IDM TECHPARK

GUIDE`S FOR PERFECT CAREER PATHWAY

Python Course Syllabus

N·S·D·C National Skill Development Corporation

CERTIFIED ISO 9001:2015 COMPANY

IDMTECHPARK
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About Us

IDMTECHPARK global retail & corporate training solutions provider in Coimbatore, Erode, Trichy & Salem that offers a comprehensive range of training and placement services for both fresher's and professionals seeking new opportunities. The company commenced its IT training business in 2016. A pioneer in IT education, over the years, we have trained over 50k students. Idmtechpark has a wide range of courses, maintains education standards & provides placement assistance.

About IDMTechpark Education Quality

IDMTECHPARK is managed and developed by industry specialists with more than 8 years of expertise in the field. IDMTECHPARK offers a staff of highly skilled professional trainers who deliver effective IT training in a friendly setting, concentrating on the needs of each individual to help them succeed in a demanding work world. In the book of career and success, our staff never leaves a page unturned.

IDMTECHPARK's versatile instructor-led training class rooms and lower-class sizes enable people to engage more easily and absorb knowledge, resulting in remarkable results for both themselves and the organizations for which they work. Our training programmes are adaptable and customizable to ensure that each participant gets the most out of their time with us. IDMTECHPARK focuses in providing hands-on IT training in over 30 different courses.

- We teach in-demand courses
- We provide impactful learning material
- Our teachers are well-selected & trained
- We follow world-class teaching methods
- Our courses include E-Projects
- We conduct technical workshops
- Exams are held and based on Exams providing Certification
- Certificates are recognized the world over
- Our course timings are flexible

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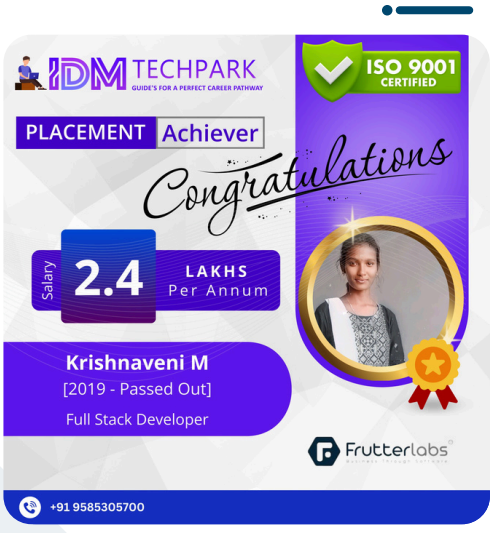
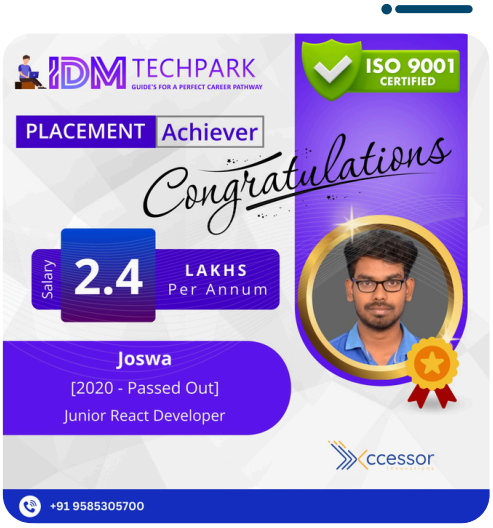
Our Recent Placement

Idmtechpark assists students in getting job placements on successful completion of their courses. Idmtechpark also provides recruitment assistance to organizations. Idmtechpark students are shortlisted based on the organization's requirement. To make students job-ready, Idmtechpark conducts workshops e.g. How to do Group Discussions, how to behave in a Personal Interview. From time to time, job fairs & campus recruitments are conducted. Workplace skills such as time management, making effective presentations and communication skills are also provided. All this helps students find appropriate jobs in the IT industry while also helping save companies recruitment costs.

