



SDET Transformation Course Curriculum

Introduction:

The course is designed for linear progression levels across Associate, Professional and Specialist level SDET. Each level of progression has specific goals and objectives and will help SDET to transition into the next role.



Summary of domain areas:

Associate SDET:

Goals: At Associate level, SDET should be able to build simple application and have good hands on experience in the related development practices that are followed by any enterprise customer, highlighted in the section below:

- Build simple application using C# and any JS framework.
- Understanding the importance and techniques for improving code quality- unit testing and related tools/techniques such as MOQ, DI, ReSharper,
- Static code analysis
- Have hands on experience in configuration management using Azure DevOps.
- Understanding of how an enterprise project is setup using Visual studio
- Understanding of some of the basics of simple UI and JS development
- Have basic understanding of DB operations and how to wrap them using Nugget packages

Domain Area(s)	Topic
Domain 1	Basic C#
Domain 2	Database Fundamentals
Domain 3	Entity Framework
Domain 4	JavaScript/ jQuery
Domain 5	Basic Angular



Professional SDET:

Goals: Extend application to build enterprise web app. Learn and implement different design and architectural patterns. Learn and implement release pipeline. Learn and implement how to build applications for Azure and deploy to Azure.

Domain Area(s)	Topic
Domain 1	C# Design Fundamentals
Domain 2	Advanced Angular
Domain 3	Basic Web API, ADO.Net, ASP .NET
Domain 4	ASP.NET MVC
Domain 5	Configuration Management
Domain 6	Code Analysis
Domain 7	CICD
Domain 8	Azure Fundamentals



Specialist SDET:

Goals: Ability to release toggle features based on routing rules to a few users to experiment such as AB testing, getting real time feedback based on Telemetry, following some of the advanced CICD techniques such as Canary deployment, Blue/Green deployment

Domain Area(s)	Topic
Domain 1	Advanced CICD and Configuration Management
Domain 2	Azure Advanced
Domain 3	Telemetry, Containers, Firewall configuration in Azure, Load and Performance test



Course outline:

Associate SDET

Domain	Topic
Domain 1	Basic C#
Domain 2	Database Fundamentals
Domain 3	Entity Framework
Domain 4	JavaScript/ JQuery
Domain 5	Basic Angular

Domain 1: Basic C#

- 1) Understand Development Lifecycle and what are focus areas for each stage
- 2) Understand how to use OOPs concepts in C#
- 3) Project creation and usage of Visual Studio IDE
- 4) Fundamentals of Loops - IF, while etc.
- 5) How to create a library & add References
- 6) NuGet fundamentals
- 7) Introduction to Interfaces and Abstract classes
- 8) Generics in C#
- 9) How to debug the code
- 10) Exception Handling
- 11) How to compile the code in Debug and Build mode
- 12) MS Unit testing framework brief
- 13) How to write Unit Test case for C# project and perform unit testing
- 14) How to ensure Code Coverage
- 15) Create a sample project in C#

Domain 2: Database Fundamentals

- 1) Understanding Queries, Joins, Stored Procedures.
- 2) Debug DB issues
- 3) CRUD operations

Domain 3: Entity Framework

- 1) Code First Approach
- 2) DB first Approach
- 3) Table to Model mapping
- 4) Develop an application using Entity Framework (implementing CRUD)

Domain 4: JavaScript/ JQuery

- 1) Scripting fundamentals (Syntax, DOM, Elements)
- 2) Introduction to AJAX
- 3) Create a simple web page using JavaScript or jQuery.

Domain 5: Basic Angular

- 1) Introduction to Single Page Application
- 2) DI in Angular
- 3) Typescript fundamentals
- 4) Angular design patterns (MV*)
- 5) Usage of Angular in a web application
- 6) Debugging Angular Issues

Professional SDET

Domain	Topic
Domain 1	C# Design Fundamentals
Domain 2	Advanced Angular
Domain 3	Basic Web API, ADO.Net, ASP .NET
Domain 4	ASP.NET MVC
Domain 5	Configuration Management
Domain 6	Code Analysis
Domain 7	CICD
Domain 8	Azure Fundamentals

Domain 1: C# Design Fundamentals

- 1) Design Patterns (Dependency Injection, Singleton, Factory, Abstract Factory, Repository, Structure Map, Auto mapper etc.)
- 2) Design considerations for using specific design patterns
- 3) Unit Testing Advanced concept: MOQ

Domain 2: Advanced Angular

- 1) Implementing Advanced Concepts - Application state, forms, navigation, and data flow
- 2) Unit testing using Jasmine and Karma
- 3) GTK (GEICO Tool Kit)

Domain 3: Basic Web API, ADO.Net, ASP .NET

- 1) Developing Restful services using Web API
- 2) Authentication, Authorization
- 3) Developing web application using ASP.Net
- 4) Developing Application using ADO.Net

Domain 4: ASP.NET MVC

- 1) Action methods (GET, POST...)
- 2) Razor engine
- 3) Routing
- 4) Custom Attributes

Domain 5: Configuration Management

- 1) Understanding basics of VSTS/Azure DevOps
- 2) Git Fundamentals and how to perform Push and Pull request
- 3) Code Check in / Check out process

Domain 6: Code Analysis

- 1) Understanding usage of Code Analysis tools and benefits
- 2) Logging - usage of Log4Net
- 3) ReSharper
- 4) StyleCop
- 5) Sonar
- 6) Veracode
- 7) AppInsights
- 8) Splunk

Domain 7: CICD

- 1) Understanding CICD Process (Continuous Integration, Deployment, Delivery)
 - 2) Branching and Merging process
 - 3) Domain 8: Azure Fundamentals
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Specialist SDET

Domain	Topic
Domain 1	Advanced CICD and Configuration Management
Domain 2	Azure Advanced
Domain 3	Telemetry, Containers, Firewall configuration in Azure, Load and Performance test

Domain 1: Advanced CICD and Configuration Management

- 1) Understanding and configuring Build and release Pipeline
- 2) Creating Build pipeline for Client (Angular) and server side (Web API) code
- 3) Configuring Gated Check-in
- 4) Build and restore NuGet
- 5) Understanding Agent and Agent Pools, Jobs
- 6) How to use Remedy ticketing tool
- 7) PowerShell fundamentals
- 8) Configuring Selenium with C# in build pipeline
- 9) Understanding GEICO tools - RMDA, DoCat, iCat, EAP

Domain 2: Azure Advanced

- 1) Implementing Web role, worker role, understanding of Azure functions etc.
- 2) Configuring Load Balancers, VNET, Subnet
- 3) Azure Auto Scaling concepts
- 4) Azure Key Vault usage

Domain 3: Telemetry, Containers, Firewall configuration in Azure, Load and Performance test

- 1) Telemetry (production system monitoring)
 - 2) Configuring F5
 - 3) Introduction to Containers
 - 4) Load and Performance testing using Storm runner
 - 5) Understanding Load Testing / Performance Testing issues and come up with a plan to fix them
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