Cognizant Academy

Full Stack Prep-up Learning Guide Java Track

Why do we need this Full Stack Engineering Prep-up Program?

Full Stack Prep-up program engages young talents with a comprehensive learning pathway, giving these millennials an opportunity to become a Full Stack Engineer, 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 pathway, with the available tools and resources. More focus is given to “learning” than “teaching”. Get ready to embark your own learning adventure!

Program at a glance

Full Stack Prep-up Internship Program has 5 stages:

- Stage 1
- Stage 2
- 3 Full Stack Prep-up Modules

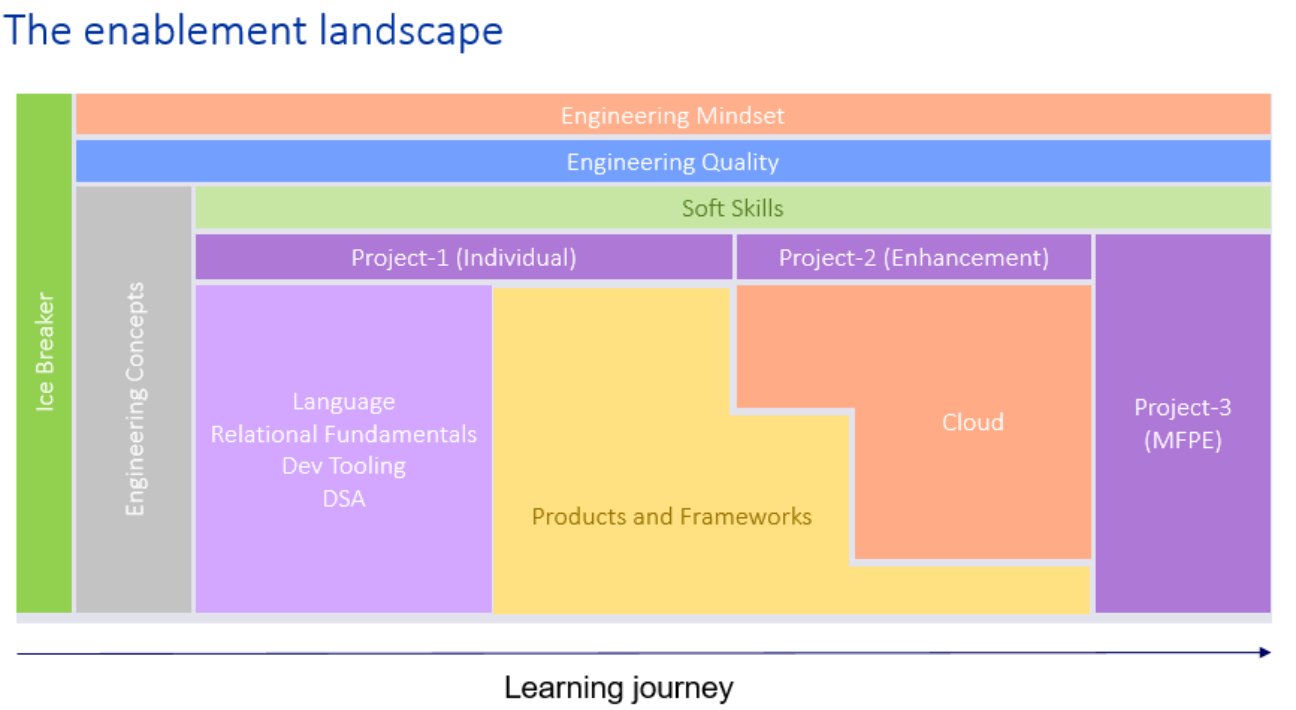
Program Highlights

- The FSE program is designed based on the ***Canonical*** model where the importance of Theory followed by appropriate practice aiming at high learning effectiveness. The rules of learning is followed diligently and the order of Skill learning increases in complexity. Importance is given for the foundational concepts are laid out very strongly.
- 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.
- Learner Autonomy is implemented via Flipped Classroom, where the learning platform offers world class learning resources, and students would not be constrained by tutelage of an instructor.
- Get mentored by Subject Matter Experts, whose motivation and guidance will help you accelerate in the learning journey.
- Higher order framework concepts would be dealt with complete Trainer support in Instructor Led training mode.

