Agentic AI Foundations

AWS Classroom Training

Course description

In this course, you'll explore the core concepts, architectures, and patterns behind agentic AI systems on AWS. You'll learn how agentic AI evolved from large language models (LLMs), what makes an individual agent agentic, and how to distinguish agent types from the architectures and workflow patterns that organize them. Through hands-on labs and instructor-led demonstrations, you'll create a chat agent in Amazon Quick, apply spec-driven development in Kiro, build an agent with the Strands Agents SDK, and see how Amazon Bedrock AgentCore takes an agent from prototype to production.

- Course level: Fundamental
- Duration: 1 day

Activities

This course includes presentations, hands-on labs, group exercises, and instructor-led demonstrations. In the hands-on labs, you build a mini project in Kiro and work through a Python notebook that builds an agent with the Strands Agents SDK.

Course objectives

In this course, you will learn to:

- Explain the evolution from LLMs to agentic AI systems using the four-stage progression from generative AI assistants to autonomous multi-agent systems
- Identify the core components and defining characteristics of an AI agent, and place agents on the autonomy spectrum
- Distinguish agent types, which describe an individual agent's decision-making sophistication, from agentic architectures, which describe how a system is organized
- Select appropriate workflow patterns, including prompt chaining, parallelization, routing, and orchestration, for a given scenario
- Describe the Model Context Protocol (MCP) and Agent2Agent (A2A) interoperability protocols and their complementary roles
- Create a chat agent in Amazon Quick and explain how it demonstrates agentic behavior
- Describe spec-driven development and how Kiro uses the requirements, design, and tasks chain to guide agentic development
- Build a basic agent with the Strands Agents SDK
- Describe how Amazon Bedrock AgentCore capabilities, including observability, take an agent from prototype to production

Intended audience

This course is intended for:

- Software developers new to agentic AI seeking foundational knowledge
- Technical professionals exploring AI capabilities and interested in core components and applications of agentic AI
- Development teams evaluating agentic AI solutions and needing to differentiate between agent types
- AWS users expanding into agentic AI, including current users of Kiro, Amazon Quick, and Amazon Bedrock AgentCore

Prerequisites

We recommend that attendees of this course have:

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- Generative AI Essentials or equivalent work experience
- Basic AWS Cloud knowledge and basic software development experience, including basic Python familiarity

Course outline

Module 0: Course Introduction

- Course objectives, agenda, and module structure
- Prerequisites and audience framing
- Lab access, registration, and environment verification
- The AWS agentic AI landscape: which offering fits your role and use case

Module 1: Understanding Agentic AI

- The promise and limitations of LLMs
- Innovations powering agents
- The evolution to agentic AI
- Anatomy of an agent: components, characteristics, and types
- Group discussion: Where are you on the autonomy spectrum?

Module 2: Agentic AI on AWS

- The AWS agentic AI landscape: applications, models and tools, and infrastructure
- Adopt or build? Pre-built agents on AWS
- Amazon Quick overview and instructor live tour
- **Hands-on lab**: Create a chat agent in Amazon Quick

Module 3: Agent Architectures, Interoperability, and Workflow Patterns

- **Case study**: the email agent at AnyCompany Consulting
- Agentic architectures: single-agent, multi-agent, and the agency spectrum
- Interoperability protocols: Model Context Protocol (MCP) and Agent2Agent (A2A)
- Workflow patterns: prompt chaining, parallelization, routing, and orchestration
- Group discussion: choose the architecture and pattern for the email agent

Module 4: Kiro and Spec-Driven Development

- Kiro and spec-driven development: the requirements, design, and tasks chain
- **Hands-on lab**: Accelerating software development using Kiro

Module 5: Building Agents with Strands

- Building agents with the Strands Agents SDK and the agentic loop
- **Hands-on lab**: Build your first Strands agent

Module 6: Amazon Bedrock AgentCore: From Prototype to Production

- AgentCore capabilities: from prototype to production

Module 7: Course Wrap-up and Learning Path

- Course summary
- Learning path and next steps

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