

HackForge

Python React Certification Training

60 Hours

Phone :9884789292

Module 1: Python Fundamentals (Foundation)

- Introduction to Python
 - Features of Python
 - Python Installation & Setup
 - Running Python Programs
 - Python Syntax & Indentation
 - Comments & Documentation
 - Keywords & Identifiers
-

Module 2: Variables & Data Types

- Variables in Python
 - Dynamic Typing
 - Numeric Types (int, float, complex)
 - Strings
 - Boolean
 - Type Conversion (Implicit & Explicit)
 - Taking User Input
-

Module 3: Operators & Control Statements

Operators

- Arithmetic
- Comparison
- Logical
- Assignment
- Bitwise
- Membership
- Identity

Control Flow

- if statement
 - if-else
 - elif ladder
 - nested conditions
 - pass statement
-

Module 4: Loops in Python

- for loop
 - while loop
 - nested loops
 - break statement
 - continue statement
 - pass statement
 - loop with else block
-

Module 5: Python Data Structures

Most important for interviews

List

- Creating lists
- Indexing & slicing
- List methods
- Nested lists

Tuple

- Tuple operations
- Packing & unpacking

Set

- Set operations
- Unique elements handling

Dictionary

- Key-value pairs
 - Dictionary methods
 - Iteration techniques
-

Module 6: Functions in Python

Reusable programming logic

- Defining functions
 - Function arguments
 - Default arguments
 - Keyword arguments
 - Variable-length arguments
 - Lambda functions
 - Recursion
 - Docstrings
-

Module 7: Strings in Python

- String indexing
 - String slicing
 - String methods
 - String formatting
 - f-strings
 - Escape characters
-

Module 8: Modules & Packages

Code organization techniques

- Creating modules
 - Importing modules
 - Built-in modules
 - math module
 - random module
 - datetime module
 - Creating packages
 - **name** variable usage
-

Module 9: Exception Handling ★

Writing robust applications

- Types of errors
 - try statement
 - except block
 - else block
 - finally block
 - Raising exceptions
 - Custom exceptions
-

Module 10: File Handling

Working with external files

- Opening files
 - Reading files
 - Writing files
 - Appending files
 - File modes
 - Working with text files
 - Working with CSV files
-

Module 11: Object-Oriented Programming (OOP)



Most important real-world concept

OOP Basics

- Class & Object
- Attributes & Methods
- self keyword
- **init** constructor

OOP Concepts

- Encapsulation
- Inheritance
- Polymorphism
- Abstraction

Advanced OOP

- Method overriding
 - Multiple inheritance
 - Operator overloading
 - Magic methods (**str**, **len**)
-

Module 12: Python Collections Module

Advanced data handling utilities

- Counter
 - defaultdict
 - namedtuple
 - deque
-

Module 13: Working with Dates & Time

- datetime module
 - date operations
 - time formatting
 - timestamp conversion
-

Module 14: Database Connectivity (SQLite / MySQL Basics)

Python database interaction

- Introduction to DB connectivity
- Connecting Python with SQLite
- CRUD operations
- Executing queries
- Fetching records
- Commit & rollback

FastAPI + SQLAlchemy + AWS

Module 1: Python Refresher

- Python Basics
 - Functions
 - OOP Concepts
 - Exception Handling
 - Virtual Environments
 - Package Management (pip)
-

Module 2: FastAPI Fundamentals

- Introduction to REST APIs
- Installing FastAPI & Uvicorn
- Creating First API
- Path Parameters
- Query Parameters
- Request Body
- Response Models
- API Documentation (Swagger/OpenAPI)

Hands-on

- Student Management REST API
-

Module 3: Pydantic Models & Validation

- Request Validation
- Response Validation
- Optional Fields
- Custom Validators
- Error Handling

Hands-on

- Product API Validation
-

Module 4: SQLAlchemy ORM

- Introduction to ORM
- MySQL Setup
- Database Connection
- Models & Tables
- CRUD Operations
- Relationships
 - One-to-One
 - One-to-Many
- Migrations using Alembic

Hands-on

- Employee Management System
-

Module 5: Authentication & Security

- Password Hashing (bcrypt)
- JWT Authentication
- Login API
- Protected Routes
- Role-Based Access Control (RBAC)
- Token Validation

- Refresh Tokens

Hands-on

- User Registration & Login System
-

Module 6: Advanced FastAPI

- Dependency Injection
- Middleware
- Background Tasks
- Async Programming
- File Uploads
- Environment Variables
- Logging

Hands-on

- Profile Management API with Image Upload
-

Module 7: AWS Deployment

AWS Fundamentals

- AWS Overview
- EC2 Basics
- Security Groups
- Key Pairs

Deploy FastAPI on EC2

- Launch EC2 Instance
- Connect via SSH
- Install Python
- Install MySQL
- Deploy FastAPI Application
- Configure Environment Variables