Krishnaveni M

Frutterlabs





Joshwa

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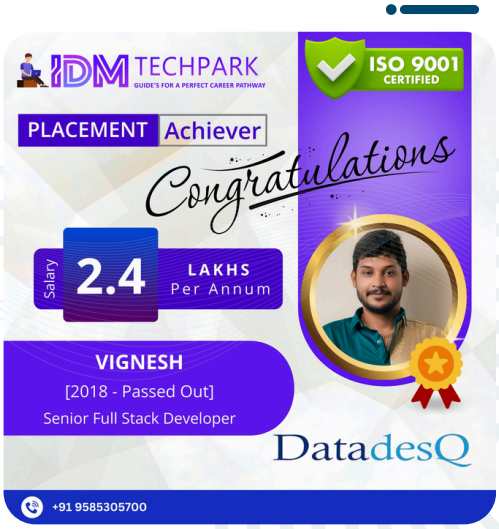

Vignesh

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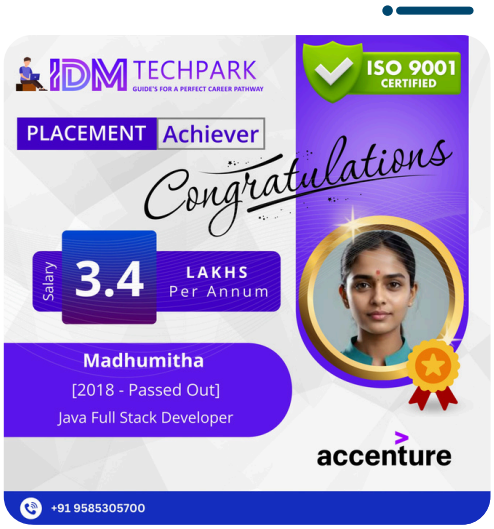
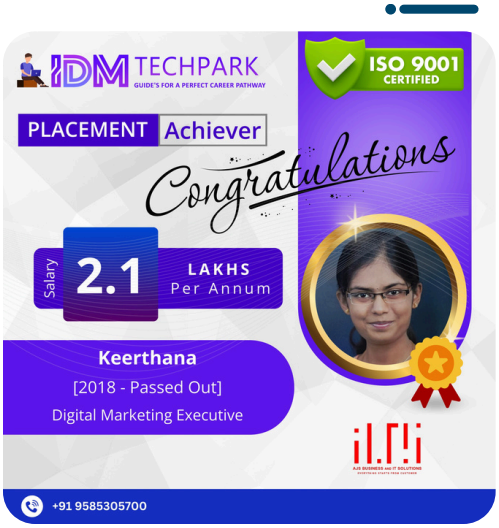


Madhumitha

Accenture

Keerthana

AJS



Brindha Boopathi

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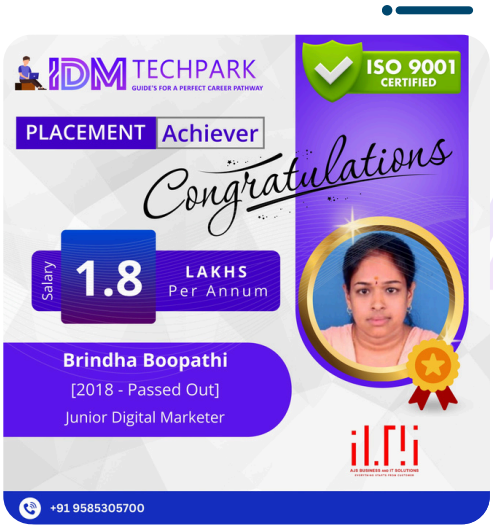

