GenC Program

SPE DotNet Standard (Delta + Stage 2) - Handbook

Why do we need this Academy Enablement Program?

Academy enablement program engages young talents with a comprehensive learning pathway, giving these millennials an opportunity to interact with Subject Matter Experts (SME) and understand the corporate environment and groom themselves even before they join us.

Cognizant emphasizes on Learner Autonomy where students take charge of their own learning, with the available tools and resources. More focus is on “learning” than “teaching”. Get ready to embark your own learning adventure!

Program at a glance

Learning consisting of 2 Stages and an Integrated Development Project:

- **Stage 1 Delta Skills** - Foundation in Software Development
- **Stage 2** - Application Development and Maintenance Practices
- Integrated Development Project (IDP)

Program Highlights

- The complete learning journey is formalized using adult learning principles, where problem solving and applying the skills gained are given more importance than conceptual learning.
- Get mentored by SMEs from BU, whose motivation and guidance will help you accelerate in the learning journey.
- Learner Autonomy is encouraged via Flipped Classroom, where the learning platform offers world class learning resources, and students would not be constrained by tutelage of an instructor.
- Through Project-Based Learning (PBL), GenCs will go through the entire project phase, embracing Agile practices

Service Lines

Service lines can simply be defined as a modern organizational structure strategy for resource planning and allocation for any size of business. Typically, traditional organizational structure models are more vertically aligned -- think of an employee who has several bosses in the hierarchical ladder before being directly under the company's owner or president. Conversely, service lines follow a more horizontal continuum approach, where the company is strategically segmented into more manageable departments. The service line approach tends to focus more on the requirements of customers, which often results in noticeable increases in the customer satisfaction rate.

What is Application Development?

Application development goes through a process of planning, creating, testing, and deploying an information system, also known as the software development lifecycle. Applications are also often developed to automate some type of internal business process or processes, build a product to address common business challenges, or drive innovation.

What is Application Maintenance?

Application maintenance is the continuous updating, analyzing, modifying, and re-evaluating of your existing software applications. Application maintenance must be an ongoing task to ensure your applications are always running to the best of their abilities. Due to evolving customer expectations, the fight to survive in an existing market, and technological advancements, modifying and implementing new strategies is critical in maintaining sustainability and staying competitive. Every competitive business needs to constantly enhance and manage the IT solutions that have been developed in order to stay relevant and meet the wavering needs of users. This is where application maintenance and support come into the picture.

Contrary to popular belief, application maintenance is not just about fixing defects, but modifying a software product after delivery to correct faults, as well as to improve performance. Application maintenance and enhancement to existing applications begin with a thorough study of existing applications to identify areas of improvement.

Tips for Successfully Carrying Out Application Development and Maintenance

Great user experience to end customers through the development and maintenance of modern apps is a must-have. Today, applications (web or mobile) are the most cost-effective and powerful ways to reach out to a vast market and generate revenues. With millions of applications being rolled out every day, it's a good idea to keep in mind a few tips:

- Be as clear as possible as to what your requirements for your application are
- Thoroughly understand the services offered by application development companies and identify the right partner if you're using a partner
- Evaluate the various development platforms and choose the one that best fits the needs of your business

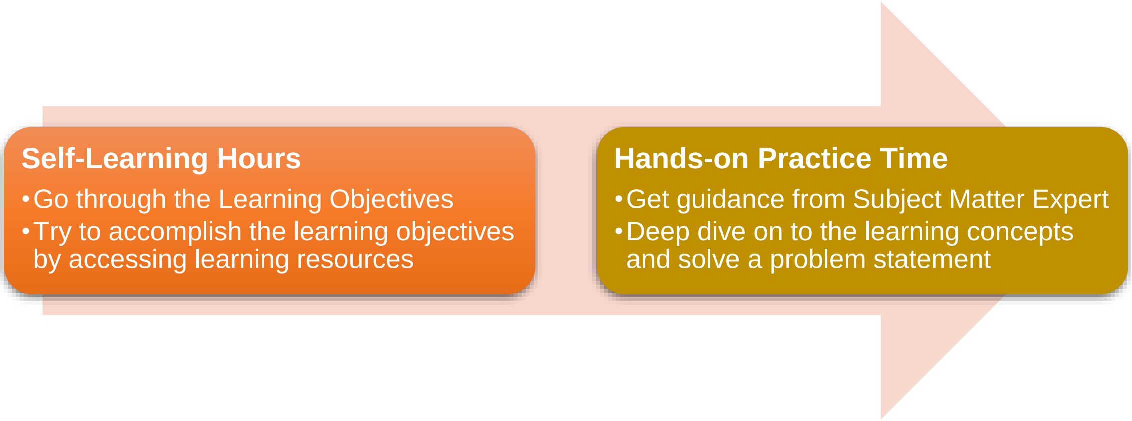
- Make sure to embed processes that focus on continuous improvements and iterations to add new features and/or fix bugs
- When developing your application, make security your top priority
- Regularly update and test your application to deliver improved and better performance, high security, and a bug-free, seamless user experience

Learning Journey with Flipped Classroom

This program encourages you to be more autonomous learners during guided self-learning hours, completing the learning objectives on your own pace and style, and get ready for the hands-on practice time.

The complete learning path is set in the GEN C Learn Platform, which you can login with SSO.

Flipped Classroom



Self-Learning Hours

- Go through the Learning Objectives
- Try to accomplish the learning objectives by accessing learning resources

Hands-on Practice Time

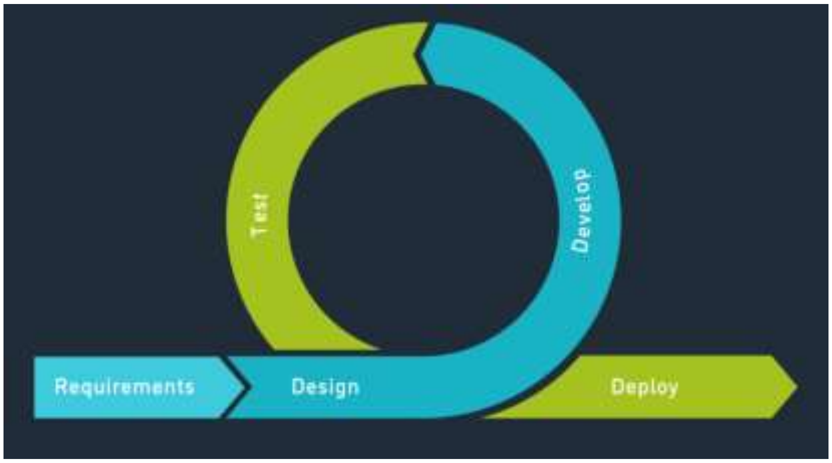
- Get guidance from Subject Matter Expert
- Deep dive on to the learning concepts and solve a problem statement

Integrated Development Project (IDP)

What is Integrated Development Project (IDP)?

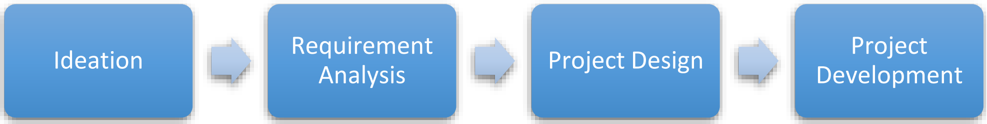
Integrated Development Project is an approach wherein the learner experiences the entire software development processes in an incremental fashion as part of the GenC Training. The IDP implementation is purely based on **Agile Software Development** methodologies and inspired from **PBL (Project-Based Learning)** which is learning while doing. It gives learners the opportunity to gain a deeper understanding of a topic through problem-solving using real-world examples and challenges.

Following is the Agile Development Methodology at high-level.



Stages of IDP

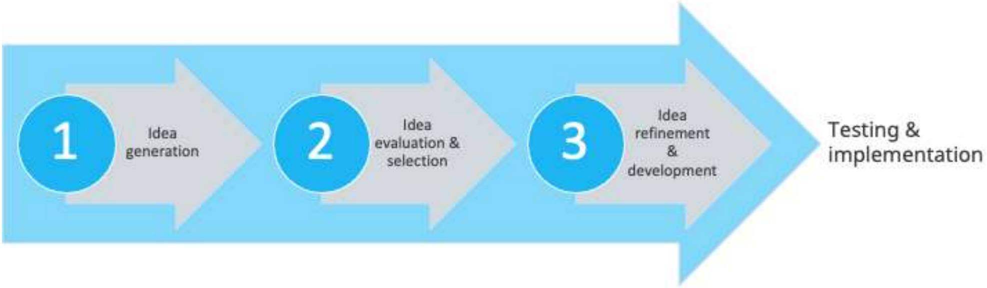
Following are the four seminal phases of IPD.