Learning Journey thru Canonical model & Flipped Classroom

This program is designed based on the Canonical model where the importance of Theory followed by appropriate practice aiming at high learning effectiveness. Listed below is the order of Skills in the enablement landscape. The depth level for **ALL the skills will be at a Working level**.

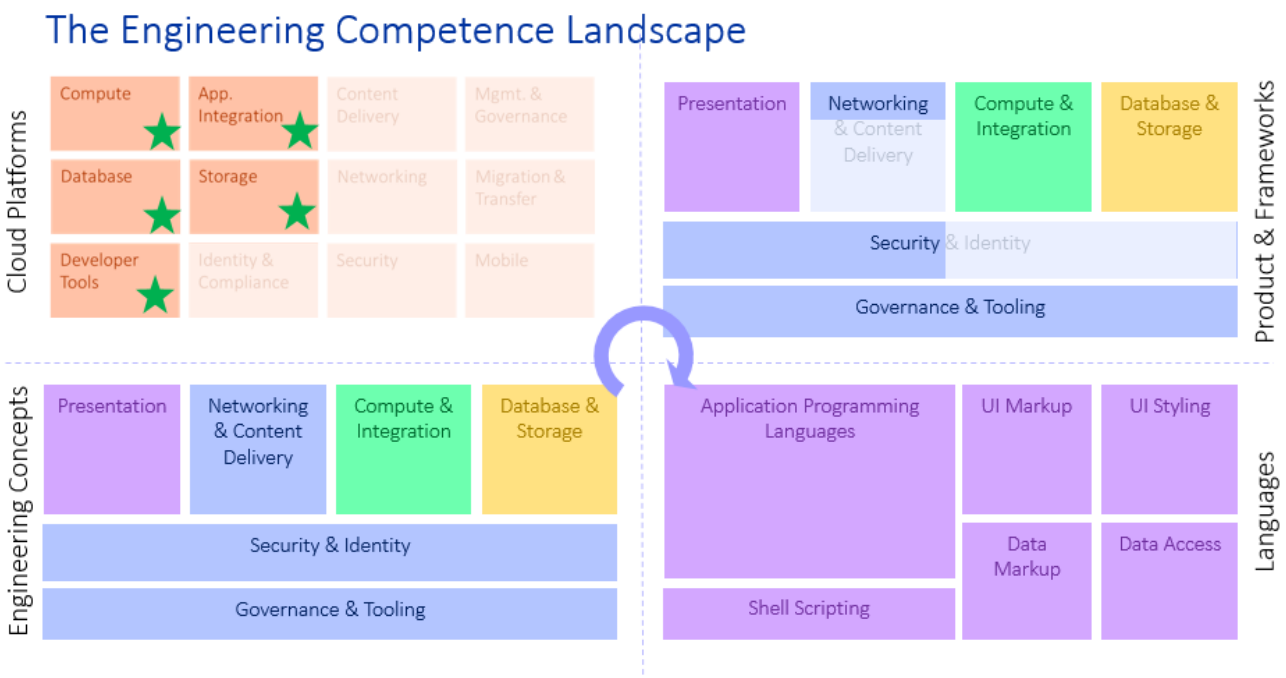
Enablement Landscape thru the Canonical model