Kavin Kumar

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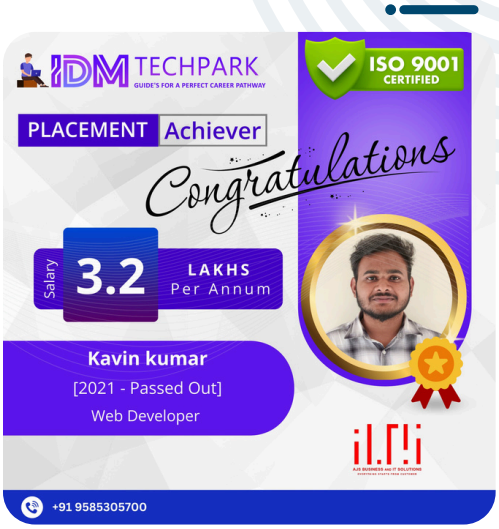

Ajithkumar

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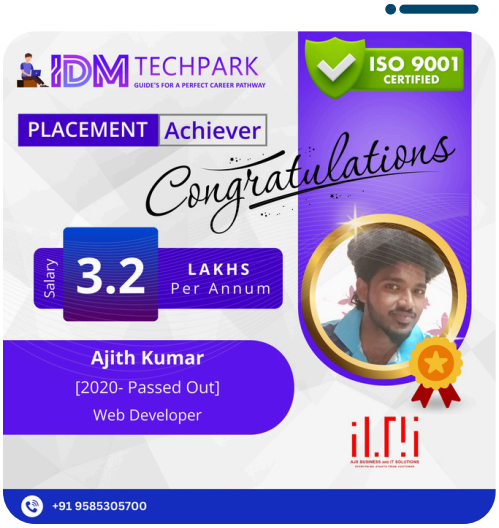

Gowthami

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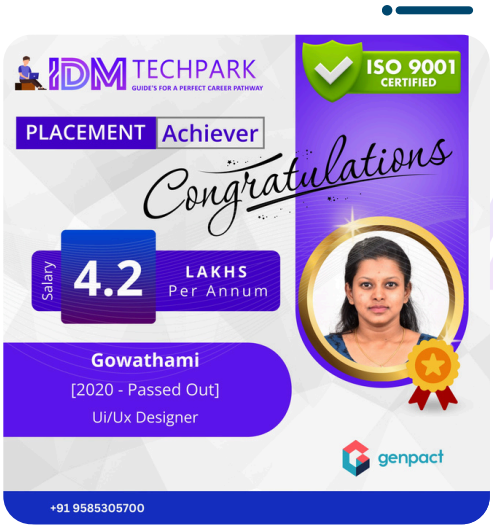

Surya

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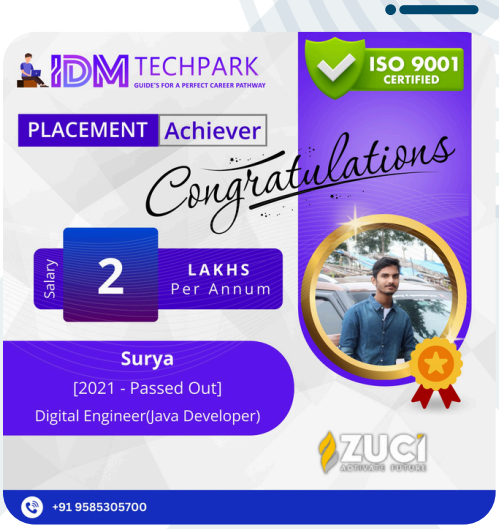

