Domain Names
   10.12.6
            Web Hosting
   10.12.7
            Web 2.0
   10.12.8
            HTML
   10.12.9
            XML( eXtensible Markup Language)
   10.12.10 DHTML (Dynamic HTML)
   10.12.11 Web Scripting
10.13 Network Security Concepts
   10.13.1
            Related Terms
   10.13.2
            IPR Issues
10.14 Viruses
   10.14.1
            How Computer Viruses Spread?
   10.14.2
            Damage that Viruses Cause
   10.14.3
            Trojan Horse
   10.14.4
            Worms
   10.14.5
            Spam
   10.14.6
             Virus Protection
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10.15 E-Commerce Payment Transactions using Online Banking

Mobile Banking

e-Wallet

11. RELATIONAL DATABASES

11.1 Introduction

10.15.1

10.15.2

- 11.2 Purpose of DBMS
- 11.3 Relational Database Model
- 11.4 The Relational Model Terminology
 - 11.4.1 Views
 - 11.4.2 Structure of Relational Databases
- 11.5 Brief History of MySQL
- 11.6 MySQL Database System
- 11.7 Starting MySQL
- 11.8 MySQL and SQL
 - 11.8.1 Processing Capabilities of SQL
 - 11.8.2 Data Definition Language
 - 11.8.3 Classification of SQL Statements

12. SIMPLE QUERIES IN SQL

- 12.1 Introduction
- 12.2 Some MySQL SQL Elements
 - 12.2.1 Literals
 - 12.2.2 Data Types
 - 12.2.3 Null Values
 - 12.2.4 Comments
- 12.3 SQL Commands Syntax
- 12.4 Sample Database
- 12.5 Making Simple Queries
 - 12.5.1 Accessing Database
 - 12.5.2 The SELECT Command
 - 12.5.3 Selecting all Columns
 - 12.5.4 Reordering Columns in Query Results
 - 12.5.5 Eliminating Redundant Data (with keyword DISTINCT)
 - 12.5.6 Selecting from all the Rows ALL Keyword

- 12.5.7 Viewing Structure of Table 12.5.8 How to Perform Simple Calculations? 12.5.9 Scalar Expressions with Selected Fields 12.5.10 Using Column Aliases *12.5.11* Handling Nulls Putting Text in the Query Output 12.5.12 12.5.13 Selecting Specific Rows - WHERE clause 12.5.14 Relational Operators 12.5.15 Logical Operators 12.5.16 Condition Based on a Range 12.5.17 Condition Based on a List 12.5.18 Condition Based on Pattern Matches *12.5.19* Searching for NULL *12.5.20* Operator Precedence 12.5.21 Sorting Results - ORDER BY clause MySQL Functions
- 12.6
 - 12.6.1 String Functions
 - 12.6.2 Numeric Functions
 - 12.6.3 Date and Time Functions
- **Aggregate Functions** 12.7

13. TABLE CREATION AND DATA MANIPULATION COMMANDS

- 13.1 Introduction
- 13.2 Database in MySQL
 - 13.2.1 Creating Databases
 - 13.2.2 Opening Databases
 - 13.2.3 Removing Databases
- 13.3 Creating Tables
 - 13.3.1 Data Integrity through Constraints

- 13.4 Changing Data with DML Commands
 - 13.4.1 Inserting Data into Table
 - 13.4.2 Modifying Data with UPDATE Command
 - 13.4.3 Deleting Data with DELETE Command
- 13.5 More DDL Commands
 - 13.5.1 ALTER TABLE Command
 - 13.5.2 The DROP TABLE Command

14. GROUPING RECORDS, JOINS IN SQL

- 14.1 Introduction
- 14.2 Types of SQL Functions
- 14.3 Grouping Result- GROUP BY
 - 14.3.1 Nested Groups Grouping on Multiple Columns
 - 14.3.2 Placing Conditions on Groups HAVING clause
 - 14.3.3 Non- Group Expressions with GROUP BY
- 14.4 Joins
 - 14.4.1 Cartesian Product
 - 14.4.2 Table Aliases
 - 14.4.3 Equi-Join and Natural Join
 - 14.4.4 Additional Search Conditions in Joins

15. INTERFACE PYTHON WITH MYSQL

- 15.1 Introduction
- 15.2 Connecting to MySQL from Python
 - 15.2.1 Steps for Creating Database Connectivity Applications
 - 15.2.2 Connecting with MySQL Database using pymysql
- 15.3 Parameterized Queries
- 15.4 Performing Insert and Update Queries