As per the Canonical model, the learning is split into four major constructs

1. Engineering Concepts
2. Programming Languages
3. Products and Frameworks
4. Platforms

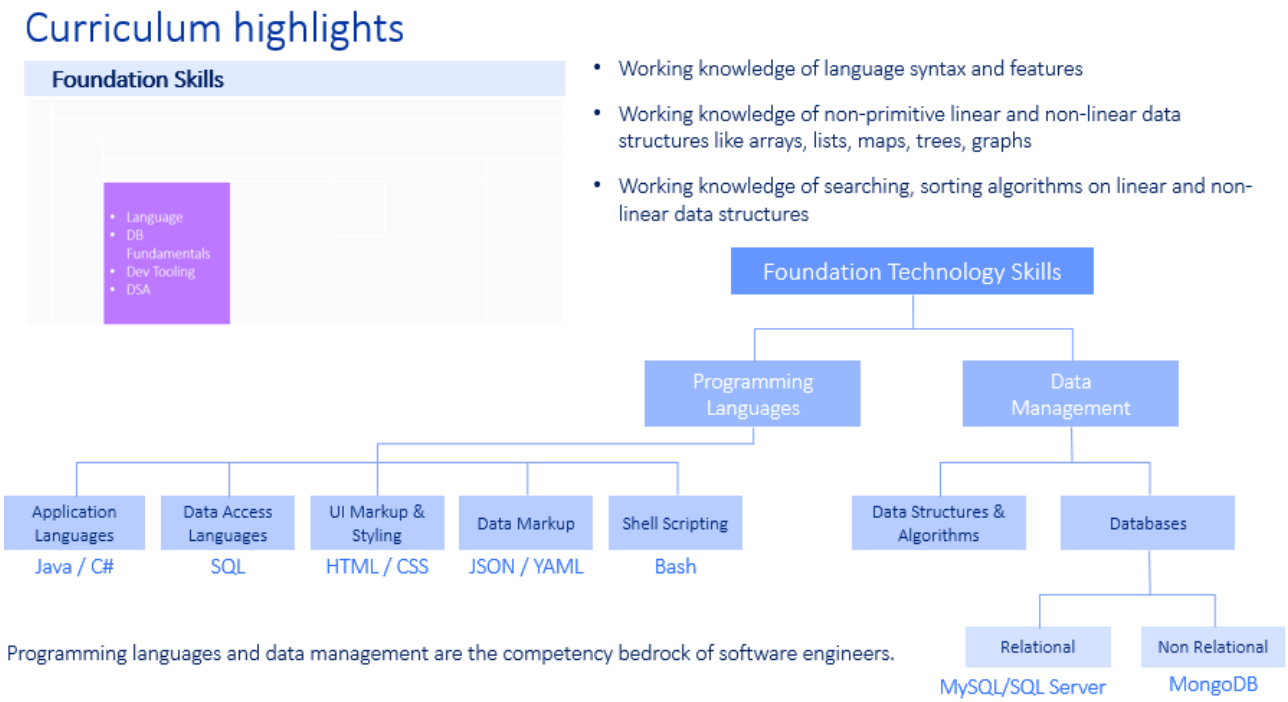
Listed below is a holistic Engineering competence Landscape covered as part of the GenC enablement program.



The program is designed into 5 stages as per the **Canonical model** to ensure the learning starts from the Foundation skills gradually increasing thru the Products and Frameworks and completing with the Platforms. All the learnings culminate into the MFPE.

Listed below is the representation of the Significance of the learning modules.

Stage 1 – Core Programming Fundamentals



Stage 2, 3 & 4 – Deep Learnings & FSE modules: Products and Frameworks and Platforms

Products and Frameworks

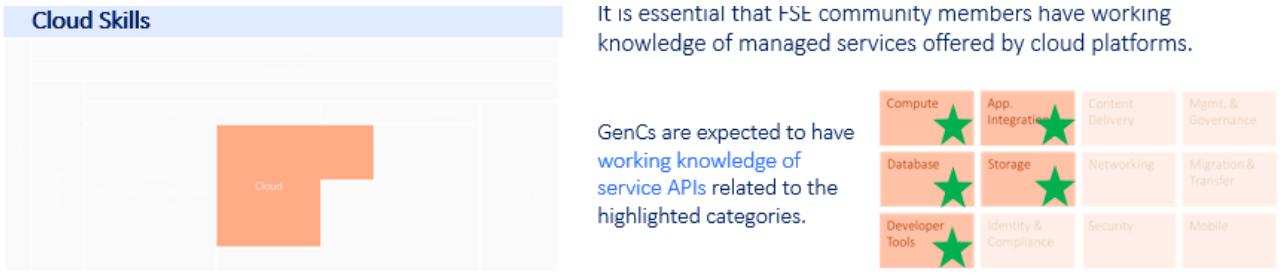
The Products and Frameworks concepts are covered thru the following skills.