Pavithra

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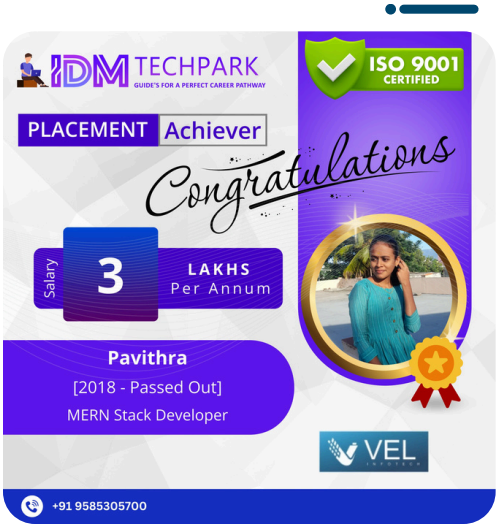
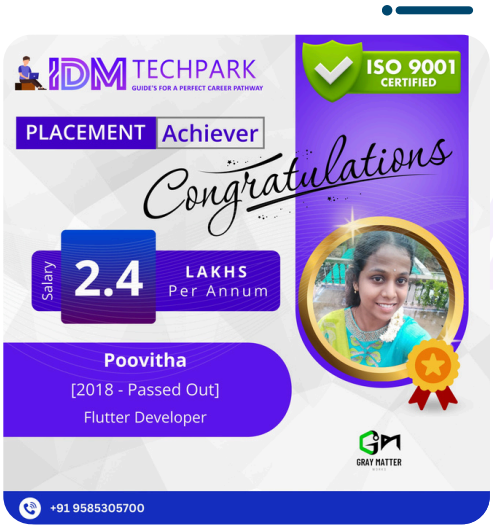


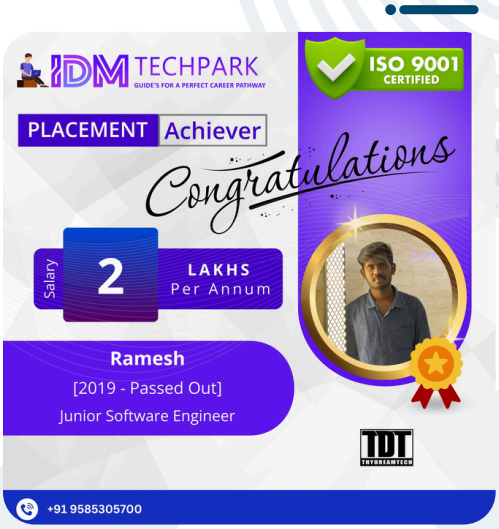
Poovitha

Gray Matter



Ramesh

TDT



Siva Sankar

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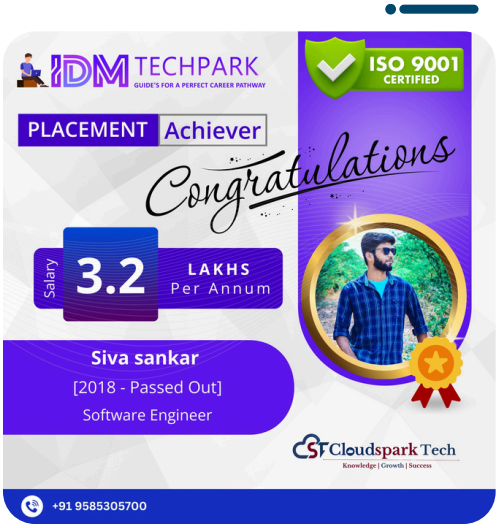

Nabeel Hisham

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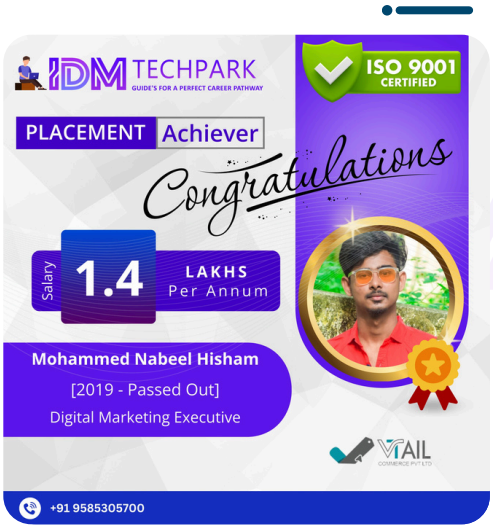
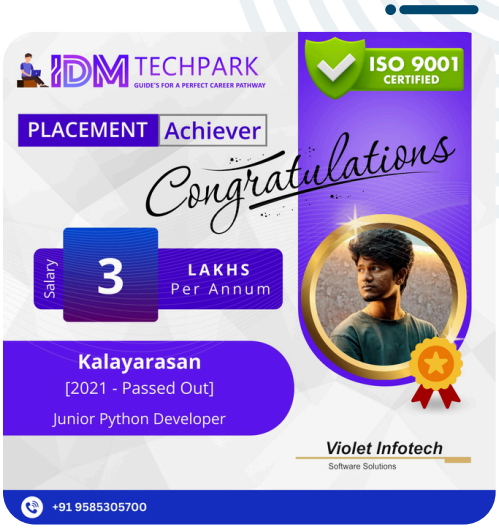