Phase 1: Ideation

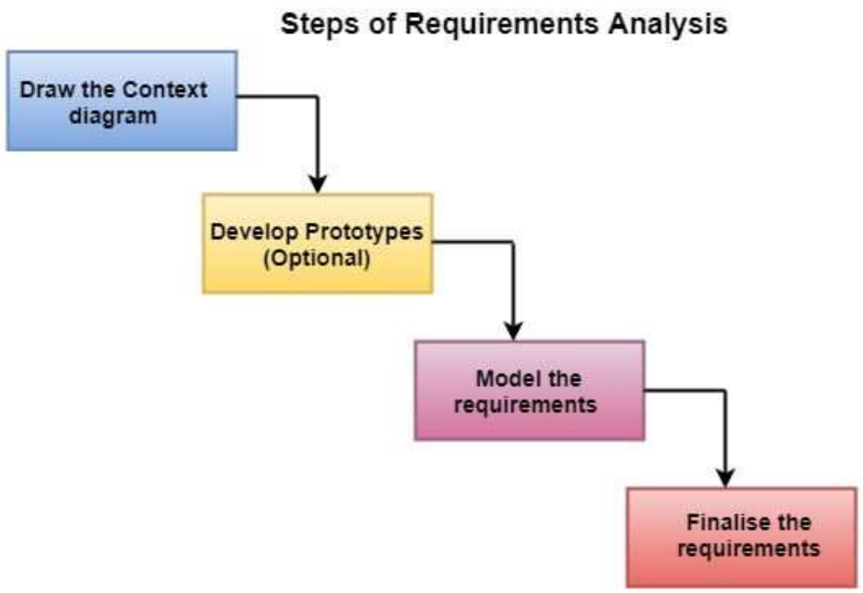
Ideation is the creative process of generating, developing, and communicating ideas. It’s important to note that these ideas don’t have to be completely new. You can ideate to solve specific problems, look into new ways of implementing a solution, or even collect feedback and evaluate ideas.

The Ideation Process



Phase 2: Requirement Analysis

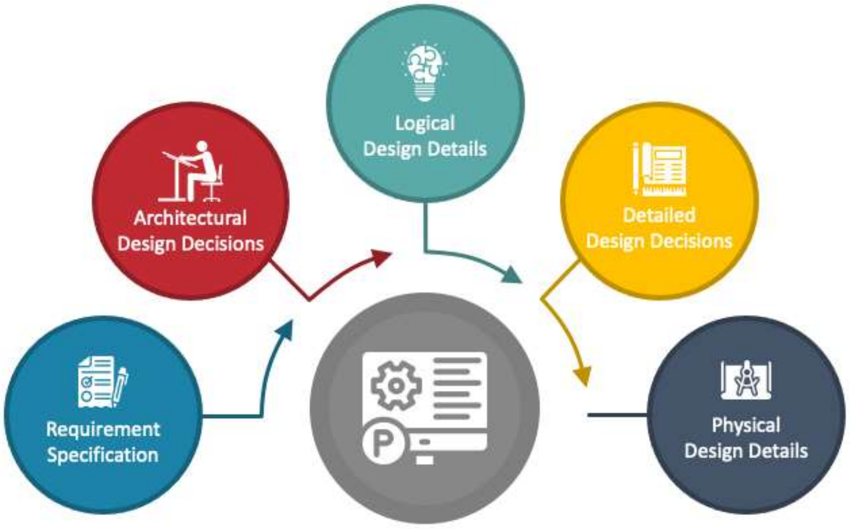
Requirements analysis, also called requirements engineering, is the process of determining user expectations for a new or modified product. These features, called requirements, must be quantifiable, relevant and detailed. In software engineering, such requirements are often called functional specifications.



Steps of Requirements Analysis
Draw the Context diagram
Develop Prototypes (Optional)
Model the requirements
Finalise the requirements

Phase 3: Project Design

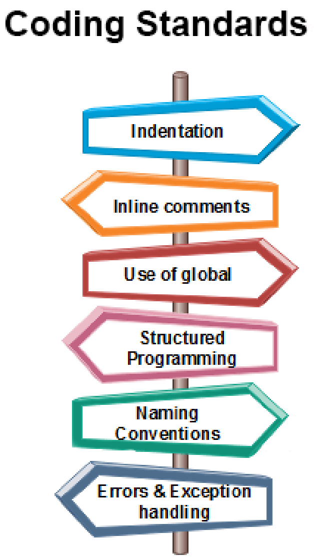
Project design is a process to transform user requirements into some suitable form, which helps the programmer in software coding and implementation.



Logical Design Details
Architectural Design Decisions
Detailed Design Decisions
Requirement Specification
Physical Design Details

Phase 4: Project Development

Once the system design phase is over, the next phase is development. In this phase, developers start build the entire system by writing code using the chosen programming language. In this phase, tasks are divided into units or modules and assigned to the various developers. It is the longest phase of the Software Development Life Cycle process.

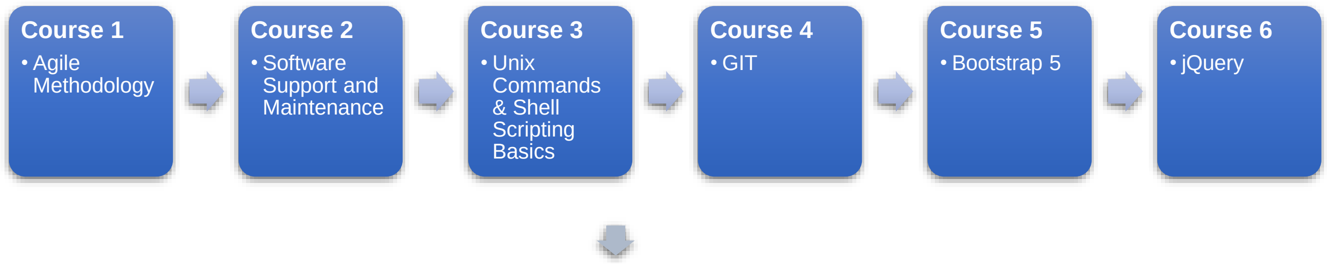


Recommended Program Sequence

The learning journey starts with **5 days of Icebreaker sessions** followed by technical learning that contains **2 stages** along with a **Project.**

- Stage 1 Delta Skills - Foundation in Software Development
- Stage 2 - Application Development and Maintenance Practices
- Integrated Development Project (IDP)

Stage 1 Delta Skills - Foundation in Software Development + IDP



Course 1
- Agile Methodology

Course 2
- Software Support and Maintenance

Course 3
- Unix Commands & Shell Scripting Basics

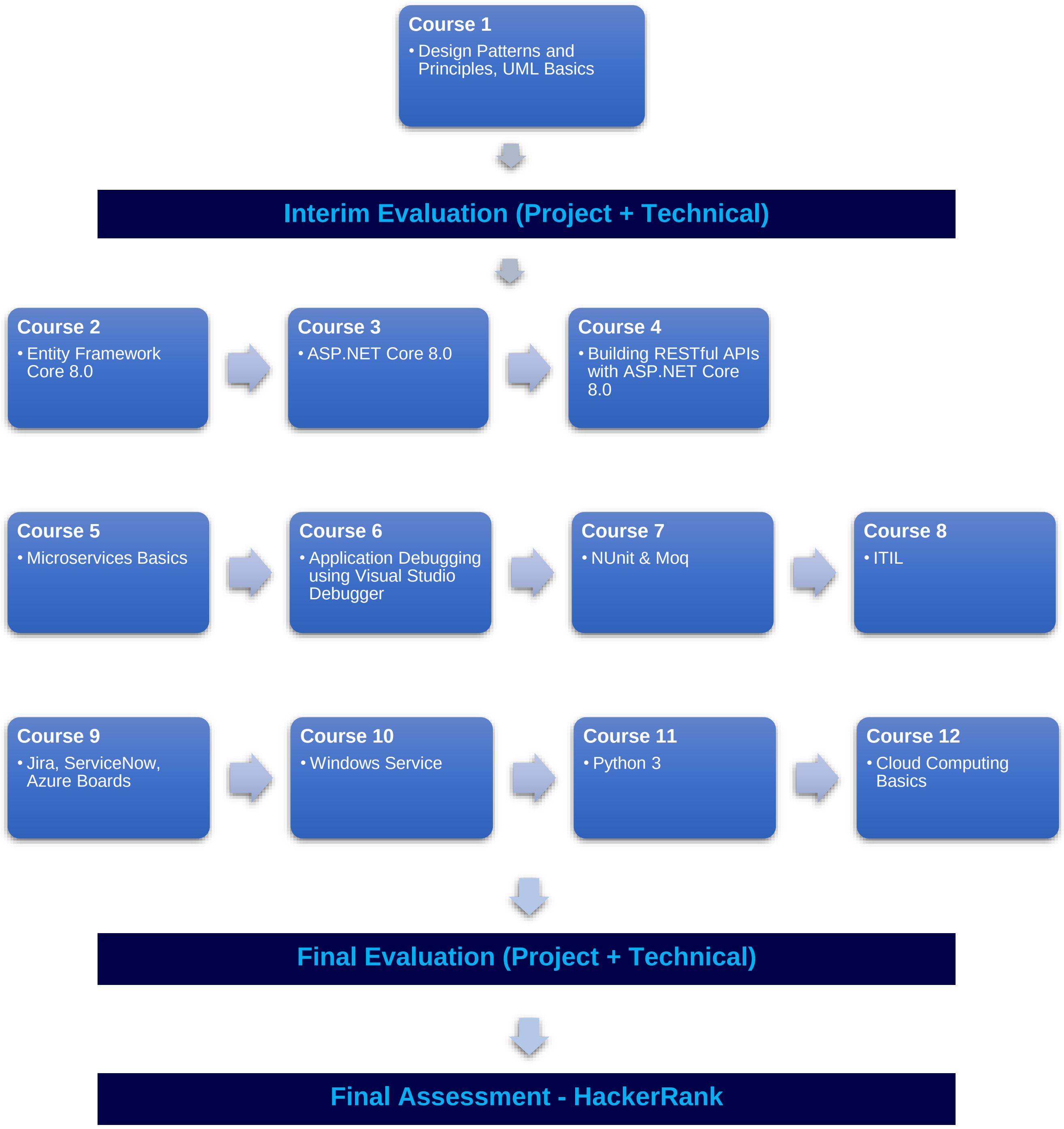
Course 4
- GIT

Course 5
- Bootstrap 5

Course 6
- jQuery

Stage 1 Delta Assessment (Skills: ALL Delta Skills)

