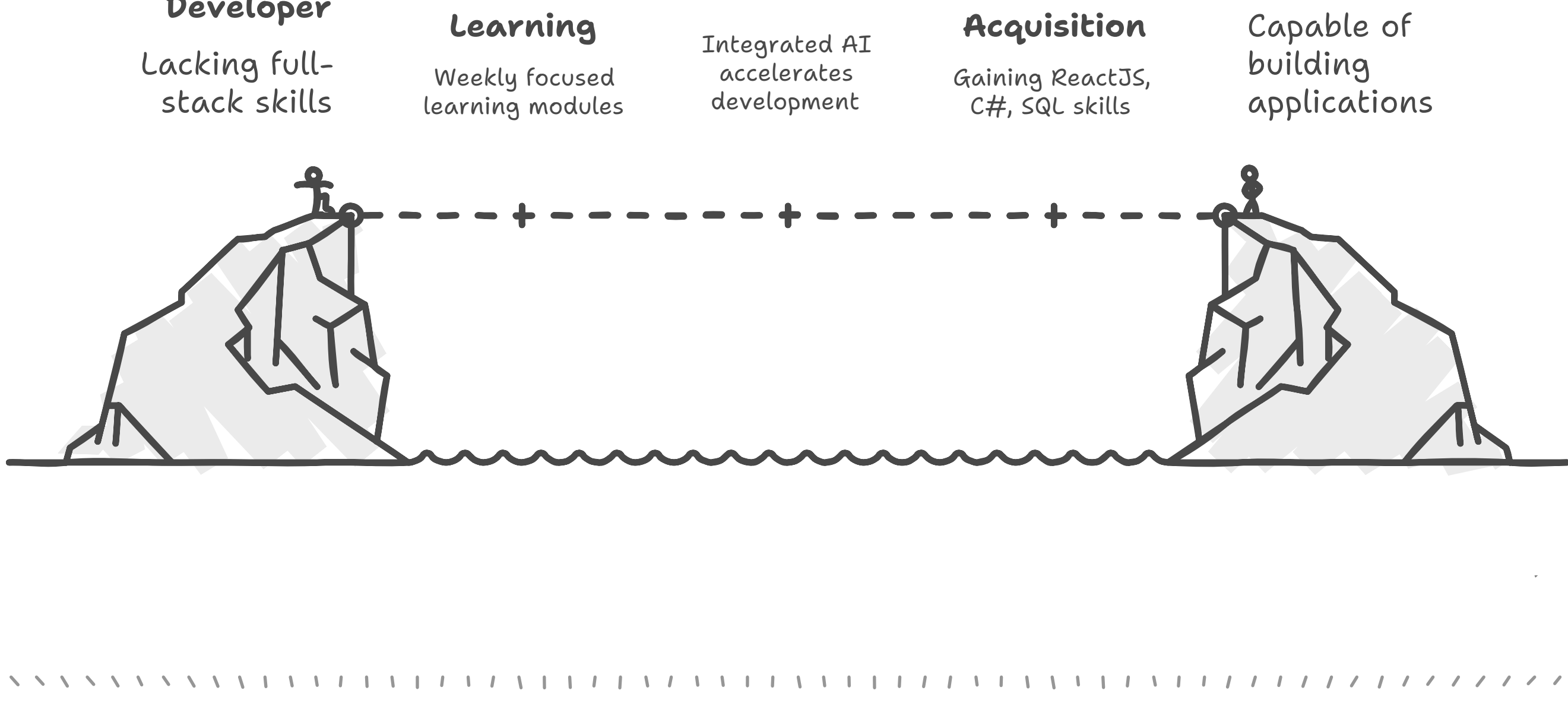
