CareerByteCode
Learning Made simple

CareerByteCode Admissions
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CAREERBYTECODE PROGRAM

AI Solutions Architect & Forward Deployed Engineer

A Forward Deployed Engineer (FDE) works close to customers and business teams to turn real operational problems into working technical solutions. The role combines software engineering, AI application development, system integration, cloud deployment, troubleshooting and customer communication.

Build. Integrate. Deploy.
Deliver AI that works.

Mentors: Jenefer Rexee George & Daisy Grace Thomas

10 weeks · 20 live classes · 12 modules · capstone demo · Hybrid: classroom + online

Course Overview

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A Forward Deployed Engineer (FDE) works close to customers and business teams to turn real operational problems into working technical solutions. The role combines software engineering, AI application development, system integration, cloud deployment, troubleshooting and customer communication.

The CareerByteCode AI Solutions Architect & Forward Deployed Engineer Program is designed to introduce learners to this end-to-end workflow. Across 10 weeks and 20 instructor-led classes, participants build foundations in Python and APIs, develop Generative AI and RAG applications, create AI-agent workflows, connect enterprise systems, and learn the essentials of deploying and operating AI applications.

This is an intensive, project-oriented program. It provides guided exposure and practical implementation experience; it does not claim that every learner will master all listed technologies or become independently production-ready after 20 classes. Outcomes depend on prior knowledge, attendance and completion of independent practice.

10	20	2/wk	12	1
WEEKS	LIVE CLASSES	CLASSES	MODULES	CAPSTONE

Your Mentors

LEARN FROM PRACTITIONERS



Jenefer Rexee George

AI ML DATA CONSULTANT

Jenefer Rexee George is an AI and ML Data Consultant and Software Engineer (AI/ML) who builds intelligent systems that combine data, machine learning and modern AI to solve real-world problems.



Daisy Grace Thomas

AI CONSULTANT · AI PRODUCT & AUTOMATION ENGINEER

Daisy Grace Thomas is an AI Product and Automation Engineer and Business Analyst with 9+ years delivering enterprise solutions across IT services, EdTech, finance and aerospace.

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How every class works

Each class combines concept explanation, a live instructor demonstration, guided practice and a short recap. You practise between classes and finish four projects for your portfolio. Delivery: Hybrid, classroom + online. Next batch dates are shared on enrolment.

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Program at a Glance

AI SOLUTIONS ARCHITECT & FDE

ITEM	DETAILS
Program name	Forward Deployed Engineer - Intensive Professional Program
Duration	10 weeks / approximately 2.5 months
Live classes	20 instructor-led classes; 2 classes per week
Suggested class duration	2 to 2.5 hours per class
Learning format	Concept explanation, live demonstrations, guided labs, assignments and capstone
Core modules	12 modules grouped across 10 weeks
Learning emphasis	Software foundations, Generative AI, RAG, AI agents, MCP, enterprise integration, cloud and delivery
Course fee	₹40,000 + applicable GST
Delivery mode	Hybrid: classroom + online
Final assessment	Practical capstone demonstration and technical review

Who This Course Is for

AI SOLUTIONS ARCHITECT & FDE

- Fresh graduates and final-year students who have basic programming exposure and want to enter AI application engineering.
- Python, Java or full-stack developers who want to build applications using LLMs, RAG and AI agents.
- Cloud and DevOps engineers who want to understand how AI applications are built, integrated and deployed.
- Data and software engineers interested in enterprise AI implementation.
- Solutions-oriented technical professionals who want to strengthen customer discovery, solution design and delivery skills.

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Before You Start: Prerequisites

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The program is designed to be accessible to learners with basic technical familiarity. The following prerequisites are recommended:

- Basic computer and internet usage, including downloading tools, managing files and using a web browser.
- Basic programming awareness is helpful. Prior Python experience is an advantage but is not mandatory if the learner is willing to practise between classes.
- Basic understanding of what software applications, websites and databases do.
- Comfort using a command line or willingness to learn basic terminal commands.
- A laptop or desktop computer capable of running a code editor, Python, Git and Docker Desktop (subject to system requirements).
- A stable internet connection for online classes, downloads and cloud labs.
- Willingness to create developer accounts and use APIs. Some third-party services may require separate accounts, usage limits or paid credits.
- Commitment to complete weekly assignments and spend additional time practising outside the two weekly classes.

Recommended preparation before the first class: install a current version of Python, Visual Studio Code, Git and a modern browser. The trainer will share setup instructions. Learners should not purchase paid API credits or cloud subscriptions until the training team provides guidance.