Stage 2 - Application Development and Maintenance Practices



Course 1
- Design Patterns and Principles, UML Basics

Interim Evaluation (Project + Technical)

Course 2
- Entity Framework Core 8.0

Course 3
- ASP.NET Core 8.0

Course 4
- Building RESTful APIs with ASP.NET Core 8.0

Course 5
- Microservices Basics

Course 6
- Application Debugging using Visual Studio Debugger

Course 7
- NUnit & Moq

Course 8
- ITIL

Course 9
- Jira, ServiceNow, Azure Boards

Course 10
- Windows Service

Course 11
- Python 3

Course 12
- Cloud Computing Basics

Final Evaluation (Project + Technical)

Final Assessment - HackerRank

Key Learning and Evaluation Components of the Program

Self-Learning via Udemy

Cognizant has collaborated with **Udemy** to provide world class learning videos for the evolving future of work. These Udemy programs are woven into a learning path, empowering you to plan and learn at your style.

The program also connects you with **Subject Matter Experts (SMEs)** to get the professional guidance on your queries in the learning journey.

RAG as PHS (Performance Health Status)

The program continuously evaluates if you are able to apply those self-learnt skills to solve a real-time business problem. Depicted below are the two key learning components, which are distributed across the learning journey for the purpose of continuous evaluation.

Interim Evaluation

During the interim evaluation, the GenC will undergo a video interview on the learning platform. This interview will be conducted by a Tech SME from the BU. The purpose of this evaluation is to assess the GenC's knowledge and understanding of the skills covered in the training program up to the halfway point. It also encompasses an evaluation of the GenC's progress in their Integrated Development Project (IDP). The evaluation will involve a technical discussion as well as an assessment of the IDP progression to gauge the GenC's proficiency in the skills learned thus far.

Final Evaluation

For the final evaluation, the GenC will participate in a video interview conducted by a Tech SME from the BU. This evaluation aims to assess the GenC's knowledge and expertise in all the skills covered throughout the entire training program. Similar to the interim evaluation, this assessment will involve a technical discussion via a video interview on the learning platform, along with a project evaluation to assess the GenC's capabilities and their IDP's progress. It serves as a comprehensive evaluation of the GenC's skills and capabilities acquired during the training.

The above evaluation components will attribute to the **Performance Health Status (PHS)** of a GenC. Additional Learning Components like Hands-On, Quizzes, CCs, and ICTs will help you to enhance your expertise level.

Icebreaker

Icebreaker session will be conducted for a duration of initial **5 days**. During the session, various topics related to Corporate Induction, Talent Management, Cognizant Agenda on Core Values, Leader Talks, Alumni, BU Mentor connects will be covered. Followed by icebreaker, technical training will kick start.

Following sessions will be covered during the 5 days of icebreaker

- Corporate Induction
- Talent Manager Connect
- Cognizant Agenda Sessions on Core Values
- Leader Talks (Academy) and many more…

Stage 1 - Foundation in Software Development

Overview

Stage 1 deals with foundational technology skills that help GenCs to get start with their software engineering career. We provide unique learning experience to learners by including diversified learning content and learning methodologies that are based on adult learning principles.

As part of Stage 1 Delta of your training, the following skills will be covered.

- Agile Methodology
- Software Support and Maintenance
- Unix Commands & Shell Scripting Basics
- GIT

- Bootstrap
- jQuery

How and From Where to Learn?

- Udemy learnings are recommended in the Platform to understand the fundamental concepts. In addition to this, you can also learn from any other sources as they are mentioned in this handbook.

Stage 1 -> Course 1 -> Agile Methodology

Course Overview

In the **Course 1** of the **Stage 1**, learners will be introduced to the basics of **Agile methodology**. Agile is an approach to project management and software development that emphasizes flexibility, collaboration, and customer satisfaction. It involves adaptive planning, iterative development, early delivery, and continuous improvement. Agile methodologies, like Scrum and Kanban, focus on delivering value to the customer and responding to change effectively.

Learning Objectives

After completing this course, GenCs will be able to:

- Understand the principles and values of Agile methodology.

- Describe the benefits of using Agile in software development.
- Explain the differences between Agile and traditional project management approaches.
- Identify the key roles and responsibilities in Agile teams.
- Describe the iterative and incremental nature of Agile development.
- Explain the importance of customer collaboration and feedback in Agile.
- Describe common Agile practices, such as user stories, sprints, and retrospectives.
- Identify common Agile frameworks, such as Scrum, Kanban, and Extreme Programming (XP).
- Explain how Agile principles can be applied in different project environments.

Day 1

Agile Methodology

Key Topics: Introduction to Agile, Agile Manifesto, Scrum Framework, Agile Estimation and Planning, Agile User Stories, Agile Metrics and Reporting

Continuous Learning: Technical Enablement

Agile Crash Course: Agile Project Management; Agile Delivery

- Learn All Sections in this Udemy course.

Stage 1 -> Course 2 -> Software Support and Maintenance

Course Overview

The **Course 2** of the **Stage 1** provides a comprehensive understanding of software development and maintenance processes, focusing on the Software Development Life Cycle (SDLC) phases and Agile methodology. It explores the critical need for software maintenance, challenges encountered during the maintenance phase, and the various categories of maintenance activities. Additionally, learners will gain insights into software reverse engineering and its significance, along with best practices for providing effective software support. The course is designed to equip learners with the necessary skills to ensure the efficiency and longevity of software systems in dynamic environments.

Learning Objectives

After completing this course, GenCs will be able to:

- Explain the stages of the Software Development Life Cycle and their role in delivering robust software solutions.
- Demonstrate knowledge of Agile principles and practices to enhance flexibility and collaboration in software development and maintenance.
- Articulate the importance of software maintenance in ensuring system performance and alignment with evolving requirements.
- Analyze common challenges in software maintenance and propose strategies to address them effectively.
- Differentiate between various types of software maintenance, including corrective, adaptive, perfective, and preventive maintenance.
- Describe the purpose and process of software reverse engineering in understanding legacy systems and facilitating updates.
- Develop strategies for providing efficient and proactive software support to meet user and business needs.

Day 2

Software Support and Maintenance

Key Topics: SDLC vs Agile, Software maintenance and support - overview

Continuous Learning: Technical Enablement

Software Engineering 101: Plan and Execute Better Software

- Learn the sections listed below in this Udemy course and take up the Quizzes in each section in order to check your understanding about the subject.
    - **Section 2:** Software Lifecycle
    - **Section 3:** Requirements and Specifications
    - **Section 4:** Design: Architecture
    - **Section 5:** Design: Modularity
    - **Section 6:** Implementation and Deployment
    - **Section 7:** Testing
    - **Section 8:** Software Development Models

Additional Learning

Learn about Software Maintenance from the following:

- Overview of Software Maintenance

Stage 1 -> Course 3 -> Unix Commands & Shell Scripting Basics

Course Overview

The **Course 3** of the **Stage 1** is designed to provide learners with a comprehensive introduction to Unix and Unix-based systems. It covers essential skills required for effective file and directory management, mastery of file permissions, and the use of basic utilities. Learners will explore powerful tools like pipes, filters, and text processing commands to manipulate data efficiently. The course also delves into process management and network communication utilities, laying a strong foundation for Unix system usage. Additionally, participants will gain hands-on experience with Unix shell scripting, from writing their first script to understanding scripting fundamentals and incorporating error-handling techniques. This course equips learners with the skills needed to automate tasks, streamline workflows, and enhance their productivity in a Unix environment.

Learning Objectives

After completing this course, GenCs will be able to:

- Understand the Unix operating system and its core functionalities.
- Perform effective file and directory management using Unix commands.
- Configure and modify file permissions and access modes for secure operations.
- Utilize basic utilities, pipes, and filters to process and manipulate data efficiently.
- Apply text processing commands to manage and analyze text-based data.
- Manage processes and monitor system performance using Unix process management tools.
- Utilize network communication utilities for system interaction and data transfer.
- Develop a foundational understanding of Unix shell scripting, including scripting syntax and structure.
- Write and execute basic shell scripts to automate routine tasks.
- Implement error-handling techniques in shell scripts to ensure robust script execution.