Presentation layer – Spring MVC using Spring Boot, Angular

Compute and Integration – Spring REST using Spring Boot, Microservices with Spring Cloud, Swagger, JWT, Apache Kafka

Database and Storage – Spring Data JPA, Hibernate

Platforms



The Platforms layer deals with the Cloud features. The offerings of the Cloud for

Compute - Thru Azure Virtual machine/ Amazon EC2 and ECS

Database – Thru Azure SQL Database/ Amazon Dynamo DB

Developer Tools – Thru Azure Repos, Pipelines, Application Insights/ AWS Code commit

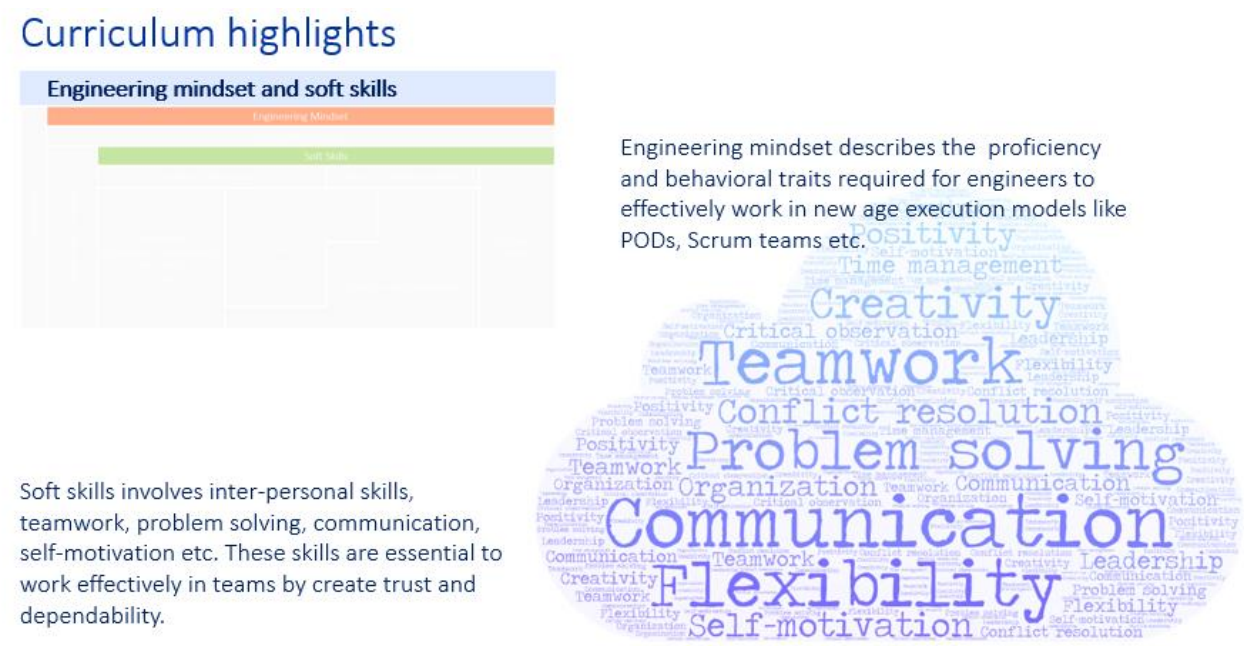
App Integration – Thru Azure Service Bus Queues/ Amazon SQS

Storage – Thru Azure Blob storage/ Amazon Simple Storage Service(S3)

Engineering Code quality

Engineering code quality is very crucial to create easily understandable, manageable and efficient code. This is instilled thru-out the learning journey thru Unit & Integration testing concepts, Coding conventions and Best practices, Error handling techniques, avoidance of deprecated functions etc.

Engineering Mindset and Soft skills



The Engineering mindset and soft skills goes hand-in-hand with the technical learning. Technical along with soft skills, is what we at Cognizant believe that would mold a professional completely. Hence the learnings and practice on the soft skills are embedded in the enablement program.

A quick reference to the Canonical model and the mapping of the Skills is available here.

