TechyEdz Solutions

Training | Consulting | Developement | Outsourcing

AWS + Python

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Python + AWS Combo Course

- **Course Overview:**

Amazon AWS, one of the prominent cloud platforms offers a wide range of services like storage, compute, networking, IAM, data analytics, machine learning and many more. Python is the featured language, it is easy to use, object oriented, which enables the developers to make simplified and functional code for any scale projects. Because of its code readability python gained a lot of popularity in the machine learning and data science domain.
In this course, you'll learn how to use Boto3 (Python Framework), allows you to automate AWS cloud operations.
Boto3 is an Amazon Web Service SDK (Software Development Kit) enables you to create, configure and manage AWS services. It is easy to use, object oriented based API and access AWS services.
This course is totally practical and industry oriented, as you'll learn and develop secure, reliable, and scalable Python applications with the help of Boto3 on the AWS cloud.

Core Python Core

- **Course Outline:**

1. **Getting Started**
   - History
   - A Python Q&A Session
   - How Python Runs Programs
   - How You Run Programs
2. **Introduction to Python:**
   - What is Python?
   - Why Python?
   - Python Applications in real life

- Brief history of Python
- Versions of Python
- Installing Python
- Using IDLE
- First Python Program
- Getting help from Python Docs

3. Types and Operations

- Introducing Python Object Types
- Numeric Types
- The Dynamic Typing Interlude
- Strings
- Lists and Dictionaries
- Tuples, Files and Everything Else

4. Variables Data types

- Intro to dynamic typing
- Variables in Python
- Naming conventions
- Basic Data types (representation of strings, integer, floats)

5. Basic Syntax

- Basic syntax
- Commenting
- Indentation
- Python keywords
- Strings
- String values
- String Operations
- String slicing

- Built in string methods
- Formatted printing
- Simple Input and Output handling

6. Language Building blocks

- Control statements, the if, elif, else
- True and False
- Arithmetic Operators
- Relational Operators
- Logical Operators
- Bitwise Operators
- While loop
- Usage of pass, break and continue
- For each loop

7. Collections

- Lists
- Tuples
- Sets
- Dictionaries
- Sorting collections
- Operations on collections
- Discussion on real life application of above collections

8. Functions

- Introduction to functions
- Built in functions
- User defined functions
- Function parameters
- Variable arguments ,args and kwargs

- Positional and named arguments
- Discussion scope of variables with respect to functions and namespace
- Passing function to another function

9. Project

10.File Handling

11. Modules

- Introduction to modules
- Introduction to standard modules
- OS module
- path module
- Sys module
- sub process module
- Argument parsing using argparse module
- .csv file parsing using csv module
- .jason file paring using Jason module
- Xml file parsing using xml module
- Introduction to logging module

12. Project 2: Building log parser and reporting the results

13. Object Oriented Programming

- Introduction to Classes and Objects
- Principles of OOP
- Instance methods
- Special methods
- Encapsulation
- Inheritance
- Polymorphism

14. Regular Expressions

- Introduction to regular exceptions
- Introduction to re module
- Simple character matches
- Match function
- Searching function
- Regular expression patterns
- Patterns in Regex
- Search And Replace

15. Optional I(for testers)

- Introduction to testing using Python
- Introduction to test automation
- Introduction to Selenium web deriver
- Web testing using selenium

16. Option II(developers)

Advance topics:

- Generators
- Decorators
- Iterators and iterator protocol
- Debugging using PDB

17. Options III(Web programming)

- Introduction to web programming using Python
- Introduction to Django/Flask
- Introduction to Restful API's using Python

18. Option IV(Data science)

- Introduction to data science using python
- Introduction to pandas module
- Introduction to data visualization using matplotlib
- Introduction to numpy
- Introduction to scipy

AWS Certified Solutions Architect – Associate (SAA-C02)

Course Outline:

1. Fundamentals of Cloud Computing

- Course Introduction
- Introduction of Cloud Computing
- Key characteristics of Cloud Computing
- Cloud Analogy
- Cloud Computing Service Models
- Cloud Computing Deployment Models
- Comparison between Cloud and Legacy IT systems
- Advantages of Cloud Computing