Production Setup

- Nginx Reverse Proxy
- Gunicorn/Uvicorn Workers
- SSL using Let's Encrypt

- Domain Configuration

Hands-on

- Deploy Complete FastAPI Project
-

Module 8: Mini Project

E-Commerce Backend API

Features:

- User Registration/Login
 - JWT Authentication
 - Product Management
 - Category Management
 - File Upload
 - MySQL Database
 - AWS Deployment
-

Tools Covered

- Python 3
- FastAPI
- SQLAlchemy
- Alembic
- MySQL
- JWT
- Passlib
- Uvicorn
- Postman
- AWS EC2
- Nginx
- Git & GitHub

React Certification Training

20 Hours

Module 1: Web Development Fundamentals

- How the Internet works
 - Client vs Server
 - HTTP / HTTPS basics
 - Browser rendering process
 - Developer tools (Chrome DevTools)
 - VS Code setup & extensions
 - Git & GitHub basics
-

Module 2: HTML5 Essentials

Structure of modern web pages

- HTML document structure
 - Semantic elements
 - Headings, paragraphs, links
 - Lists & tables
 - Images, audio, video
 - Forms & input types
 - Accessibility basics
-

Module 3: CSS3 Fundamentals

Designing responsive layouts

- Selectors & specificity
- Colors & typography
- Box model
- Display properties
- Positioning
- Flexbox

- Grid layout
 - Media queries
 - Responsive design
-

Module 4: Advanced CSS & UI Design

Modern interface styling

- CSS variables
 - Transitions & animations
 - Hover effects
 - Responsive navigation bars
 - Card layouts
 - Mobile-first design
 - Tailwind CSS (optional)
-

Module 5: JavaScript Fundamentals ★

Core programming logic for frontend

- Variables (var, let, const)
 - Data types
 - Operators
 - Functions
 - Arrays & objects
 - Loops
 - Conditional statements
 - DOM manipulation
 - Event handling
-

Module 6: Advanced JavaScript (ES6+) ★★★

Modern JavaScript required for React

- Arrow functions
- Destructuring
- Spread & rest operators
- Template literals
- Modules (import/export)
- Closures
- Hoisting

- Callbacks
 - Promises
 - Async / Await
 - Fetch API
-

Module 7: React Fundamentals

Component-based UI development

- Introduction to React
 - JSX
 - Functional components
 - Props
 - State
 - Event handling
 - Conditional rendering
 - Lists & keys
-

Module 8: React Hooks (Modern React)

Core hooks used in real projects

- useState
 - useEffect
 - useRef
 - useContext
-

Module 9: React Advanced Concepts

Building scalable applications

- Component architecture
 - Reusable components
 - Forms handling
 - Lifting state up
 - Context API
 - Custom hooks
 - Environment variables
-

Module 10: Routing & API Integration

Connecting frontend with backend

- React Router setup
 - Dynamic routes
 - Navigation handling
 - Axios integration
 - Fetching REST APIs
 - Loading states
 - Error handling
-

Module 11: Project Development

Real-world frontend application

- Authentication UI
 - Dashboard layout
 - API-based project
 - Responsive UI implementation
 - Component reuse strategy
-

Module 12: Deployment & Best Practices

Making apps production-ready

- Build optimization
- Environment configs
- Deploy to Vercel / Netlify
- Performance improvements
- Clean folder structure

Git & Version Control

- Version control concepts
- Git installation
- Git workflow
- Branching strategies
- Merge vs rebase
- Resolving conflicts
- GitHub / GitLab usage

Commands:

git clone
git commit
git push
git pull
git branch
git merge

Module 1: DevOps Fundamentals

- What is DevOps?
- DevOps lifecycle
- Agile vs DevOps
- CI/CD concepts
- Infrastructure as Code (IaC)
- DevOps roles & responsibilities
- DevOps toolchain overview

Module 4: CI/CD with Jenkins

- Continuous Integration basics
- Jenkins architecture
- Installing Jenkins
- Creating pipelines
- Freestyle jobs
- Jenkinsfile (pipeline as code)
- Integrating Git with Jenkins
- Automated builds

Module 5: Docker (Containerization)

- Virtualization vs Containers
- Docker architecture
- Installing Docker
- Docker images & containers
- Dockerfile creation
- Docker volumes
- Docker networking
- Docker Compose

Cloud Computing (AWS Recommended)

Core services:

- EC2
- S3
- IAM
- VPC basics
- Load Balancer
- Auto Scaling
- CloudWatch monitoring

Deployment practice:

- Host application on EC2
- Store files in S3
- Configure IAM roles

Social Media Links:

<https://www.linkedin.com/company/hackforge-academy>

https://www.instagram.com/hackforge_english/

https://www.youtube.com/@hackforge_code

**Daily coding whatsapp community in java,React,JavaScript,Python
+919884789292**