What You'll Achieve: Learning Outcomes

AI SOLUTIONS ARCHITECT & FDE

By the end of the program, learners should be able to:

- Explain the role of a Forward Deployed Engineer and distinguish it from adjacent software engineering and solution architecture roles.
- Use Python fundamentals to write small scripts and understand application code.
- Work with Git and GitHub, basic Linux commands, REST APIs and JSON.
- Build a simple backend service using FastAPI and connect it to a relational database.
- Gather and clarify a business requirement, identify a problem statement and document basic acceptance criteria.
- Create a simple solution architecture and a working minimum viable product (MVP).
- Call an LLM API and build a basic Generative AI application using prompts and structured outputs.
- Explain RAG, embeddings, chunking, vector search and build a basic document question-answering application.
- Understand AI-agent concepts, tool calling, workflow orchestration and the role of MCP.
- Connect an AI application to external APIs or a database using appropriate integration and authentication patterns.
- Package an application using Docker and understand the basics of cloud deployment, Kubernetes and CI/CD.
- Recognise common AI application security risks and use basic logging, tracing and monitoring approaches.
- Present a technical solution, demonstrate its functionality and prepare basic documentation and handover material.

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Detailed 10-Week Curriculum

AI SOLUTIONS ARCHITECT & FDE

The curriculum contains 20 live classes. Each week has two classes, with practical work and independent practice between sessions.

WEEK 01 Module 1: Python & Engineering Foundations

Class 1 – FDE role and Python fundamentals

- Introduction to Forward Deployed Engineering and the course learning journey
- Python setup, syntax, variables, data types and operators
- Conditional statements, loops and functions
- Simple programming exercises and problem-solving

Class 2 – Python essentials and developer workflow

- Lists, tuples, dictionaries and sets
- Object-oriented programming basics
- Exception handling, file handling and JSON
- Git, GitHub and essential Linux commands

✓ Practical: Build a small Python business utility or file-processing automation script.

WEEK 02 Modules 2–3: Backend APIs, Databases & FDE Discovery

Class 3 – REST APIs, FastAPI and databases

- HTTP, REST API concepts, methods and status codes
- JSON requests and responses; API testing concepts
- FastAPI introduction and CRUD endpoints
- SQL and PostgreSQL fundamentals; connecting an API to a database

Class 4 – FDE mindset and customer discovery

- FDE responsibilities and comparison with software engineer and solutions architect roles
- Understanding business workflows and customer pain points
- Stakeholder questions, requirement gathering and problem definition
- BRD/PRD overview, functional requirements and acceptance criteria

✓ Practical: Build a basic employee-management API and turn a sample business problem into a short requirement document.

WEEK 03 Module 4: Solution Architecture & Rapid Prototyping

Class 5 – Solution design

- Frontend, backend, database and API architecture
- High-Level Design (HLD) and Low-Level Design (LLD) basics
- Data flow, component diagrams and technology choices
- Basic API and database design

Class 6 – MVP and AI-assisted development

- Minimum Viable Product (MVP) and prototype planning
- Using AI coding assistants responsibly
- Introduction to Cursor, Claude Code and GitHub Copilot
- Simple UI/prototype development using Streamlit

✓ Practical: Design and prototype a basic AI customer-support application.

WEEK 04 Module 5: Generative AI & LLM Application Development

Class 7 – Generative AI and LLM foundations

- AI, Machine Learning and Generative AI overview
- What LLMs do; tokens, context windows and model limitations
- Overview of OpenAI, Anthropic Claude and Google Gemini
- Calling an LLM API from Python

Class 8 – Prompting and application patterns

- System prompts, user prompts and prompt structure
- Prompt engineering and output validation
- Structured outputs and JSON responses
- Function/tool calling, streaming and hallucination awareness

✓ Practical: Build a basic chatbot, summariser or resume-analysis prototype.

WEEK 05 Module 6: RAG & Vector Databases

Class 9 – RAG foundations and document processing

- Why RAG is used and how it differs from a standalone LLM prompt
- Document ingestion and PDF/text extraction
- Text cleaning, chunking and metadata
- Embeddings and their role in semantic retrieval

Class 10 – Retrieval and RAG application

- Vector database concepts and options such as ChromaDB and FAISS
- Similarity search and retrieval workflow
- Building a basic RAG pipeline
- Context injection, source references and basic answer evaluation

✓ Practical: Build a document-based question-answering assistant using a small set of sample documents.