ALWAYS use this as a reference on beginning and completion of every Milestone to relate and understand which part of your learning construct is being achieved.

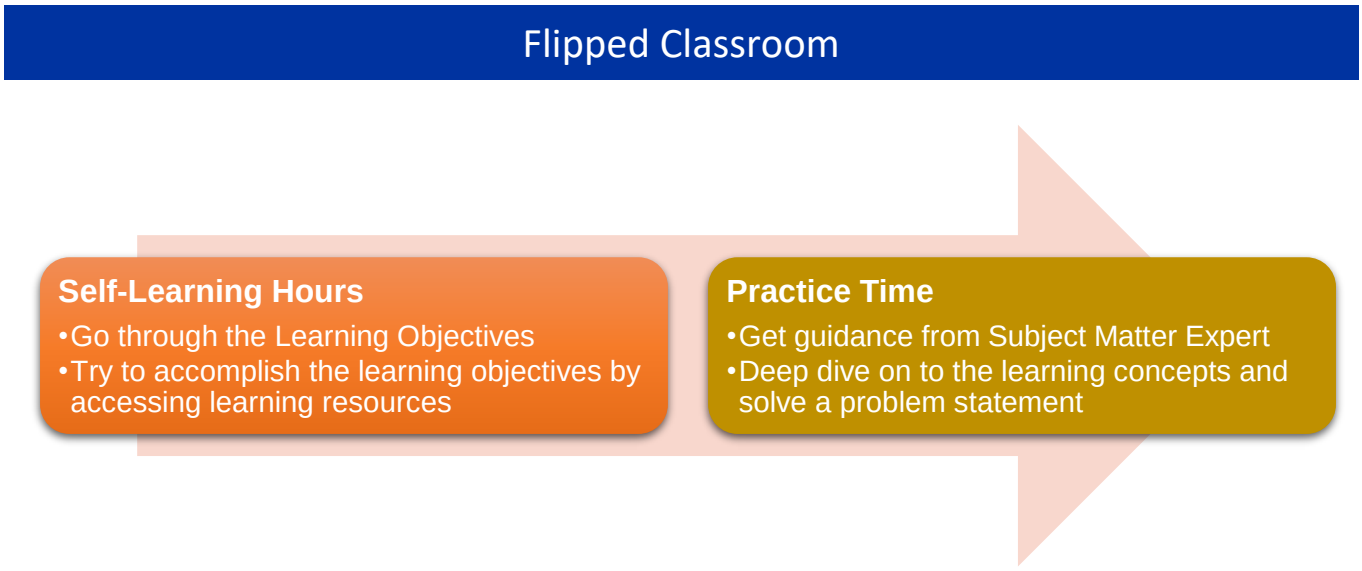
This program encourages you to be more autonomous learners during out-class self-learning hours, completing the learning objectives on your own pace and style, and get ready for the in-class practice time.

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

Learning Journey with Flipped Classroom

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

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

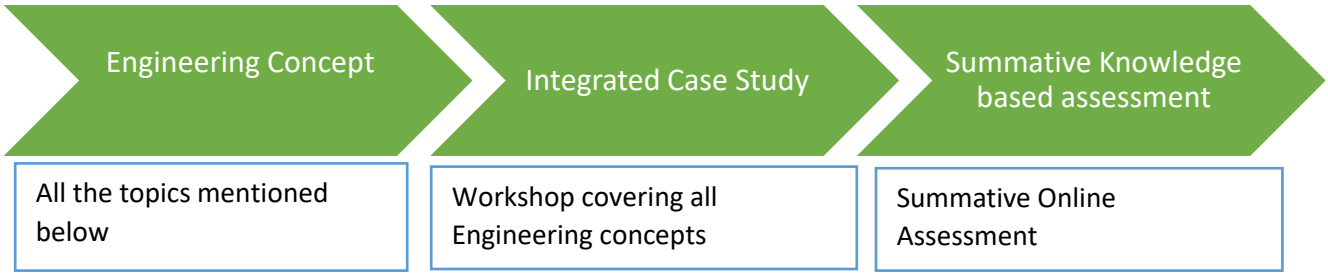


Recommended Program Sequence

The learning journey starts with **6 days of Icebreaker sessions** followed by a technical learning that contains **5 stages** and they are the following:

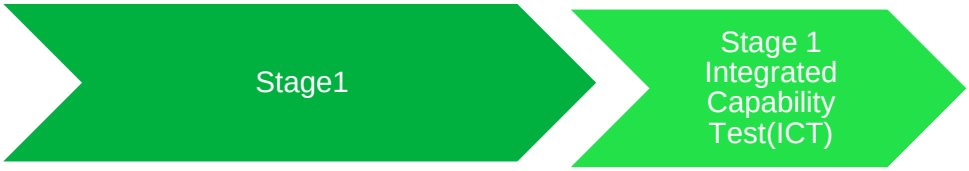
- Engineering Concepts
- Stage 1 – Core Programming Fundamentals
- Stage 2 – Deep Learnings
- Stage 3 & 4 – FSE modules
- My First Pod Engagement – Project Case study done as a team

Engineering Concepts



- Software Engineering Concepts
- OOP
- OOAD
- Software Architecture Styles
- UI Markup, Styling, RWD
- Mobile, Pervasive Computing
- Security Principles
- Database and storage
- Compute and Integrate
  - REST Architecture
  - Microservices Architecture
  - Cloud Computing
  - Communication and Discovery
  - CI/CD and Containerization
  - Orchestration
- Security and Identity
  - Security Services
  - Key Terms
  - RBAC
  - IAM
  - Classical Encryption Techniques
  - Key Management
  - Types of Attacks
- Governance and Tooling
  - Governance and Monitoring
  - Logging
  - Alerting
  - Unit Testing
  - Source Control
- Network and Content Delivery

Stage 1 - Core Programming Fundamentals



- HTML5, CSS3, Bootstrap
- Jquery, Javascript
- ANSI SQL,Oracle PL/SQL
- Core Java
- Unix and Shell Scritping
- Design Patterns
- Datastructures and Algortihm

Solve Integrated case study with the skills learnt in stage 1

Stage 2 - Deep Learnings

- Spring Core,Maven
- Unit Testing
- MVC using JSP, JSTL

Stage 3 – FSE Modules

- Angular
- Spring Data JPA/Hibernate
- Logging and Code Quality

Stage 4 – FSE Modules

- Spring REST & Microservices
- Cloud concepts
- Live Project

Stages 1 & 2 would be executed in the **Flipped classroom model** through Learning paths configured on the **Tekstac** platform.

Stages 3 & 4 would be executed with **complete trainer guidance** outside of the Tekstac platform. Software on the local machine will be used to work on the enablement and case study requirements. The modules in this stage would follow a model of **Enablement through Objectives** (not thru Udemy), practice through Hands-on question.

As part of the knowledge check, there would be case studies, as provided in the previous stages. It is split into **Practice check** and **Final check**. The case study in Practice check would be done with complete trainer guidance. The case study in Final check would be very similar to that of the Practice check. The participant will implement it without the trainer support.

There will be a **Final project** thru a case study, **My First Pod Engagement (MFPE)**. This is implemented thru **POD model**. Teams will be identified with 4 or 5 GenCs for the project implementation. **Mentor** will be assigned for every POD to track the project review and completion.