2. AWS Cloud Overview

- Introduction to AWS Cloud
- History of AWS Cloud
- Global Infrastructure of AWS
- AWS Service scope in this course
- AWS Global vs. Regional Services
- Overview on Billing and Pricing

3. AWS Free Tier Account

- Introduction
- AWS Free Tier Account Creation
- Basic account Setting & Management
- Setting up Billing Alarm & Budget
- Activate MFA on Root Account

4. AWS IAM: Security & Authentication

- Introduction to Identity & Access Management
- Components of IAM
- Creating and Managing Users & Groups
- Creating and Managing IAM Policies
- Roles and its use cases
- Multi-Factor Authentication - [MFA]
- Security Token Service [STS]
- Security Features in IAM
- Best Practices of IAM
- Pricing

5. AWS Compute (EC2, ECS, Lambda and Lightsail)

- Introduction to EC2
- EC2 vs. Traditional Servers
- Introduction to Elastic Cloud Compute (EC2)
- Amazon Machine Images (AMI) and its Uses
- Configuring EC2 Instance and its types
- Security Groups - Creation & Management
- Launching & Connecting to EC2 instance (Hands On)
- Instance User Data and Instance Metadata
- Instance User Data and Instance Metadata (Hands On)
- Setting up a web server on EC2 Instance - Hosting a website
- Amazon Elastic Container Service(ECS)
- AWS Lambda (Serverless Computing)
- AWS Lambda Hands On
- Amazon Lightsail
- Amazon Lightsail Hands on (create Lightsail WordPress Site)

- Pricing

6. AWS Load Balancers and Auto Scaling Configuration

- Introduction
- Types of Load Balancer in AWS
- Important Components of Load Balancer
- How Health-Check Works for Load Balancer
- Creating and Configuring Application Load Balancer (Hands On)
- Understanding Launch Configuration and AutoScaling Group
- Creating and Configuring Autoscaling group (Hands On)
- Pricing

7. AWS Storage (S3, EFS and Storage Gateway)

- Introduction to Storage services
- Difference Between Object, Block and File Storage
- Introduction to Simple Storage Service (S3)
- S3 Storage Classes (or Tiers)
- S3 Consistency model
- Important Properties, Permissions and Management of S3 bucket
- Versioning of Objects
- Hosting a static-website in S3 (Hands On)
- Cross-Region & Same Region replication in S3
- S3 Transfer Acceleration
- Security feature of S3-Encryption, Bucket Policy and Permissions
- Storage Pricing
- Launch EC2 instance with IAM role and view data
- Amazon Elastic Block Store (EBS)
- AWS EBS Volume types
- Amazon EBS snapshots
- Instance Store Volumes
- Take snapshot, create AMI and Launch new Instance
- AWS Elastic File System (EFS)
- Create and mount EFS (Hands On)
- AWS Storage Gateway
- Pricing (Block store, EFS and Storage Gateway)

8. AWS Virtual Private Cloud (VPC)

- Introduction
- Amazon VPC
- Amazon VPC console Walkthrough Hands On
- Create Custom VPC Hands On
- IP Address and CIDR Block concepts
- Subnet and Route Tables
- Public, Private and Elastic IP addresses
- Internet Gateway and NAT
- Creating and managing NAT Gateways and NAT Instances
- Network Access Control List - NACL
- VPC Peering and VPC Endpoints
- Securely Connecting to the VPC
- VPN and CGW

9. AWS Relational Database Services (RDS)

- Introduction to RDS
- Components of RDS
- DB engines provided by RDS
- Snapshots and Back-up in RDS
- Read Replicas in RDS
- Creating and connecting to a RDS database
- RDS Security Groups
- Amazon DynamoDB
- Amazon DynamoDB Table Hands On
- Amazon Redshift
- Amazon Elasticache
- Limitations and Best Practice – RDS
- Pricing in RDS

10. AWS Content Delivery

- Introduction to CloudFront
- Create CloudFront Distribution with S3 Bucket (Hands On)
- CloudFront Caching, Caching Invalidations and Cache Hit Ratio
- Pricing