Kalayarasan

Violet Infotech



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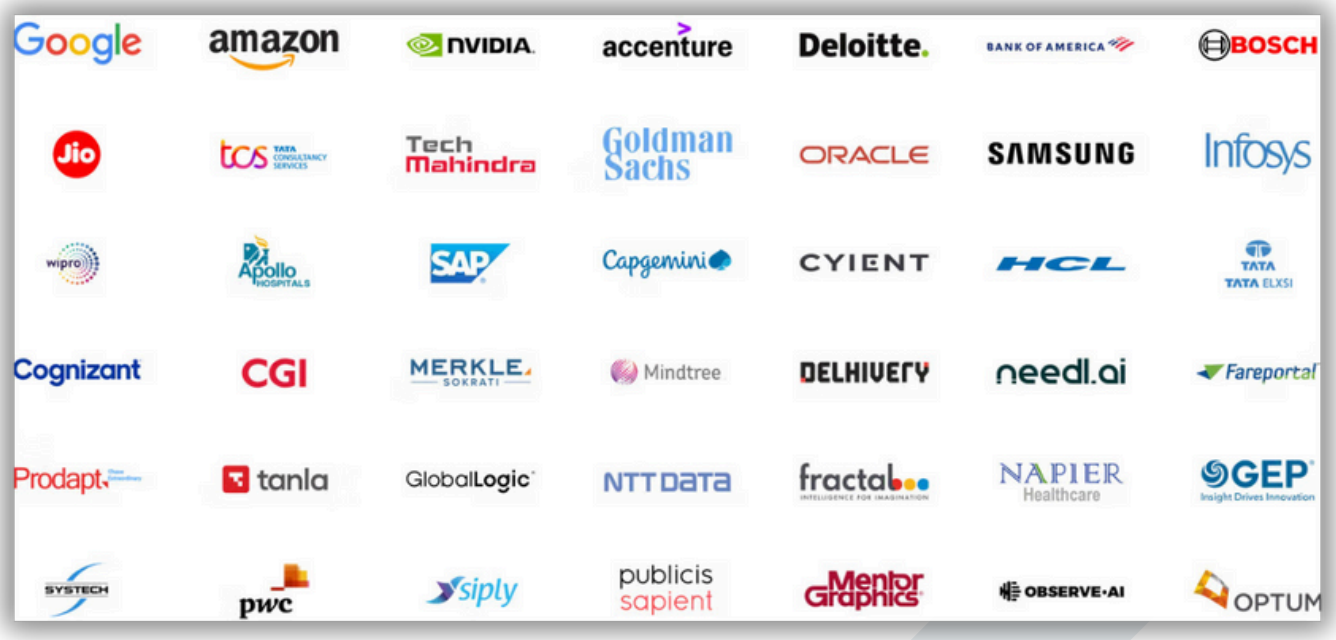

MODULE 1

Introduction to Python Programming

- Overview of Python and Its History
- Installing Python and Setting Up the Development Environment (IDE: PyCharm, VS Code)
- Writing Your First Python Program
- Understanding Python Syntax and Structure
- Variables, Data Types, and Constants
- Basic Input and Output
- Arithmetic and Logical Operators
- Comments and Documentation in Python

MODULE 2

Control Flow and Loops

- Conditional Statements: if, elif, else
- Comparison Operators and Logical Operators
- Loops: for and while Loops
- Loop Control Statements: break, continue, pass
- Nested Loops
- Working with Lists and Iterables in Loops