Unix Commands

Key Topics: Introduction, File Management, Directory Management, File Permission / Access Modes, Basic Utilities, Pipes and Filters, Process Management, Network Communication Utilities

Continuous Learning: Technical Enablement

The Linux Command Line Bootcamp: Beginner To Power User

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 2:** Introduction
  - **Section 3:** Command Basics
  - **Section 4:** Getting Help
  - **Section 5:** Navigation
  - **Section 6:** Creating Files & Folders
  - **Section 8:** Deleting, Copying, & Moving
  - **Section 10:** Working With Files

    - **Section 11:** Redirection
    - **Section 12:** Piping
    - **Section 14:** Finding Things
    - **Section 15:** Grep
    - **Section 16:** Permissions Basics
    - **Section 17:** Altering Permissions
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following set of hands-on given in the Learning Path at Tekstac.

> ❗ Do not copy paste the code. Write the code yourself.

- Display the days of the year 2016
- Calculator
- Display the hidden files or directories
- Copy a File using relative path
- Move a File to mammals using relative path
- Change File Permission adding write permission to group
- Change File permission by removing write permission as specified
- Display the lines of the file that do not contain the string
- List all the file-names starting with "t" or "s"
- Count the Files in a directory

Additional Learning

Learn about Process Management and Network Communication Utilities from the following

- Linux/Unix Process Management
- Network Communication Utilities

Technical Quiz

Attempt the following technical quiz in the Learning Path at Tekstac for checking your knowledge level on Unix and Shell Scripting.

- Introduction to Unix
    - Pre-Quiz
    - Post-Quiz
- File System
    - Pre-Quiz
    - Post-Quiz
- Filters
    - Pre-Quiz
    - Post-Quiz
- Test Your Understanding - Introduction to Unix
- Test Your Understanding - File System
- Test Your Understanding – Filters

Day 3 - Forenoon

Shell Scripting Basics

Key Topics: Introduction to Shell Scripting, Basic Shell Scripting Concepts, Control Structures, Command-Line Arguments, Functions, Text Processing, Error Handling and Debugging

Continuous Learning: Technical Enablement

Shell Scripting: Discover How to Automate Command Line Tasks

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
    - **Section 2:** Shell Scripting, Succinctly
    - **Section 5:** Shell Script Checklist and Template
    - **Section 7:** Case Statements
    - **Section 9:** While Loops
    - **Section 3:** Exit Statuses and Return Codes
    - **Section 4:** Functions
    - **Section 8:** Logging
    - **Section 10:** Debugging
    - **Section 11:** Data Manipulation and Text Transformation with Sed
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following set of hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- Permission Change
- Factorial of a number

Technical Quiz

Attempt the following technical quiz in the Learning Path at Tekstac for checking your knowledge level on Unix and Shell Scripting.

- Vi Editor

    - Pre-Quiz
    - Post-Quiz
- Bourne Shell
    - Pre-Quiz
    - Post-Quiz
- Test Your Understanding - Vi Editor
- Test Your Understanding - Bourne Shell

Stage 1 -> Course 4 -> GIT

Course Overview

The **Course 4** of the **Stage 1** provides a comprehensive understanding of Git, a powerful version control system widely used in software development. Participants will learn the foundational concepts and advanced techniques necessary to effectively manage and collaborate on projects using Git. The course is structured to guide learners from working locally with Git to mastering collaborative workflows, including branching, merging, and rebasing. By the end of this course, participants will be well-equipped to handle real-world version control challenges and streamline their development processes.

Learning Objectives

After completing this course, GenCs will be able to:

- Grasp fundamental Git concepts, including repositories, versioning, and the role of Git in software development workflows.
- Set up and initialize local Git repositories.
- Track changes and manage versions using essential Git commands like add, commit, and log.
- Navigate through commit history and revert changes when necessary.
- Connect local repositories to remote services like GitHub or GitLab.
- Push and pull changes to and from remote repositories.
- Understand and resolve common conflicts during collaborative workflows.
- Create and manage branches for feature development and bug fixes.
- Merge changes effectively to maintain a stable codebase.
- Rebase commits to keep a clean and linear project history.

Day 3 - Afternoon, Day 4 - Forenoon

GIT

Key Topics: Introduction, Working Locally with Git, Working Remotely with Git, Branching, Merging, and Rebasing with Git

Continuous Learning: Technical Enablement

Git Complete: The definitive, step-by-step guide to Git

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.

    - **Section 1:** Introduction
    - **Section 2:** Installation
    - **Section 3:** Git Quick Start
    - **Section 6:** Basic Git Commands
    - **Section 8:** Comparisons
    - **Section 9:** Branching and Merging
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following set of hands-on given in the Learning Path at Tekstac.

> Do not copy paste the code. Write the code yourself.

- Git Config
- Clone Repo
- Add, Commit And Push
- Pull And Merge
- Merge - Resolve Conflict
- Git Tags

Stage 1 -> Course 5 -> Bootstrap 5

Course Overview

The **Course 5** of the **Stage 1** provides a comprehensive introduction to Bootstrap 5, the world's most popular front-end framework for building responsive, mobile-first websites. GenCs will explore the fundamental concepts and tools that Bootstrap 5 offers, empowering them to design and develop modern, dynamic web interfaces efficiently. From understanding the layout and grid system to leveraging essential components, utilities, and helpers, this course will equip them with the skills to create visually appealing and user-friendly web pages. Additionally, GenCs will learn how to customize and extend Bootstrap to meet specific project requirements while mastering responsive design principles.

Learning Objectives

After completing this course, GenCs will be able to:

- Describe the purpose and features of Bootstrap 5 as a front-end framework.
- Design responsive web layouts using the Bootstrap grid system.
- Implement advanced layout techniques for complex web pages.
- Incorporate common UI elements like navigation bars, modals, buttons, and cards to enhance interactivity and usability.
- Use Bootstrap utilities and helper classes to streamline the styling and functionality of web pages.
- Develop web pages that adapt seamlessly to different devices and screen sizes.
- Leverage responsive breakpoints effectively for design adjustments.

- Modify default themes and styles to align with specific design requirements.
- Integrate Bootstrap with custom CSS and JavaScript to extend its functionality.

Day 4 - Afternoon

Bootstrap 5

Key Topics: Introduction to Bootstrap 5, Layout and Grid System

Continuous Learning: Technical Enablement

The Ultimate Bootstrap Guide - Bootstrap 5 from Scratch

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 1:** Getting Started with Bootstrap 5
  - **Section 2:** Layouts in Bootstrap 5
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following set of hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- Ohm's Law

Day 5

Bootstrap 5

Key Topics: Essential Components, Utilities and Helpers

Continuous Learning: Technical Enablement

The Ultimate Bootstrap Guide - Bootstrap 5 from Scratch

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 5:** Components in Bootstrap 5
  - **Section 6:** Helpers in Bootstrap 5
  - **Section 7:** Utilities in Bootstrap 5

- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following set of hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- Sticky Notes
- Portfolio
- Library Home Page
- Hi-Tech Digital world

Day 6 - Forenoon

Bootstrap 5

Key Topics: Responsive Design, Customization and Extensions

Continuous Learning: Technical Enablement

- Responsive Web Design - Media Queries
- Responsive Web Design - Images
- Bootstrap 5 Navbar Responsive behaviors Toggler
- How to theme, customize, and extend Bootstrap with Sass

Stage 1 -> Course 6 -> jQuery

Course Overview

The **Course 6** of the **Stage 1** is designed to provide a comprehensive introduction to jQuery, a powerful JavaScript library that simplifies web development by streamlining tasks such as DOM manipulation, event handling, and AJAX integration. Through practical examples, GenCs will learn how to leverage jQuery's robust features to enhance user interfaces and create dynamic, interactive web applications.

Learning Objectives

After completing this course, GenCs will be able to:

- Explain the purpose and benefits of using jQuery in web development.
- Identify the core features and components of the jQuery library.
- Select and manipulate HTML elements efficiently using jQuery selectors and methods.
- Apply various jQuery methods to alter content, attributes, and styles dynamically.
- Perform advanced DOM manipulation, including traversing and filtering elements.
- Attach and manage event handlers to create interactive web experiences.
- Use jQuery's AJAX capabilities to send and receive data asynchronously.

Day 6 - Afternoon, Day 7 - Forenoon

jQuery

Key Topics: jQuery and its features, Basic components, DOM manipulation & events, Basic AJAX with jQuery

Continuous Learning: Technical Enablement

The Complete jQuery Course: From Beginner To Advanced!

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
    - **Section 1:** Introduction
    - **Section 3:** Element Selectors
    - **Section 4:** Manipulating the DOM I – Inserting, Replacing and Removing Elements
    - **Section 5:** Manipulating the DOM II – Changing Element Data and CSS
    - **Section 6:** Events I – Handling Mouse Events & Keyboard Events
    - **Section 7:** Events II – Forms
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Day 7 - Afternoon, 8, 9, 10

Project High Level Design Demo, Project Artifacts Review

- High-Level Design Demo
- Project Artifacts Review

Stage 1 Delta Assessment

Day 11 - Forenoon

Stage 1 Delta Assessment

- This day will be dedicated for the Stage 1 Delta Assessment.