WEEK 06 Modules 7–8: AI Agents, Agentic Workflows & MCP

Class 11 – AI-agent fundamentals

- What an AI agent is and when to use one
- Agent components: model, instructions, tools and state
- Tool calling, memory and planning concepts
- Introduction to LangChain and LangGraph

Class 12 – Agent workflows and MCP

- Simple agent workflows and orchestration
- LangGraph concepts: nodes, edges and state
- Human approval and human-in-the-loop patterns
- MCP overview: clients, servers, tools and resources
- Connecting an agent to an external tool

✓ Practical: Create a simple agent that calls a tool or retrieves information from a database/API. Multi-agent systems are introduced conceptually.

WEEK 07 Module 9: Enterprise Integration & Containers

Class 13 – Enterprise application integration

- Integrating REST APIs and databases
- OAuth 2.0 and API authentication overview
- Webhooks and event-driven integration concepts
- CRM, ticketing and business-system integration patterns

Class 14 – Docker and Kubernetes introduction

- Containers, images and Dockerfiles
- Building and running a container
- Docker Compose overview
- Kubernetes concepts: pods, deployments and services
- How AI applications can be containerised and deployed

✓ Practical: Connect a small AI application to an external API and package it using Docker.

WEEK 08 Module 10: Cloud, DevOps, AI Security & LLMOps

Class 15 – Cloud and delivery foundations

- Cloud compute, storage and networking overview
- AWS/Azure deployment options and service selection
- CI/CD concepts using GitHub Actions
- Terraform introduction and infrastructure-as-code concepts
- Environment variables and secrets management

Class 16 – Security, monitoring and LLMOps

- Authentication, authorization and API security basics
- Prompt injection, sensitive data and privacy awareness
- Logging, tracing and error monitoring
- LLMOps concepts; introduction to Langfuse or LangSmith
- Monitoring token usage, latency and application quality

✓ Practical: Deploy a containerised application to a selected cloud environment and inspect basic logs/traces. Cloud costs and account requirements must be managed.

WEEK 09 Module 11: Customer Engagement & Capstone Development

Class 17 – Customer-facing delivery

- Discovery workshop and stakeholder communication
- Validating requirements and managing scope
- Technical proposal, estimation and sprint planning
- User Acceptance Testing (UAT), feedback and customer demos
- Deployment planning and handover expectations

Class 18 – Capstone build workshop

- Select and define a business problem
- Confirm scope, users and acceptance criteria
- Review architecture and data flow
- Build/integrate backend, AI or RAG capability
- Connect required APIs and prepare deployment

✓ Practical: Begin the final enterprise-style AI solution in teams or individually, depending on cohort design.

WEEK 10 Module 12: Capstone, Deployment & Assessment

Class 19 – Capstone completion and validation

- Complete application integration
- Functional testing and basic security checks
- Deployment and configuration review
- Logging, troubleshooting and production-readiness discussion
- Technical documentation and user guidance

Class 20 – Final demonstration and assessment

- Present the original business problem and proposed solution
- Demonstrate the working application
- Explain architecture, integrations and deployment
- Respond to technical and stakeholder questions
- Submit project documentation and handover summary

Final deliverable: A demonstrated prototype or working application, supported by project documentation and a presentation. Production readiness depends on the scope and validation achieved.

Technology Stack & Tools

AI SOLUTIONS ARCHITECT & FDE

AREA	TECHNOLOGIES / EXAMPLES	EXPECTED LEVEL
Programming	Python, JSON, basic JavaScript awareness	Foundational
Developer workflow	VS Code, Git, GitHub, Linux terminal	Hands-on basics
Backend and APIs	FastAPI, REST, Postman, PostgreSQL	Build a simple service
Generative AI	OpenAI, Claude, Gemini APIs	Build basic LLM applications
RAG	Embeddings, ChromaDB, FAISS; pgvector overview	Build a basic RAG workflow
Agents and orchestration	LangChain, LangGraph; MCP concepts	Build a simple tool-using workflow
Frontend/prototyping	Streamlit; React awareness	Build/demo a simple interface
Cloud and DevOps	AWS or Azure, Docker, Kubernetes basics, GitHub Actions, Terraform basics	Understand and practise deployment
Observability	Langfuse or LangSmith; logs and traces	Basic instrumentation

Tool selection may change based on platform updates, cohort needs and trainer recommendations. The program introduces selected tools and patterns; it does not provide deep certification-level coverage of every cloud, framework or platform listed.