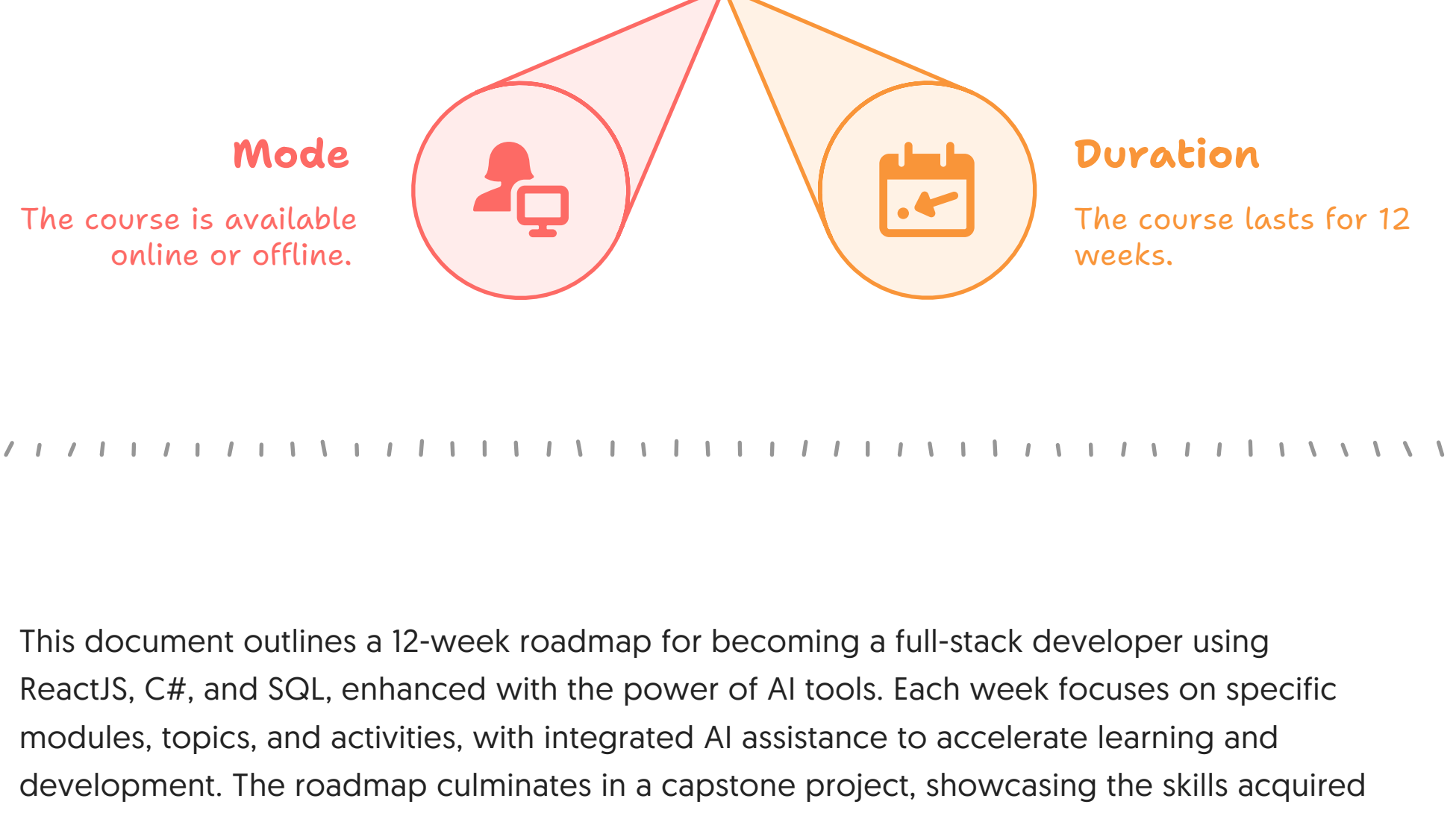