Assessment Overview

- **Assessment Type:** Knowledge-Based Assessment (KBA)
- **Duration:** 90 minutes
- **Number of Questions:** 40
- **Modules Covered:**
  - Software Support and Maintenance
  - Unix Commands & Shell Scripting Basics
  - GIT
  - Bootstrap 5
  - jQuery
- **Maximum Attempts:** 3

Stage 2 - Application Development and Maintenance Practices

Overview

Stage 2 focuses on Application Development and Maintenance Practices essential for the development and maintenance of various software applications. We offer a unique learning experience to learners by providing diverse learning content and methodologies based on adult learning principles.

As part of Stage 2 of your training, the following skills will be covered.

- Design Patterns and Principles, UML Basics
- Entity Framework Core 8.0
- ASP.NET Core 8.0
- Building RESTful APIs with ASP.NET Core 8.0
- Microservices Basics
- Application Debugging using Visual Studio Debugger
- NUnit & Moq
- ITIL
- Jira, ServiceNow, Azure Boards
- Windows Service
- Python 3
- Cloud Computing Basics

How and From Where to Learn?

- Udemy learnings are recommended in the Platform to understand the fundamental concepts. In addition to this, you can also learn from any other sources as they are mentioned in this handbook.

Stage 2 -> Course 1 -> Design Patterns and Principles, UML Basics

Course Overview

The **Course 1** of the **Stage 2** will be focusing on **Design Principles and Patterns, UML Basics** and their practical implementations in various application development and maintenance scenarios.

Design Principles provide high level guidelines to design better software applications. They do not provide implementation guidelines and are not bound to any programming language. The SOLID (SRP, OCP, LSP, ISP, DIP) principles are one of the most popular sets of design principles.

Design Pattern provides low-level solutions related to implementation, of commonly occurring object-oriented problems. In other words, design pattern suggests a specific implementation for the specific object-oriented programming problem.

Design patterns are tested by others and are safe to follow, e.g., Gang of Four patterns: Abstract Factory, Factory, Singleton, Command, etc.

UML, or Unified Modeling Language, is a standardized way of visually representing a system's design in software engineering. It uses diagrams to show different parts of a system, like its structure or how it behaves. These diagrams help understand and communicate about the system's design throughout the software development process. UML includes various types of diagrams, each showing a different aspect of the system.

Learning Objectives

After completing this course, GenCs will be able to:

- Understand and apply the Gang of Four (GoF) Design Patterns to solve common design problems in software development.
- Apply various software design principles, such as SOLID and DRY to enhance the quality and maintainability of software systems.
- Explain the basics of Unified Modeling Language (UML) and its importance in software development.
- Create and interpret different types of UML diagrams, including class diagrams, sequence diagrams, and activity diagrams.
- Identify and utilize the essential elements of UML diagrams, such as classes, objects, relationships, and behaviors, to model software systems effectively.

Day 11 - Afternoon

Design Patterns and Principles, UML Basics

Key Topics: GoF Design Patterns

Continuous Learning: Technical Enablement

Design Patterns in C# and .NET

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 2:** Builder
  - **Section 3:** Factories
  - **Section 5:** Singleton
  - **Section 6:** Adapter
  - **Section 7:** Bridge
  - **Section 10:** Façade
  - **Section 13:** Chain of Responsibilities
  - **Section 14:** Command
  - **Section 20:** Observer
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Design Microservices Architecture with Patterns & Principles

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 2:** Monolithic Architecture
  - **Section 4:** Layered (N-Layer) Architecture
  - **Section 5:** Service-Oriented Architecture (SOA)
  - **Section 6:** Microservices Architecture
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following set of hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- UA Highschool - Singleton Pattern
- GadgetHub - Factory Pattern
- SecureDocs - Proxy Pattern
- FoodiesDelight - Command Pattern

Day 12

Design Patterns and Principles, UML Basics

Key Topics: Different Types of Software Design Principles

Continuous Learning: Technical Enablement

Design Patterns in C# and .NET

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.

    - **Section 1:** The SOLID Design Principles
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Please find the hyperlink to an article on DRY principles in C# on the internet below and ensure you study its contents thoroughly.

- DRY Principles in C#

Day 13, 14 - Forenoon

Design Patterns and Principles, UML Basics

Key Topics: UML Diagram Types, UML Diagram Elements

Continuous Learning: Technical Enablement

The Complete UML Course: Learn to Design UML Diagrams

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
    - **ALL** Sections
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Please find the hyperlink to an article on DRY principles in C# on the internet below and ensure you study its contents thoroughly.

- UML Diagram Elements

IDP - Project Activities

Day 14 - Afternoon, 15, 16, 17 - Forenoon

IDP - Development & Review, Demo

- These days will be spent on project development and review activities.

Day 17 - Afternoon

- This part of the day has been included to adjust the Behavioral Training duration.

Interim Evaluation

Day 18, 19

Interim Evaluation (Project + Technical)

- Interim evaluation will be conducted on these days, and the mode will be a video interview on the Tekstac platform.

Day 20 - Forenoon

- This part of the day has been included to adjust the Behavioral Training duration.

Stage 2 -> Course 2 -> Entity Framework Core 8.0

Course Overview

The **Course 2** of the **Stage 2** provides a comprehensive introduction to **Entity Framework Core 8** (EF Core 8) and its seamless integration with .NET 8. Designed for aspiring developers, the course focuses on building robust and efficient data access layers for modern applications. Students will gain hands-on experience with creating database models, performing CRUD operations, executing LINQ queries, managing database migrations, and handling data relationships. The course also covers advanced topics such as performance optimization and best practices, ensuring that learners can develop scalable and maintainable applications with confidence.

Learning Objectives

After completing this course, GenCs will be able to:

- Understand the integration of EF Core 8 with .NET 8 and set up EF Core in a project.
- Design and implement a simple database model using EF Core 8.
- Perform basic CRUD (Create, Read, Update, Delete) operations with EF Core 8.
- Construct and execute LINQ queries for data retrieval and manipulation.
- Apply EF Core migrations to manage and update database schemas effectively.
- Handle data relationships and loading strategies, such as eager, lazy, and explicit loading.
- Optimize EF Core performance using best practices and advanced techniques.
- Build scalable and maintainable data access layers for modern software applications.

Day 20 - Afternoon

Entity Framework Core 8.0

Key Topics: Overview of EF Core 8 and .NET 8 Integration, Setting up EF Core in a .NET 8 Project

Continuous Learning: Technical Enablement

Entity Framework Core - A Full Tour

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 1:** Introduction
  - **Section 2:** Environment Setup
  - **Section 3:** Getting Started with Entity Framework Core
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Go through the below learning.

- Create a Model with Database Table in .NET 8 using EF Core

Day 21

Entity Framework Core 8.0

Key Topics: Creating a Simple Database Model, Performing Basic CRUD Operations, LINQ Queries in EF Core 8

Continuous Learning: Technical Enablement

Entity Framework Core - A Full Tour

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 4:** Using Entity Framework Core to Query a Database
  - **Section 5:** Using Entity Framework Core to Manipulate Data
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Go through the below learning.

- A Comprehensive Guide to Entity Framework Core in .NET 8
- CRUD Operations in Entity Framework Core

Hands-On

Complete the following hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- Car Repository - Insert

- Car Repository - Eager Loading
- Car Repository - Lazy Loading

Day 22, 23 - Forenoon

Entity Framework Core 8.0

Key Topics: EF Core Migrations and Database Updates, Handling Relationships and Data Loading, Performance Optimizations and Best Practices

Continuous Learning: Technical Enablement

Entity Framework Core - A Full Tour

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 6:** Handling Database Changes and Migrations
  - **Section 7:** Interacting With Related Records
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Go through the below learning.

- EF Core Performance Optimisations

Technical Quiz

Attempt the following technical quiz in the Learning Path at Tekstac for checking your knowledge level on Entity Framework Core.

- Entity Framework

Code Challenge (For Practice Only)

Attempt the following Code Challenge through the Learning Path at Tekstac for checking your skill level on Entity Framework Core. You have to secure 70% in order to clear this challenge.

Do not copy paste the solution. Write the query yourself.

- Assess-Type-1: Code Challenge - Entity Framework

Stage 2 -> Course 3 -> ASP.NET Core 8.0

Course Overview

The **Course 3** of the **Stage 2** provides a comprehensive introduction to **ASP.NET Core 8**, a modern, open-source, cross-platform framework for building web applications. Designed for aspiring developers, the course emphasizes practical skills to design, develop, and deploy dynamic web applications using the latest features of ASP.NET Core. Participants will gain a solid understanding of the MVC (Model-View-Controller) architecture, explore robust techniques for handling user input and state management, and learn to integrate Entity Framework (EF) Core 8 for seamless data operations. By the end of the course, learners will be equipped to create scalable, maintainable, and deployable web applications using industry best practices.

Learning Objectives

After completing this course, GenCs will be able to:

- Describe the key features and benefits of ASP.NET Core 8.
- Set up and configure a new ASP.NET Core project.
- Explain the principles of the Model-View-Controller (MVC) design pattern.
- Develop and integrate Models, Controllers, and Views effectively.
- Create and manage forms to collect and process user input.
- Utilize routing to enable intuitive navigation and URL structures.
- Explore techniques for session and application state management.
- Implement secure state management solutions.
- Configure and connect ASP.NET Core applications with databases using EF Core 8.
- Perform CRUD (Create, Read, Update, Delete) operations with EF Core.
- Implement Dependency Injection (DI) for modular and testable code.
- Understand the process of publishing and deploying ASP.NET Core applications to various hosting environments.
- Apply the skills and concepts learned to design and develop a fully functional web application, ready for deployment.

