AI Enabled Software Engineering Training

Duration: **1 Day**

BILGINC IT Academy
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Artificial intelligence is transforming modern software engineering by changing how applications are designed, developed, tested, and maintained. Rather than replacing developers, AI has become a valuable development companion that helps teams increase productivity, improve code quality, and accelerate delivery throughout the software development lifecycle.

This course provides a practical introduction to using generative AI within everyday software engineering activities. Participants will explore how AI-powered tools can assist with writing code, debugging applications, creating technical documentation, and solving complex development challenges.

A major focus of the course is prompt engineering. Learners will develop the skills required to create clear, structured prompts that produce accurate, relevant, and reliable AI-generated outputs. Through hands-on exercises, guided demonstrations, and realistic development scenarios, participants will learn how to evaluate AI responses, refine prompts, and improve results through iterative techniques.

By the end of the programme, learners will be able to confidently integrate AI assistants into their software development workflow, applying advanced prompting strategies to improve both engineering efficiency and software quality.

Prerequisites

Participants should have:

- A basic understanding of software engineering and programming principles
- Experience using an integrated development environment (IDE), such as Visual Studio Code
- Familiarity with debugging, testing, and software documentation practices
- An interest in applying AI technologies to improve software development processes

Who Should Attend

This course is intended for:

- Software developers and software engineers
- Development teams looking to improve productivity with generative AI
- Technical leads and software architects
- DevOps engineers
- Technical professionals who collaborate closely with software development teams

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What You Will Learn

After completing this course, learners will be able to:

- Identify the most valuable use cases for generative AI within software engineering.
- Explain why human judgement and oversight remain essential when working with AI systems.
- Configure and use AI coding assistants within modern development environments.
- Create effective prompts for coding, debugging, documentation, and technical problem-solving.
- Evaluate, verify, and improve AI-generated responses.
- Integrate AI tools into everyday engineering workflows with confidence and consistency.

Training Outline

Module 1: Introduction to AI in Software Engineering

- Overview of generative AI technologies
- The evolving role of AI in software development
- Strengths and limitations of AI coding assistants
- Using AI as a collaborative development partner
- Identifying practical AI use cases across the software lifecycle

Module 2: Setting Up AI-Assisted Development Environments

- Overview of AI-powered development tools
- Configuring AI assistants within development environments
- Working with IDE extensions and plugins
- Security, privacy, and responsible use of AI tools

Module 3: Prompt Engineering Fundamentals

- Principles of effective prompt design
- Structuring prompts for clarity and accuracy
- Techniques for improving AI-generated responses
- Common prompting mistakes and best practices

Module 4: AI-Assisted Coding

- Generating code snippets and reusable functions
- Refactoring existing applications
- Improving code quality and performance
- Exploring alternative implementation approaches
- Working across multiple programming languages and frameworks

Module 5: Debugging and Problem Solving with AI

- Identifying coding errors using AI
- Analysing logs and diagnostic information
- Step-by-step debugging techniques
- Validating AI-generated solutions
- Supporting software testing activities

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Module 6: Documentation and Knowledge Creation

- Producing technical documentation
- Generating code comments and developer explanations
- Creating user guides and knowledge base articles
- Maintaining documentation quality, consistency, and accuracy

Module 7: Evaluating AI-Generated Outputs

- Assessing the quality and relevance of AI responses
- Detecting hallucinations and inaccurate information
- Improving outputs through iterative prompt refinement
- Establishing validation and review workflows

Module 8: Collaborative Development with AI

- Integrating AI into software development teams
- Supporting code reviews with AI
- Combining automation with human expertise
- Ethical considerations and responsible AI practices

Module 9: Applying AI in Real-World Software Projects

- End-to-end AI-assisted development scenarios
- Real-world engineering case studies
- Measuring productivity and development efficiency
- Continuously improving engineering workflows using AI

Key Benefits

- Learn how generative AI enhances every stage of the software development lifecycle.
- Gain practical experience using AI-powered coding assistants.
- Develop advanced prompt engineering skills for software engineering tasks.
- Improve coding, debugging, testing, and documentation efficiency.
- Learn how to validate and refine AI-generated outputs with confidence.
- Understand how to adopt AI responsibly within collaborative development teams.
- Build modern software engineering workflows that combine AI capabilities with human expertise for higher productivity and software quality.