11. AWS Monitoring and Logging services

- Introduction
- Important Components of CloudWatch
- Create and view Alarms & Events in CloudWatch
- Amazon CloudTrail
- Create and view CloudTrail records
- Limitations and Best Practices
- Pricing

12. AWS Automation and Platform services

- Introduction to Cloud Automation
- CloudFormation introduction
- CloudFormation Stack creation Hands On
- Understanding Beanstalk
- Benefits of Beanstalk
- Create/ Deploy PHP application with Beanstalk service
- Pricing

13. AWS Migration and Data Transfer services

- Introduction
- AWS Data Migration Service
- AWS Server Migration Service
- AWS Snowball
- AWS Snowmobile
- AWS Migration Hub

14. AWS Cloud Security and Encryption

- AWS Security Overview
- AWS Shared Security Responsibility Model
- AWS Cloud Compliance and AWS Artifact
- AWS Config
- KMS and CloudHSM
- AWS Inspector and Trusted Advisor
- AWS Personal Health Dashboard
- AWS WAF & Shield
- AWS Direct Connect
- IAM Identity Providers and Federation
- AWS Single Sign-on
- AWS Directory Service
- AWS Macie
- Use cases and Pricing

15. AWS DNS Service and Routing Policies

- Introduction to Route53
- How Route53 Works
- Domain Registration in Route53
- Health Checks in Route53
- Routing Policies in Route53
- Creating and Managing different Routing Policies
- Records Sets supported by Route53
- Alarms and Notifications in Route53
- Limitations & Best Practices in Route53
- Pricing - Route53

16. DynamoDB, AWS NoSQL Database Service

- Difference between SQL and NoSQL

- Components of DynamoDB
- AutoScaling in DynamoDB
- DynamoDB Streams
- Primary and Secondary Indexing in DynamoDB
- Data Distribution in DynamoDB
- Backup and Monitoring in DynamoDB
- Creating Table and loading data into DynamoDB
- Best Practices – DynamoDB
- Pricing in DynamoDB

17. AWS Cloud Management Services

- Understanding and configuring Trusted Advisor
- Understanding and configuring Config
- Understanding and configuring AWS System Manager
- Use Cases
- Pricing

18. AWS AWS SNS, Notification Service

- How SNS Works?
- Important Components of SNS
- Creating and Managing Topics in SNS
- Adding Subscriber in SNS
- Managing SNS Policies
- Pricing in SNS

19. AWS Kinesis

- Types of Data Streaming in Kinesis
- Kinesis Firehose and its Architecture
- Kinesis Analytics and its Architecture
- Best Practice in Kinesis
- Use cases
- Pricing in Kinesis

20. AWS CLI, Amazon Command Line Interface

- Setting-Up AWS CLI on local machine
- Creating Users and groups using AWS CLI
- Creating & Managing Policy using AWS CLI
- Creating and Managing IAM Roles using AWS CLI
- AWS CLI Command Syntax walkthrough

21. AWS SQS

- How SQS Works - Architectural Walkthrough
- Important Components of SQS
- Pricing in SQS
- Best Practice - SQS

22. AWS Billing and Pricing

- Introduction
- AWS Budgets and Cost Explorer
- AWS Monthly Cost Calculator and TCO
- AWS Monthly Cost Calculation with an example
- AWS Support Plans
- AWS Resource grouping and Tagging
- AWS Organization and Consolidated Billing
- Pricing discussed as per modules above

Prerequisites:

- A basic knowledge of windows administration and networking knowledge.
- A Basic Knowledge of linux administration

Who Can attend:

- AWS Absolute Beginners. No prior AWS experience necessary

- Existing Solutions Architects
- Programmers interested in deploying applications on AWS

Number of Hours: 70hrs

Certification: AWS Certified Solutions Architect – Associate (SAA-C02)

Key Features:

- One to One Training
- Online Training
- Fastrack & Normal Track
- Resume Modification
- Mock Interviews
- Video Tutorials
- Materials
- Real Time Projects
- Virtual Live Experience
- Preparing for Certification