Day 23 - Afternoon

ASP.NET Core 8.0

Key Topics: Introduction to ASP.NET Core 8, Creating a New ASP.NET Core Project, Understanding MVC Architecture

Continuous Learning: Technical Enablement

The complete ASP.NET Core 9 course for busy developers

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 1:** Building your first ASP.NET Core application
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- Interrogation Panel - Data Transferring
- Interrogation Panel - Component
- Interrogation Panel - Razor Page

Day 24

ASP.NET Core 8.0

Key Topics: Working with Models, Building Controllers, Designing Views in ASP.NET Core

Continuous Learning: Technical Enablement

- Get started with ASP.NET Core MVC
- Add a controller to an ASP.NET Core MVC app
- Add a view to an ASP.NET Core MVC app
- Add a model to an ASP.NET Core MVC app

Day 25

ASP.NET Core 8.0

Key Topics: Routing in ASP.NET Core, Working with Forms and User Input, State Management, Integrating EF Core 8 with ASP.NET Core

Continuous Learning: Technical Enablement

- Routing in ASP.NET Core
- ASP.NET Core Blazor forms overview
- Session and state management in ASP.NET Core

Asp.Net Core 9 (.NET 9) | True Ultimate Guide

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 5:** Routing [MVC and Web API]
  - **Section 17:** Tag Helpers [MVC]
  - **Section 18:** Entity Framework Core [MVC and Web API]
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- Interrogation Panel - DB Initialize

Day 26, 27

ASP.NET Core 8.0

Key Topics: State Management, Integrating EF Core 8 with ASP.NET Core

Continuous Learning: Technical Enablement

- Session and state management in ASP.NET Core

Continuous Learning: Technical Enablement

Asp.Net Core 9 (.NET 9) | True Ultimate Guide

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
    - **Section 17:** Tag Helpers [MVC]
    - **Section 18:** Entity Framework Core [MVC and Web API]
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- Interrogation Panel - DB Initialize

Day 28

ASP.NET Core 8.0

Key Topics: Dependency Injection (DI) in ASP.NET Core, Publishing and Deployment

Continuous Learning: Technical Enablement

- Dependency injection in ASP.NET Core
- Host and deploy ASP.NET Core

Code Challenge (For Practice Only)

Attempt the following Code Challenge through the Learning Path at Tekstac for checking your skill level on ASP.NET Core. You have to secure 70% in order to clear this challenge.

Do not copy paste the code. Write the code yourself.

- Assess-Type-1 Code Challenge - ASP.Net Core, MVC with Entity Framework

Day 29 - Forenoon

- This part of the day has been included to adjust the Behavioral Training duration.

Stage 2 -> Course 4 -> ASP.NET Core 8 Web API

Course Overview

The **Course 4** of the **Stage 2** provides an in-depth understanding of Web APIs and ASP.NET Core, enabling learners to design, develop, and secure robust API solutions. Starting with the foundational concepts of Web APIs and ASP.NET Core, the course delves into building RESTful APIs, exploring advanced API features, and integrating SOAP services. Additionally, learners will gain expertise in API security, exception handling, and best practices for API documentation and testing. By the end of the course, participants will be equipped to create scalable, secure, and well-documented APIs tailored to real-world applications.

Learning Objectives

After completing this course, GenCs will be able to:

- Understand the fundamental principles of Web APIs and the ASP.NET Core framework.
- Design and implement RESTful APIs using ASP.NET Core, adhering to industry standards.
- Explore advanced API features, including pagination, versioning, and filtering.
- Integrate and consume SOAP services in .NET applications.
- Ensure API security through authentication, authorization, and secure communication practices.
- Effectively handle exceptions and implement error-handling mechanisms in APIs.
- Create comprehensive API documentation using tools like Swagger/OpenAPI.
- Conduct rigorous testing of APIs to ensure reliability and performance.

Day 29 - Afternoon, 30

ASP.NET Core 8 Web API

Key Topics: Introduction to Web APIs and ASP.NET Core, Building RESTful APIs with ASP.NET Core

Continuous Learning: Technical Enablement

ASP.NET CORE WEB API | The Complete Guide

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 1:** Before You Get Started
  - **Section 2:** Introduction to Web API
  - **Section 3:** Building Your First ASP.NET Core API
  - **Section 5:** Controller Action Return Types
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Go through the below learning.

- Implement Entity Framework A Code First Approach in .Net 8 API

Hands-On

Complete the following set of hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- Online Bookstore API - Insert
- Online Bookstore API - Retrieve
- Online Bookstore API - Modify
- Online Bookstore API - Remove

Day 31

ASP.NET Core 8 Web API

Key Topics: Advanced API Features

Continuous Learning: Technical Enablement

Build ASP.NET Core Web API - Scratch To Finish (.NET8 API)

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 8:** Securing our ASP.NET Core API - Authentication and Authorization - JWT Tokens
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Go through the below learning.

- Routing in ASP.NET Core Web API
- Filters in ASP.NET Core Web API

Hands-On

Complete the following set of hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- Online Bookstore API – Retrieve
- Online Bookstore API - Modify
- Online Bookstore API - Remove

Day 32

ASP.NET Core 8 Web API

Key Topics: Consuming and Creating SOAP Services, API Security and Exception Handling

Continuous Learning: Technical Enablement

- SOAP Web Service in .NET Core

Continuous Learning: Technical Enablement

Build ASP.NET Core Web API - Scratch To Finish (.NET8 API)

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 10:** Advanced Functionality in ASP.NET Core Web APIs
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Day 33

ASP.NET Core 6 Web API

Key Topics: API Documentation and Testing

Continuous Learning: Technical Enablement

Asp.Net Core 8 (.NET 8) | True Ultimate Guide

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 27:** Swagger / Open API
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Code Challenge (For Practice Only)

Attempt the following Code Challenge through the Learning Path at Tekstac for checking your skill level on ASP.NET Core Web API. You have to secure 70% in order to clear this challenge.

Do not copy paste the code. Write the code yourself.

- Assess-Type-1: Code Challenge - Web API.Net

Stage 2 -> Course 5 -> Microservices Basics

Course Overview

The **Course 5** of the **Stage 2** will be focusing on the fundamental aspects of **Microservices** and their core features**.**

Software architecture using microservices is an architectural style where an application is composed of small, independent services that are built around specific business capabilities and communicate with each other through well-defined APIs. Each microservice is designed to be modular, highly maintainable, and independently deployable, allowing for flexibility and scalability in large and complex applications.

Learning Objectives

After completing this course, GenCs will be able to:

- Understand the fundamental concept of microservices and their advantages over monolithic architectures, including scalability, flexibility, and resilience, through real-world examples.
- Identify and describe the key building blocks of microservices, such as service boundaries, APIs, and communication protocols, and how they contribute to the overall architecture of a microservices-based application.
- Explore the challenges and best practices of data management in a microservices architecture, including database per service, eventual consistency, and the use of polyglot persistence to handle different types of data.
- Understand the principles of deploying and managing microservices in a production environment, including infrastructure as code (IaC), continuous integration and deployment (CI/CD), and deployment patterns like blue-green deployments and canary releases.

Day 34 - Forenoon

Microservices Basics

Key Topics: Introduction to Microservices, Building Blocks, Data Management, Deployment and Infrastructure

Continuous Learning: Technical Enablement

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
    - **All Sections**
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Stage 2 -> Course 6 -> Application Debugging using Visual Studio Debugger

Course Overview

The **Course 6** of the **Stage 2** will be focusing on **Application Debugging using Visual Studio Debugger** which can help you navigate through code to inspect the state of an app and show its execution flow.

Debugging is the process of detecting and removing of existing and potential errors (also called as 'bugs') in a software code that can cause it to behave unexpectedly or crash. To prevent incorrect operation of a software or system, debugging is used to find and resolve bugs or defects. When various subsystems or modules are tightly coupled, debugging becomes harder as any change in one module may cause more bugs to appear in another. Sometimes it takes more time to debug a program than to code it.

Learning Objectives

After completing this course, GenCs will be able to

- Explain what is Debugging and why do we need it
- Use Visual Studio Debugger that helps in navigating through code to inspect the state of an app and show its execution flow.
- Employ various debugging techniques during application development and maintenance.

Day 34 - Afternoon

Application Debugging using Visual Studio Debugger

Key Topics: Introduction to Debugging, Visual Studio Debugger, Navigate through code by using the Visual Studio debugger

Continuous Learning: Technical Enablement

Visual Studio Mastery with C# - Double Your Productivity

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
    - **Section 6:** Debugging Tools in Visual Studio
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Learn about Application Debugging from the following

- Debugging in Visual Studio
- Debugging in C# - Finding and Fixing Problems in Your Application

Day 35 - Forenoon

- This part of the day has been included to adjust the Behavioral Training duration.