Projects & Practical Milestones

MILESTONE	PROJECT	WHAT THE LEARNER PRACTISES	TARGET WEEK
1	Python + FastAPI Business Application	Python logic, APIs, CRUD operations and database connection	Week 2
2	AI Chatbot + Enterprise RAG Assistant	LLM API use, prompt design, document ingestion and retrieval	Week 5
3	AI Agent + MCP + Enterprise Integration	Tool calling, agent workflow and external system integration	Week 7
4	Enterprise AI Capstone	Discovery, architecture, development, integration, deployment, demo and handover	Week 10

Final Capstone – Suggested Business Scenarios

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Learners can select one scenario, subject to trainer approval and available time:

- Enterprise Knowledge Assistant: answers employee questions using approved company documents and provides source references.
- Customer Support Assistant: retrieves order or customer information and prepares or creates support tickets through an API.
- HR Policy Assistant: answers questions from HR policies and guides employees to the relevant source material.
- IT Service Desk Assistant: classifies incoming issues, retrieves troubleshooting guidance and assists with ticket workflows.
- Sales Operations Assistant: summarises customer information and prepares structured follow-up notes using connected data.

Capstone scope should be intentionally limited to a demonstrable prototype. Learners should use synthetic, public or explicitly authorised sample data. They must not upload confidential customer or employer data to public AI services.

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Training Methodology

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LEARNING COMPONENT	SUGGESTED APPROACH
Concept learning	Simple explanations, diagrams and real-world examples.
Live demonstration	Trainer demonstrates the workflow and explains key implementation decisions.
Guided hands-on lab	Learners implement the concept during class with trainer support.
Weekly assignment	A small task to reinforce the topics covered in the two classes.
Project milestone	Build progressively towards the final capstone.
Review and feedback	Code review, troubleshooting discussion and presentation feedback.

Suggested two-hour class structure:

ACTIVITY	SUGGESTED TIME
Concept explanation	25 minutes
Live demonstration	25 minutes
Guided hands-on implementation	50 minutes

ACTIVITY	SUGGESTED TIME
Assignment, recap and questions	20 minutes

For a 2.5-hour class, the additional 30 minutes can be used for deeper lab work, debugging or individual learner support.

Assessment & Completion Expectations

AI SOLUTIONS ARCHITECT & FDE

- Attendance and participation in the 20 live classes.
- Completion of weekly practice tasks and assignments.
- Submission of the four practical milestones or agreed equivalent work.
- A final capstone demonstration and explanation of the solution.
- Basic understanding of the business problem, architecture, AI workflow, integrations and deployment choices.

CareerByteCode may define a minimum attendance and assessment threshold for certificate eligibility before cohort enrolment. A certificate of completion, if offered, should reflect successful completion of the program requirements and should not be represented as an external vendor certification or a guarantee of employment.

What Learners Should Have at the End

AI SOLUTIONS ARCHITECT & FDE

Subject to completing the practical work, each learner should aim to leave with:

- A GitHub portfolio containing selected exercises and project code.
- A Python/FastAPI backend project.
- A basic LLM-powered application and a document-based RAG assistant.
- A simple tool-using AI-agent workflow or MCP integration exercise.
- A containerised application and exposure to a cloud deployment workflow.
- A final capstone project with a short architecture diagram, README and demonstration.
- Experience explaining a business problem, technical approach, limitations and next steps.
- A clearer learning path for further specialisation in AI engineering, FDE, cloud engineering or AI platform operations.

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Course Fee & Commercial Details

AI SOLUTIONS ARCHITECT & FDE

DESCRIPTION	AMOUNT
Program fee	₹40,000
GST	Additional, at the applicable rate
Total payable	₹40,000 + applicable GST

The applicable GST amount will be calculated and shown on the invoice by CareerByteCode. The fee above is the program fee before GST.

The following items should be confirmed in the cohort-specific enrolment communication:

- Batch start date, class days and class timings.
- Training delivery mode and venue or online access details.
- Payment schedule, payment methods and refund/cancellation terms.
- Whether any cloud credits, paid API usage or third-party subscriptions are included or are learner-paid.

- Certificate eligibility and assessment requirements.

Important Program Notes

AI SOLUTIONS ARCHITECT & FDE

- This is an intensive 10-week program with 20 live classes. Learners should expect independent practice between classes.
- The course introduces a broad FDE skill set. Advanced production architecture, large-scale distributed systems, model fine-tuning, GPU infrastructure and deep Kubernetes operations are outside the core scope unless separately announced.
- Cloud and LLM services may incur usage charges. Learners should use free tiers, training credits or trainer-approved environments wherever possible.
- Technology interfaces and third-party service features may change during the program.
- The capstone is an educational simulation unless a real client project is explicitly arranged and authorised.
- Course completion does not guarantee a job, placement, salary level or professional certification.

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THANK YOU

We want learners to move beyond simply knowing AI terminology. The program is structured to help them practise the complete engineering journey: understand a real business need, design a suitable solution, build an AI-powered application, connect it to business systems, deploy it in an appropriate environment, and explain the result clearly to stakeholders.

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