MODULE 3

Functions in Python

- Defining Functions in Python
- Function Parameters and Return Values
- Default Arguments, Variable-Length Arguments (*args and **kwargs)
- Lambda Functions (Anonymous Functions)
- Function Scope and Lifetime
- Recursion in Python
- Python's Built-in Functions

MODULE 4

Data Structures in Python - Lists and Tuples

- Introduction to Data Structures
- Lists: Creation, Indexing, and Slicing
- List Operations (Adding, Removing, Modifying Elements)
- List Comprehensions
- Introduction to Tuples: Immutable Sequences
- Tuple Operations (Indexing, Slicing)
- Tuple Packing and Unpacking

MODULE 5

Data Structures in Python - Dictionaries and Sets

- Introduction to Dictionaries: Key-Value Pairs
- Dictionary Operations: Adding, Modifying, and Removing Elements
- Dictionary Comprehensions
- Introduction to Sets: Unordered Collections of Unique Elements
- Set Operations (Union, Intersection, Difference, Symmetric Difference)
- Set Comprehensions
- Common Dictionary and Set Methods

MODULE 6

String Manipulation in Python

- Working with Strings in Python
- String Indexing, Slicing, and Concatenation
- String Methods: upper(), lower(), replace(), split(), join()
- Formatting Strings with f-strings, format(), and %-formatting
- Regular Expressions in Python (re module)
- String Encoding and Decoding

MODULE 7

File Handling and I/O

- Reading and Writing Files in Python
- Opening Files with open()
- File Modes: Read, Write, Append
- Working with File Pointers and Buffers
- File Methods: read(), write(), close()
- Context Manager (with statement) for File Handling
- Reading and Writing CSV, JSON, and Pickle Files

MODULE 8

Exception Handling in Python

- Introduction to Errors and Exceptions
- The try, except, else, and finally Blocks
- Catching Specific Exceptions
- Raising Exceptions with raise
- Custom Exception Classes
- Using Assertions in Python
- Best Practices for Error Handling

MODULE 9

Object-Oriented Programming (OOP) in Python

- Introduction to OOP and Classes
- Defining Classes and Objects in Python
- Instance Variables and Methods
- The self Keyword
- Constructors (__init__ method)
- Inheritance and Method Overriding
- Polymorphism and Encapsulation
- Special Methods: __str__, __repr__, __len__, etc.
- Static and Class Methods

MODULE 10

Python Modules and Packages

- Introduction to Modules and Importing
- Creating and Using Modules
- Python Standard Library Overview
- Installing Third-Party Packages with pip
- Virtual Environments and venv
- Creating and Distributing Python Packages
- Introduction to __init__.py and Package Structure

MODULE 11

Iterators and Generators

- Introduction to Iterators
- __iter__() and __next__() Methods
- Understanding Python's Iterable Protocol
- Introduction to Generators
- yield Keyword and Generator Functions
- Benefits of Generators: Lazy Evaluation
- Using itertools for Advanced Iteration

MODULE 12

Advanced Python Functions

- Closures and Nested Functions
- Decorators and Function Wrapping
- Function Memoization and Caching
- Partial Functions (functools.partial)
- Higher-Order Functions
- map(), filter(), and reduce() Functions
- Handling Functions with Variable Arguments

MODULE 13

Python Collections Module

- Introduction to the collections Module
- Named Tuples and namedtuple()
- Deques: Double-Ended Queues
- Counters: Frequency Counting
- Default Dictionaries (defaultdict)
- Ordered Dictionaries (OrderedDict)

MODULE 14

Working with Databases in Python

- Introduction to Databases (SQL vs NoSQL)
- Connecting to SQL Databases with sqlite3 or MySQLdb
- Executing SQL Queries from Python
- Inserting, Updating, and Deleting Data from Databases
- Using ORM (Object Relational Mapping) with SQLAlchemy
- Working with NoSQL Databases (MongoDB) using pymongo
- CRUD Operations with MongoDB