Stage 2 -> Course 7 -> NUnit & Moq

Course Overview

The **Course 6** of the **Stage 2** will be focusing on **Unit Testing and Mocking Frameworks such as NUnit, Moq** and their implementation during Test Driven Development.

Unit Testing is a software testing method by which individual units of source code—sets of one or more computer program modules together with associated control data, usage procedures, and operating procedures are tested to determine whether they are fit for use.

NUnit is an open-source unit testing framework for the .NET Framework and Mono. It serves the same purpose as JUnit does in the Java world, and is one of many programs in the xUnit family.

Moq is a mocking framework built to facilitate the testing of components with dependencies.

Learning Objectives

After completing this course, GenCs will be able to

- Understand the fundamental concepts of test-driven development.
- Perform Unit Testing using the NUnit Framework, Moq, and Visual Studio

Day 35 - Afternoon, 36

NUnit & Moq

Key Topics: Getting Started, Fundamentals of Unit Testing, Core Unit Testing Techniques

Continuous Learning: Technical Enablement

Unit Testing for C# Developers

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 1:** Getting Started
  - **Section 2:** Fundamentals of Unit Testing
  - **Section 3:** Core Unit Testing Techniques
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following set of hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- Test Case - Validations On String Concatenation
- Test Case - Validations On Vowel Checker
- Test Case - Validations On Array Search
- Test Case - Validations on Array Multiplication
- Test Case - Validations on List

Day 37 - Forenoon

NUnit & Moq

Key Topics: Moq-Breaking External Dependencies

Continuous Learning: Technical Enablement

Unit Testing for C# Developers

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 5:** Breaking External Dependencies
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

IDP - Project Activities

Day 37 - Afternoon, 38, 39 - Forenoon

Integration & Demo

- These two days will be spent on module integration and demo.

Course Overview

The **Course 8** of the **Stage 2** provides a comprehensive understanding of the ITIL 4 framework, its evolution from ITIL v3, and its application in modern IT service management. The program is designed to equip GenCs with the foundational knowledge of service management principles, the Service Value System (SVS), and the Service Value Chain (SVC). Participants will explore the roles of organizations, people, technology, and partners in creating and delivering value through service management practices.

Additionally, this course delves into the guiding principles of ITIL 4, offering practical insights into their application. GenCs will gain expertise in service management practices, continual improvement, and the integration of ITIL's best practices into organizational processes.

Learning Objectives

After completing this course, GenCs will be able to:

- Explain the key concepts and principles of ITIL 4.
- Describe the evolution from ITIL v3 to ITIL 4 and its relevance to modern service management.
- Understand the definition, scope, and principles of service management.
- Describe the components and significance of the ITIL 4 Service Value System (SVS).
- Identify the roles of organizations, people, information, technology, partners, and suppliers in the SVS.
- Illustrate value streams and processes within the service management lifecycle.
- Explain the activities and interconnections within the SVC, including planning, improving, engaging, designing, obtaining/building, and delivering/supporting services.
- Understand and apply general management practices such as service level management, service catalog management, availability management, and more.
- Implement ITIL practices like monitoring, deployment, release, and service request management.
- Explain the guiding principles of ITIL 4 and their role in service management.
- Apply principles such as focusing on value, iterative progression, collaboration, simplicity, and optimization in service delivery.
- Understand the continual improvement model and its importance in ITIL 4.
- Apply measurement and reporting techniques to drive improvement initiatives.

Day 39 - Afternoon, 40 - Forenoon

ITIL Framework

Key Topics: Introduction to ITIL 4, Service Management, Four Dimensions of Service Management, ITIL 4 Service Value System (SVS), ITIL 4 Service Value Chain (SVC), ITIL 4 Practices, ITIL 4 Guiding Principles, ITIL 4 Continual Improvement

Continuous Learning: Technical Enablement

Introduction to Service Management with ITIL 4

- Go through ALL sections of this course to understand ITIL 4.
- Take up the Practice Exam given as part of this course to check your understanding about ITIL 4.

Quiz - Mandatory

Take up the following quiz to assess your knowledge on the ITIL Framework.

- ITIL Quiz

Stage 2 -> Course 8 -> Jira, ServiceNow, Azure Boards

Course Overview

The **Course 8** of the **Stage 2** will cover **SCM Tools** like **ServiceNow** which is a tool that provides workflows designed for centralized IT service management **and JIRA Service Management** which supports diverse teams and bring development and IT operations teams together on the same platform developers already work in. It also covers, **Azure Boards** which is a web-based service that enables teams to plan, track, and discuss work across the entire development process, while it supports agile methodologies.

ServiceNow is a cloud-based software platform for **IT Service Management (ITSM)** which helps to automate IT Business Management. It is designed based on ITIL guidelines to provide service-orientation for tasks, activities, and processes. It uses machine learning to leverage data and workflows to help businesses become faster and scalable.

JIRA is a tool developed by Australian Company Atlassian. This software is used for bug tracking, issue tracking, and project management. The JIRA full form is actually inherited from the Japanese word “Gojira” which means “Godzilla”. The basic use of this tool is to track issue and bugs related to your software and Mobile apps. It is also used for project management. The JIRA dashboard consists of many useful functions and features which make handling of issues easy.

Azure Boards is a project management and work tracking system provided as part of Microsoft's Azure DevOps Services. It is designed to help teams plan, track, and discuss work across the entire software development process.

Learning Objectives

After completing this course, GenCs will be able to:

- Gain a comprehensive understanding of Jira's core concepts, including issues, workflows, and projects.
- Learn how to navigate Jira's interface and perform basic operations like creating and updating issues.
- Understand the purpose and capabilities of ServiceNow as an ITSM platform.
- Learn about ServiceNow's core applications for IT service management, such as incident management and change management.

- Understand the purpose and key features of Azure DevOps Boards as a project management tool.
- Learn how Azure DevOps Boards integrates with other Azure DevOps services like Repos and Pipelines.

Day 40 - Afternoon, 41

Jira, ServiceNow, Azure Boards

Key Topics: Jira-Basic Concepts, Using Team-Managed Projects, Using Company-Managed Projects, Administration Basics, Introduction to ServiceNow, ServiceNow Fundamentals, Core Applications

Continuous Learning: Technical Enablement

Jira for Beginners - Detailed Course to Get Started in Jira

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 2:** Concepts You Need to Know in Jira
  - **Section 3:** Using Team-Managed Projects
  - **Section 4:** Using Company-Managed Projects
  - **Section 5:** Jira's Administrative Back End
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

The Complete ServiceNow System Administrator Course

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 2:** ServiceNow Overview
  - **Section 3:** Working With Lists & Forms
  - **Section 5:** Tables & Fields
  - **Section 6:** User Administration
  - **Section 7:** Core Applications
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Day 42 - Forenoon

Jira, ServiceNow, Azure Boards

Key Topics: Introduction to Azure DevOps Boards, Work Item Types, Boards, Backlogs, Task Management, Agile Planning, Queries, Reporting

Continuous Learning: Technical Enablement

Azure DevOps Boards for Project Managers/Analyst/Developers

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
    - **Section 1:** Azure DevOps for Project Managers and Analyst
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Stage 2 -> Course 9 -> Windows Service

Course Overview

The Course 9 of the Stage 2 will be focusing on **Windows Service** which is a core component of the Microsoft Windows operating system and enable the creation and management of long-running processes

Unlike regular software that is launched by the end user and only runs when the user is logged on, Windows Services can start without user intervention and may continue to run long after the user has logged off. The services run in the background and will usually kick in when the machine is booted. Developers can create Services by creating applications that are installed as a Service, an option ideal for use on servers when long-running functionality is needed without interference with other users on the same system.

The services manage a wide variety of functions including network connections, speaker sound, data backup, user credentials and display colors. Windows Services perform a similar function as UNIX daemons.

Learning Objectives

After completing this course, GenCs will be able to

- Explain what is a Windows Service, why we need it and what are the differences between Windows Services and Regular Applications.
- Develop and manage a Windows Service.

Day 42 - Afternoon

Windows Service

Key Topics: Introduction, Developing and Managing a Windows Service

Continuous Learning: Technical Enablement

Please find the hyperlink to an article on Windows Service on the internet below and ensure you study its contents thoroughly.

- Windows Service

- TaskScheduler Class
- Quartz API

IDP - Project Activities

Day 43

Sprint 2 Review, Demo & Rework

- This day will be spent on Sprint 2 Review, Demo & Rework

Stage 2 -> Course 10 -> Python 3

Course Overview

The **Course 10** of the **Stage 2** This course provides a comprehensive introduction to **Python**, a versatile and widely-used programming language. Designed for beginners and intermediate learners, the curriculum covers essential programming concepts, Python-specific features, and advanced techniques. GenCs will explore Python's foundational constructs, control flow, data structures, object-oriented programming (OOP), file handling, exception management, and modular programming. Through practical exercises and hands-on coding, GenCs will develop the skills needed to write efficient, readable, and scalable Python programs.