From Novice to AI Full-Stack Developer



Course components



Week 1: Introduction & Setup

- Module:** Introduction & Setup with AI Tools
- Topics & Activities:**
- Software Development Life Cycle (SDLC)
 - Git/GitHub version control basics
 - Agile & Scrum overview
 - Environment setup: VS Code, SQL Server, Postman
- AI Assist:**
- Use ChatGPT/Cursor for project boilerplate setup scripts
 - Use Copilot for generating README & Git commit messages
- Project / Deliverable:** Personal GitHub Repository Setup with AI-generated project README

Week 2: C# & .NET Core – Fundamentals

- Module:** C# Basics with AI Assistance
- Topics & Activities:**
- C# syntax & data types
 - OOP [Encapsulation, Inheritance, Polymorphism]
 - Exception handling
 - Collections, Generics, LINQ
 - Async/Await, Dependency Injection
- AI Assist:**
- Generate example code snippets with Copilot
 - Use AI to explain complex OOP concepts in simpler terms
 - AI-powered debugging suggestions
- Project / Deliverable:** Console Mini Project (AI-assisted code generation for Calculator/Text-based game)

Week 3: C# & .NET Core – API Development

- Module:** API Development with AI
- Topics & Activities:**
- REST API principles
 - EF Core & Repository Pattern
 - Middleware & Swagger
 - Unit Testing with xUnit
- AI Assist:**
- Use AI to generate CRUD controller boilerplate
 - Auto-generate Swagger API documentation text
 - AI test case generation with xUnit
- Project / Deliverable:** CRUD API with SQL Integration (AI-generated boilerplate + student refinements)

Week 4: SQL Server

- Module:** SQL with AI Query Assistance
- Topics & Activities:**
- DDL, DML [Create, Select, Update, Delete]
 - Joins, Views, Stored Procedures
 - Functions & Transactions
 - Query Optimization
- AI Assist:**
- Use AI to generate SQL queries from natural language prompts
 - AI-assisted schema normalization suggestions
 - Debug queries using AI explanations
- Project / Deliverable:** Normalized Database Schema (AI-suggested improvements)

Week 5: ReactJS – Fundamentals

- Module:** React Basics with AI
- Topics & Activities:**
- JSX, Components [Class/Functional]
 - Props & State
 - Hooks [useState, useEffect]
 - Router & Forms handling
- AI Assist:**
- Use Copilot to auto-complete React components
 - AI-generated prop-types & validation examples
 - Use AI to create documentation for components
- Project / Deliverable:** React To-Do App (AI-generated boilerplate + manual refinement)

Week 6: ReactJS – Advanced

- Module:** React Advanced with AI
- Topics & Activities:**
- Redux Toolkit
 - API Integration [Axios/Fetch]
 - Error Handling
 - JWT Authentication
 - Reusable Components
- AI Assist:**
- AI-generated Redux slices & reducers
 - Auto-suggest error handling patterns
 - Generate reusable UI components with Tailwind + AI
- Project / Deliverable:** React + API Integration Project (AI-assisted Weather Dashboard)

Week 7: Full Stack Integration

- Module:** AI-Assisted Full Stack Integration
- Topics & Activities:**
- Connect React → .NET Core → SQL
 - Authentication & RBAC
- AI Assist:**
- Generate API integration hooks with AI
 - Debugging SQL/API connectivity with AI guidance
 - Use AI to recommend RBAC strategies
- Project / Deliverable:** Basic Full Stack Blog/E-commerce App (AI-accelerated development)

Week 8: Enterprise Practices

- Module:** Enterprise-Grade Development with AI
- Topics & Activities:**
- Logging [Serilog]
 - Exception Handling
 - Config Management
 - CI/CD overview
 - Agile sprint simulation
- AI Assist:**
- Auto-generate logging & error-handling templates
 - Generate CI/CD pipeline YAML with AI
 - Sprint backlog/user stories generated via AI
- Project / Deliverable:** Project Deployed Locally (AI-assisted pipeline setup)

Week 9: Capstone Planning

- Module:** AI-Assisted Project Planning
- Topics & Activities:**
- Requirements gathering
 - Database design
 - API contract definition
 - UI wireframing
- AI Assist:**
- Use AI for wireframe-to-React component generation
 - AI-generated database schema suggestions
 - Generate OpenAPI contract stubs with AI
- Project / Deliverable:** AI-Supported Project Blueprint & Architecture

Week 10: Capstone Backend Dev

- Module:** Backend Build with AI
- Topics & Activities:**
- Clean Architecture
 - EF Core Optimizations
 - Unit Testing
- AI Assist:**
- Generate repository/service boilerplate
 - AI-powered unit test generation
 - SQL optimization hints from AI
- Project / Deliverable:** Completed Backend Services (AI-supported)

Week 11: Capstone Frontend Dev

- Module:** Frontend Build with AI
- Topics & Activities:**
- React UI Development
 - API Integration
 - Redux State Management
 - Validation & Error Handling
- AI Assist:**
- AI-generated React forms with validation
 - Auto-generate frontend API integration hooks
 - Use AI to refine UI/UX suggestions
- Project / Deliverable:** Completed Frontend UI (AI-accelerated)

Week 12: Capstone Testing & Deployment

- Module:** Final AI-Assisted Deployment
- Topics & Activities:**
- Integration Testing
 - Bug Fixing
 - Docker Basics
 - Deployment Walkthrough
- AI Assist:**
- Generate Dockerfiles with AI
 - Deployment scripts auto-suggested by AI
 - AI-guided bug-fixing sprint
- Project / Deliverable:** Final AI-Assisted Capstone Deployment & Presentation

AI-Assisted Development Tools

