Training: AWS
Developing Generative AI Applications on AWS

TRAINING GOALS:

In this advanced two-day course, software developers learn to build and customize AI solutions by using Amazon Bedrock programmatically. Through hands-on exercises and labs, participants will invoke foundation models through Amazon Bedrock APIs, implement Retrieval Augmented Generation (RAG) patterns with Amazon Bedrock Knowledge Bases, and develop AI agents with tool integration. The course focuses on the practical implementation of prompt engineering techniques, responsible AI practices with Amazon Bedrock Guardrails, open source framework integration, and architectural patterns for real-world business applications.

Course objectives

In this course, you will learn to do the following:

- Develop generative AI applications using Amazon Bedrock.
- Design architecture patterns of generative AI applications.
- Configure Amazon Bedrock APIs to invoke foundation models (FMs) programmatically. Develop agentic AI applications by integrating Amazon Bedrock tools and open source frameworks.
- Build custom solutions with Retrieval Augmented Generation (RAG) and Amazon Bedrock Knowledge Bases.
- Integrate open source SDKs with Amazon Bedrock to build business.
- Optimize model responses by applying prompt engineering techniques.
- Evaluate generative AI application components.
- Implement responsible AI practices to protect generative AI.

Intended audience

This course is intended for software developers.

CONSPECT:

- Module 1: Exploring Components of Generative AI Applications on AWS
  - Understanding generative AI concepts

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- Identifying AWS generative AI stack components
- Designing generative AI application components

- Module 2: Programming with Amazon Bedrock
  - Guiding model response generation
  - Using Amazon Bedrock programmatically
  - Hands-on lab: Develop with Amazon Bedrock APIs
  - Hands-on lab: Develop Streaming Patterns with Amazon Bedrock APIs
- Module 3: Applying Prompt Engineering for Developers
  - Introducing prompt engineering
  - Introducing prompt techniques
  - Optimizing prompts for better results
- Module 4: Using Amazon Bedrock APIs in Common Architectures
  - Implementing architecture patterns with Amazon Bedrock APIs
  - Exploring common use cases
  - Adding conversational memory to extend context
  - Hands-on lab: Develop Conversation Patterns with Amazon Bedrock APIs
- Module 5: Customizing Generative AI Responses with RAG
  - Implementing Retrieval Augmented Generation (RAG)
  - Using Amazon Bedrock Knowledge Bases
  - Hands-on lab: Develop Retrieval Augmented Generation (RAG) Applications with Amazon Bedrock Knowledge Bases
- Module 6: Integrating Open Source Frameworks with Amazon Bedrock
  - Invoking a foundation model in Amazon Bedrock using LangChain
  - Using LangChain for context-aware responses
  - Hands-on lab: Develop a Generative AI Application Pattern using Open Source Frameworks and Amazon Bedrock Knowledge Bases
- Module 7: Evaluating Generative AI Application Components
  - Evaluating application components
  - Evaluating model output
  - Evaluating RAG output
  - Optimizing latency and cost
  - Hands-on lab: Evaluating Retrieval Augmented Generation (RAG) Applications
- Module 8: Implementing Responsible AI
  - Understanding responsible AI
  - Mitigating bias and addressing prompt misuses
  - Using Amazon Bedrock Guardrails
  - Hands-on lab: Securing Generative AI Applications Using Bedrock Guardrails

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- Module 9: Using Tools and Agents in Generative AI Applications
  - Using tools
  - Understanding AI agents
  - Understanding open source agentic frameworks
  - Understanding agent interoperability
- Module 10: Developing Amazon Bedrock Agents
  - Implementing Amazon Bedrock Flows
  - Designing Amazon Bedrock Agents
  - Developing Amazon Bedrock Inline Agents
  - Designing multi-agent collaboration
  - Using Amazon Bedrock AgentCore
  - Hands-on lab: Developing Amazon Bedrock Agents Integrated with Amazon Bedrock Knowledge Bases and Guardrails
- Module 11: Course Wrap-Up

REQUIREMENTS:

We recommend that attendees of this course have:

- Completed the Generative AI Essentials AWS instructor-led course
- Intermediate-level proficiency in Python
- Familiarity with AWS Cloud

Difficulty level



CERTIFICATE:

The participants will obtain certificates signed by AWS (course completion).

This course also helps you prepare for the AWS Certified Generative AI Developer – Professional AIP-C01 exam and this way gain the AWS Certified Generative AI Developer – Professional title – professional level. AWS certification exams are offered at Pearson Vue test centers worldwide https://home.pearsonvue.com/Clients/AWS.aspx

TRAINER:

AWS Authorized Instructor (AAI)

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