# Python Core Road-Map

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## Introduction

1. History
2. Programming Paradigm
3. Features
4. Who uses Python today?

## Setup Workspace

1. Install python from www.python.org
2. Install Anaconda www.anaconda.com
3. Install Jupyter Notebook

## Basics

01. Variables
02. Print function
03. Input from user
04. Data Types
    a. Numbers
    b. Strings
    c. Lists
    d. Dictionaries
    e. Tuples
    f. Sets
    g. Other Types
05. Operators
    a. Arithmetic Operators
    b. Relational Operators
    c. Bitwise Operators
    d. Logical Operators
06. Type conversion

## Control Statements

1. If Else
    a. If
    b. Else
    c. Else If
    d. If Else Ternary Expression
2. While Loops
    a. Nested While Loops
    b. Break
    c. Continue
    d. pass
    e. Loop else

## Lists

1. List Basics
2. List Operations
3. List Comprehensions
4. List Methods

## Strings

1. String Basics
2. String Literals
3. String Operations
4. String Comprehensions
5. String Methods

## For Loops

1. Range Functions
2. Nested For Loops
3. Break

4. Continue
5. Pass
6. Loop else

## Functions

1. Definition
2. Call
3. Function Arguments
4. Default Arguments
5. Docstrings
6. Scope
7. Special functions Lambda, Map and Filter
8. Recursion
9. Functional Programming and Reference Functions

## Dictionaries

1. Dictionaries Basics
2. Operations
3. Comprehensions
4. Dictionaries Methods

## Tuples

1. Tuples Basics
2. Tuples Comprehensions
3. Tuple Methods

## Sets

1. Sets Basics
2. Sets Operations
3. Union

4. Intersection
5. Difference and Symmetric Difference

## Data Structures and Algorithms

1. Analysis of Algorithms
2. Types of analysis
3. Asymptotic Notations
4. Recursion and Backtracking
5. Stack
6. Queue
7. Trees
8. Linked Lists
9. Sorting
10. Searching

## File Handling

1. File Basics
2. Opening Files
3. Reading Files
4. Writing Files
5. Editing Files
6. Working with different extensions of file
7. With Statements

## Exception Handling

1. Common Exceptions
2. Exception Handling
    a. Try
    b. Except
    c. Try except else
    d. Finally
    e. Raising exceptions
    f. Assertion

## Object Oriented Programming

1. Classes
2. Objects
3. Method Calls
4. Inheritance and Its Types
5. Overloading
6. Overriding
7. Data Hiding
8. Operator Overloading

## Regular Expression

1. Basic RE functions
2. Patterns
3. Meta Characters
4. Character Classes

## Modules & Packages

1. Different types of modules
2. Create your own module
3. Building Packages
4. Build your own python module and deploy it on pip

## Magic Methods

1. Dunders
2. Operator Methods

## CGI Programming

1. Architecture
2. GET
3. POST
4. Cookies
5. Working with files

## Network Programming

1. Socket
2. Modules
3. Networking methods
4. Client and Server
5. Other Modules

## Multithreading

1. Thread
2. New Thread
3. Threading Module
4. Synchronization
5. Priorities

## GUI Programming

1. GUI Programming Basics
2. Using Tkinter
3. Building Desktop Applications using Tkinter.

## Advance Topics

1. Flask
2. SQL
3. HTML5
4. CSS3
5. JavaScript and jQuery
6. Web Scraping
7. Projects

## Approach for Academic Requirements

1. All curriculum topics of the respective university will be covered within this training program.
2. For theory, material will be provided.

## Approach for Placement Requirements

1. Competitive Programming

   Competitive Programming will start after Loops and Functions, parallelly with further topics.

2. Logical Thinking

   Logical Programming will start from day one parallelly.

3. Building Strategy for Technical Rounds
4. Solving more than 500+ problem statements and interview questions.
5. Building mini Projects for understanding of different modules.

## Further Approach after learning Python Core

1. Web Development
2. Ethical Hacking
3. Machine Learning
4. Deep Learning
5. Computer Vision
6. Natural Language Processing
7. Data Science

## Materials & Resources

1. E-books
2. PDFs
3. Booklets
4. Jupyter Files
5. Useful links

Will be provided as we move further with each and every topic.

# Connect with me on these platforms:

**LinkedIn : https://www.linkedin.com/in/hemansnation/**

**GitHub : https://github.com/hemansnation**

**Instagram : https://www.instagram.com/masterdexter.ai/**

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