Learning Objectives

After completing this course, GenCs will be able to:

- Trace Python's version history and identify key features of Python 3.
- Set up and configure the Python environment, including environment variables.
- Execute Python programs via the command line and work with .py files.
- Define and use variables, numbers, strings, and casting in Python.
- Employ string methods to manipulate and process text data.
- Differentiate between Python data types and their use cases.
- Utilize mathematical, assignment, comparison, logical, membership, identity, and bitwise operators effectively.
- Understand operator precedence to write accurate and optimized expressions.
- Implement if, elif, and else conditions with logical and compound expressions.
- Write and manage loops (while, for) with control statements (break, continue).
- Leverage advanced looping techniques like looping through strings and range-based iterations.
- Define and call functions with various types of arguments, including anonymous functions.
- Differentiate between global and local variables and their scopes.
- Employ the return statement to retrieve function outputs.
- Perform operations on lists, tuples, and dictionaries, including indexing, slicing, and built-in methods.
- Understand the properties and behaviors of these data types in Python programs.
- Grasp the principles and characteristics of OOP.

- Create Python classes with properties and methods, using the __init__ function and self argument.
- Implement inheritance and method overriding to build reusable and scalable code.
- Work with file objects, read/write text files, and handle directory structures.
- Utilize file handling methods to perform advanced operations, including renaming and deleting files.
- Identify Python's exception handling features and standard exceptions.
- Implement robust exception handling mechanisms using try, except, finally, and assertions.
- Design custom user-defined exceptions to meet specific program needs.
- Import and utilize modules and packages effectively.
- Understand the role of namespaces, the PYTHONPATH variable, and scoping.
- Leverage built-in functions like dir(), globals(), and reload() for advanced module operations.

Day 44

Python 3

Key Topics: Basics, Variables and Types, Program Flow, Functions

Continuous Learning: Technical Enablement

Complete Python Programming Masterclass Beginner to Advanced

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 2:** Getting Setup with Python
  - **Section 3:** Variables and Types
  - **Section 8:** Python Program Flow
  - **Section 13:** Python Functions
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- Welcome Message
- Virtual Assistant
- Hospital Billing
- Stationary Shop
- Theme Park Pricing
- Cash Exchange
- House Rent Calculator
- Airline Reservation System
- Voting System
- Fitness Tracker Analyzer

Day 45

Python 3

Key Topics: Python Operators, Collections, Object Oriented Programming (OOP)

Continuous Learning: Technical Enablement

Complete Python Programming Masterclass Beginner to Advanced

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 4:** Python Operators
  - **Section 13:** Python Collections
  - **Section 14:** Python Object Oriented Programming (OOP)
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following hands-on given in the Learning Path at Tekstac.

Do not copy paste the code. Write the code yourself.

- Non-Working Doctors
- Product Sales
- Participant Registration and Preference Analysis
- Student Electives
- Sort the Student Details Dictionary
- Generate Customer Id
- Online Shopping Cart System
- Pattern Generator
- Vehicle Premium
- Classic Curve Members
- Area calculation - Method Overrding
- Tournament - Method overloading
- Complex Addition

Day 46, 47 - Forenoon

Python 3

Key Topics: File I/O, Exception Handling, Modules

Continuous Learning: Technical Enablement

Complete Python Programming Masterclass Beginner to Advanced

- Walkthrough the following Udemy course sections and focus on the corresponding topics within our training curriculum's technical scope.
  - **Section 10:** Working With Files
  - **Section 15:** Handling Errors in Python
  - **Section 7:** Python Modules
- Ensure that you learn these topics through self-learning and practice alongside the course instructor. It is NOT necessary to cover every topic comprehensively within each section.

Hands-On

Complete the following hands-on given in the Learning Path at Tekstac.

> Do not copy paste the code. Write the code yourself.

- Basket Ball Player Analysis
- Percentage of marks - Lamda Functions
- Employee Appraisal
- Product Information
- Filter the Countries Sachin has Played Against - CSV file
- Filter Customers - JSON File
- Data Encryption
- Password Update
- Lucky Number – Generator
- Project Allocation – Iterator
- Summer Camp - Decorator

Code Challenge (For Practice Only)

Attempt the following Code Challenge through the Learning Path at Tekstac to check your skill level in Python 3. You need to score 70% or higher to clear this challenge.

> Do not copy paste the code. Write the code yourself.

- Assess-Type-1: Code Challenge - Python

Stage 2 -> Course 11 -> Cloud Computing Basics

Course Overview

The **Course 11** of the **Stage 2** will be focusing on **Cloud Computing Basics** which is the delivery of different services through the Internet, including data storage, servers, databases, networking, and software.

Cloud computing is the on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. Large clouds often have functions distributed over multiple locations, each of which is a data center.

Learning Objectives

After completing this course, GenCs will be able to

- Explain what is Cloud computing and its characteristics.
- Explain types of Cloud.
- Explain various Cloud Service Models and Cloud Service Providers.

Day 47 -Afternoon, 48 - Forenoon

Cloud Computing Basics

Key Topics: Introduction to Cloud Computing, Types of Cloud, Cloud Service Models, Cloud Service Providers

Continuous Learning: Technical Enablement

AZ-900 Microsoft Azure Fundamentals + FULL Practice Exam!

- Learn the sections listed below in this Udemy course and complete the corresponding hands-on coding given below.
  - **Section 2:** Laying the Groundwork: Describe Cloud Concepts

Integrated Capability Test (ICT) (For Practice Only)

Attempt the Integrated Capability Test (ICT) available on the Learning Path at Tekstac to assess your skill level in Stage 2, particularly focusing on web application development skills. You must achieve a score of 70% or higher to pass this practice test.

Do not copy paste the code. Write the code yourself.

- Dotnet Assess-Type-2: Integrated Capability Test (ICT)

Final Evaluation

Day 48 - Afternoon, 49, 50, 51 - Forenoon

Final Evaluation (Project + Technical)

- Final Evaluation will be conducted on these days, and the mode will be a video interview on the Tekstac platform.

Final HackerRank Assessment

HackerRank Assessment (C#, SQL)

- The final assessment will be conducted on this day.

How to learn each day?

Each day has a set of learning objectives. These learning objectives can be met by going through the Udemy courses and by completing the hands-on exercises mentioned in the daily plan.

The below strategies will help you decide the learning approach.

Learning Strategy & Approach

Find below few imaginary profiles. For each of these profiles we have defined a recommended learning approach. This is not an exhaustive list. The approaches below might help invent a new way of learning.

Profile #1

Harry Reacher

Engineering Discipline: Electronics

Skills: Python, Ruby on Rails, nginx

Project: Mining Crime Data to get Route Cause Insights

Learning Approach to Programming Languages: I do not want to waste my time learning. I am more practice oriented. I want to work on the problem immediately

What will work for me?

- Directly complete hands-on exercises
- Refer Internet or Udemy Courses
- If hands on are implemented early, clarify your friends’ questions and troubleshoot their issues

Profile #2

Olivia Richards

Engineering Discipline: Computer Science

Skills: Java, C, C++

Project: Library Management System

Learning Approach to Programming Languages: I have interest, but I don't know where to start.

What will work for me?

- Go through the recommended Udemy Course
- Try completing the hands-on exercises
- Get your clarifications solved with help from Tech SME
- Get help from other learners in your batch whom had already completed

Profile #3

Greg Anderson

Engineering Discipline: Civil

Skills: C

Project: Fiber reinforced concrete

Learning Approach to Programming Languages: I am scared of programming languages. I haven't got my hands dirty with coding

What will work for me?

- Go through the recommended Udemy Course
- Implement the coding along with the author of the Udemy Course
- Try completing the hands-on exercises
- Clarify queries with SME
- Troubleshoot programming issues with help from SME or learner from your classroom whom had already completed

FAQs

1. **Who can participate in this program?**

   Ans: Students who have enrolled for Full Internship Program (or) the Cognizant on-boarded GenCs can participate in this program.

2. **Is there any pre-learning I should do?**

   Ans: No. This program is open to all students from any academic discipline.

3. **What is Code Challenge?**

   Ans: A problem statement will be provided to you and you need to solve it using a single skill.

4. **What is Integrated Capability Test (ICT)?**

   Ans: A case study problem statement will be provided to you that you may need to solve using the combination of skills learned in the given stage.

5. **How many attempts are provided for the Coding challenge and ICTs?**

Is it open all the time for practice?

Ans: The coding challenges and ICTs are open from day 1, and a maximum of 3 attempts will be provided.

6. **What are the entry criteria for Stage 1 Delta Assessment?**

   Ans: The eligibility criterion for the Stage 1 Delta Assessment is 100% hands-on completion, along with an attempt and submission in both CC and ICT.

7. **What skills are covered in the Stage 1 Delta Assessment?**

   Ans: The delta skills of Stage 1 are covered in this assessment. Maximum THREE attempts will be provided to pass with a minimum score of 70%.

8. **What if I fail in the Interim evaluation?**

   Ans: Your coach will notify your performance in the Interim evaluation. However, you can continue with the learning.

9. **How many chances will I get in the Final evaluation?**

   Ans: You'll get 2 chances in the Final evaluation which covers ALL the skills in the learning journey.

10. **Will we be provided with Projects to work on?**

    Ans: Yes, we will provide the requirement specifications. You will need to implement them by forming a PoD (Pod of Developers). The implementation will be reviewed during both the interim evaluation and the final evaluation.

11. **Whom do I reach out in case of any queries?**

    Ans: Batch Owner is your point of contact.