MODULE 15

Python for Web Development - Flask Basics

- Introduction to Web Development with Python
- Setting Up Flask Web Framework
- Creating a Simple Flask Web Application
- Routing in Flask
- Handling HTTP Methods: GET, POST, PUT, DELETE
- Templates and Jinja2 for Dynamic HTML Rendering
- Flask Forms and Validation
- Flask URL Building and Redirection

MODULE 16

Python for Web Development - Django Basics

- Introduction to Django Web Framework
- Setting Up Django and Creating a Project
- Django Project Structure and MVC Architecture
- Django Models and Migrations
- Django Views and Templates
- Django Forms and Validation
- Django Admin Panel and User Authentication
- Django URL Routing

MODULE 17

Data Visualization with Python

- Using matplotlib for Basic Plotting
- Customizing Plots (Title, Labels, Colors, Legends)
- Plotting Different Chart Types (Line, Bar, Histogram, Scatter)
- Introduction to seaborn for Statistical Visualization
- Using plotly for Interactive Visualizations
- Working with pandas and matplotlib for DataFrames

MODULE 18

Web Scraping with Python

- Introduction to Web Scraping
- HTML Parsing with BeautifulSoup
- Navigating and Searching the HTML Tree with BeautifulSoup
- Sending HTTP Requests with requests
- Handling Forms and Authentication in Web Scraping
- Scraping Data from Multiple Pages
- Storing Scraped Data in CSV/JSON/Databases
- Web Scraping Best Practices and Legal Considerations

MODULE 19

Testing in Python

- Introduction to Testing in Python
- Writing Unit Tests with unittest
- Writing Tests with pytest
- Mocking with unittest.mock
- Test-Driven Development (TDD) Workflow
- Running Tests with Continuous Integration (CI)
- Coverage and Best Practices for Writing Tests

MODULE 20

Concurrency and Parallelism in Python

- Introduction to Concurrency and Parallelism
- Threading and the Global Interpreter Lock (GIL)
- The threading Module in Python
- Using multiprocessing for Parallel Execution
- Asynchronous Programming with asyncio
- Using async and await Keywords
- Best Practices for Concurrency and Parallelism

MODULE 21

Machine Learning with Python

- Introduction to Machine Learning and Python Libraries
- Setting Up the Machine Learning Environment (Scikit-learn, NumPy, pandas)
- Supervised Learning: Regression and Classification
- Unsupervised Learning: Clustering
- Model Evaluation and Metrics (Accuracy, Precision, Recall, F1-Score)
- Feature Engineering and Preprocessing
- Building Machine Learning Models with Scikit-learn

MODULE 22

Deep Learning with Python

- Introduction to Deep Learning and Neural Networks
- Setting Up Deep Learning Environment (TensorFlow, Keras, PyTorch)
- Basics of Neural Networks: Layers, Activation Functions
- Building a Simple Neural Network in Keras
- Convolutional Neural Networks (CNNs) for Image Recognition
- Recurrent Neural Networks (RNNs) for Sequence Data
- Transfer Learning and Fine-Tuning Pre-Trained Models

MODULE 23

Python for Automation and Scripting

- Introduction to Automation with Python
- Automating Repetitive Tasks with Python Scripts
- Working with Files, Folders, and Directories Programmatically
- Sending Emails and Notifications with Python
- Web Automation with selenium
- Using Python for System Administration Tasks
- Writing Batch Scripts for Regular Automation

MODULE 24

Python for Cloud Development

- Introduction to Cloud Computing and Python
- Setting Up AWS SDK for Python (Boto3)
- Automating AWS Services (EC2, S3, Lambda) with Python
- Introduction to Google Cloud and Azure SDKs
- Serverless Architecture with AWS Lambda
- Deploying Python Web Applications to Cloud

MODULE 25

Final Project and Capstone

- Design and Implement a Comprehensive Python Application
- Integrating Web Development, Data Analysis, or Machine Learning
- Deploying Python Application to a Web Server or Cloud Service
- Testing and Optimizing the Python Application
- Presenting and Documenting the Final Project

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Thank You

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