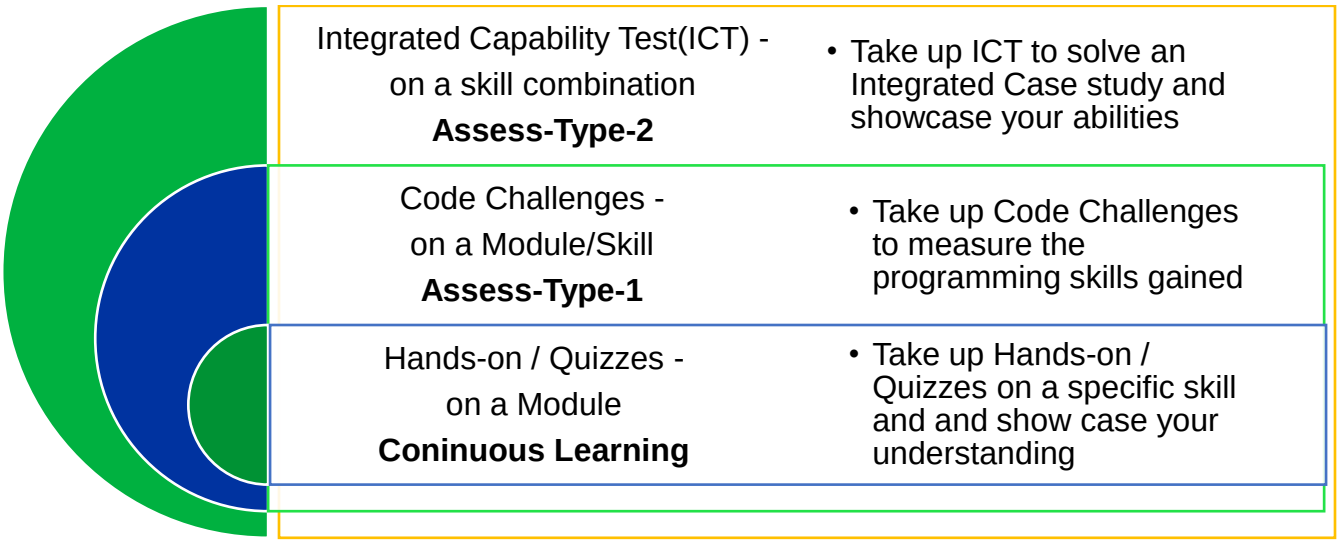
Post Stages 1 to 4, an assessment would be scheduled for **test on Data structures and Algorithms** through **HackerRank**. There would be preparation time for this with a Mock assessment on HackerRank of the same pattern.

Key Learning Components of the Program

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.

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



Throughout the learning path, all the Mandatory Learning Components will attribute to the Performance Health Score. Additional Learning Components will help you to enhance your expertise level.

Program Completion Criteria

Complete all the mandatory Coding Challenges and ICT with benchmark of 70% in both the stages. Coding challenges will be scheduled on the last day of the Milestone. ICT will be scheduled on the last day of the Stage 1 & 2.

MFPE involves project evaluation on functionality and technical features. The GenC, followed by Trainer evaluation, should do self-evaluation of the project. MFPE mentor would conduct a Viva voce on the project implementation and score the GenC code. Mentor can override the trainer's evaluation score if needed. Final MFPE evaluation score should have a benchmark of 70%.

CDE Accreditation

The learning effectiveness is gauged thru the **ALL** of the learning components in the program, performance in the MFPE and finally an assessment thru HackerRank platform. Every aspect of the learning plays a crucial role in getting yourself **ACCREDITED** from this program to join Cognizant Digital Engineering (CDE). All of the learning components viz., hands-on, coding challenges, Integrated Capability assessments, Practice check, Final check scores, and Practice questions thru HackerRank helps the learning to be very effective and to attain a Very good score for the CDE accreditation.

Icebreaker

Icebreaker session will be conducted for a duration of 6 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.

Self-paced behavioral learning detail

Engineering mindset

Learn:

Consulting Approach to Problem Solving
Change management
Creating a Mindset for Change

- Learn all the sections listed in the above listed Udemy courses

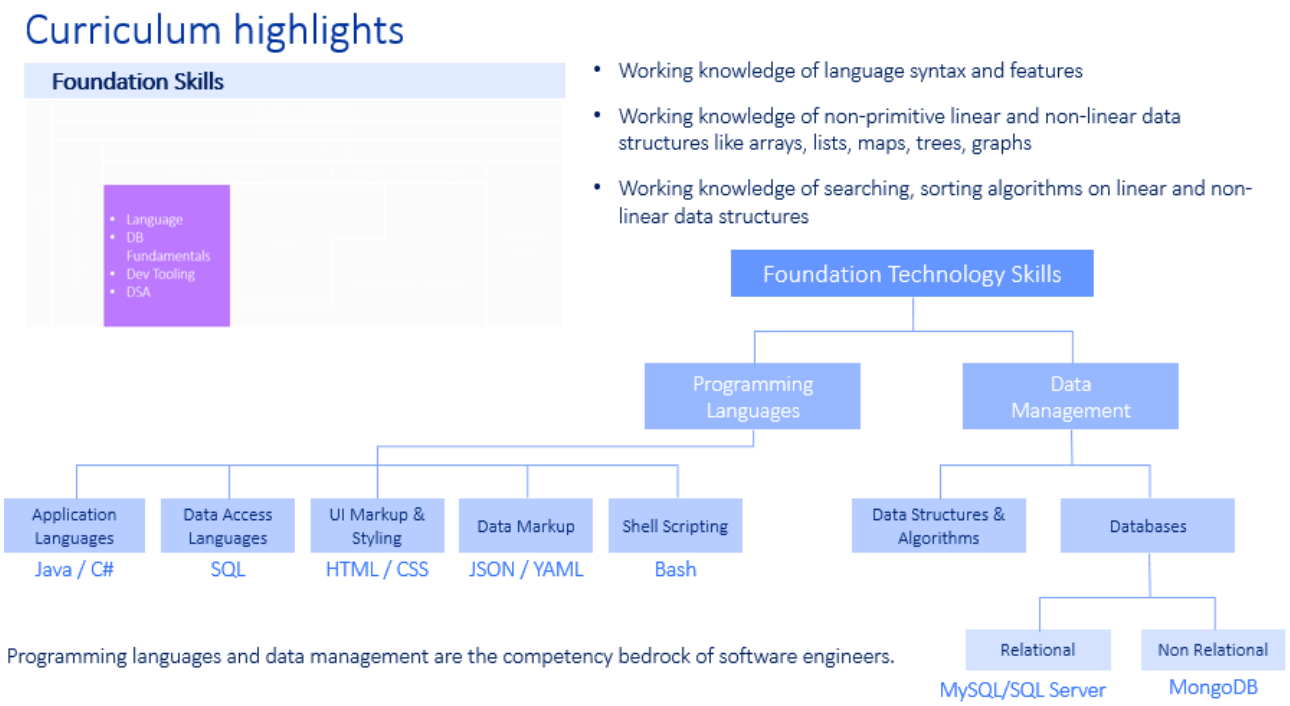
Relationship management

Learn:

Conscious Business: Building Empowered Relationships
The Essential Guide for Effective Managers
How to Succeed In Your First Management Job

- Learn all the sections listed in the above listed Udemy courses

Stage 1 – Engineering Concepts & Programming Languages



Stage 1: Milestone 1

Canonical model constructs		Track wise skill list
		Java
		Skill
Engineering concepts		Engineering concepts

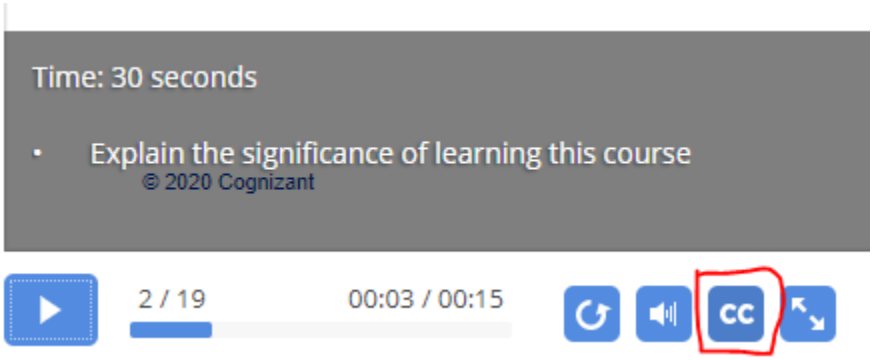
Overall Duration: 9 days + 1 day (Behavioral)

Milestone 1 focuses on base theories of Software Engineering – Engineering Concepts. This forms the fundamentals for the learning on softwares, its implementation and significance.

Note: The detail of the course in platform is shown in the listing below, in the format

- Competency skill
  - Section name in Tekstac platform under the 'Engineering Concepts' Milestone
    - PPT title

Please note that the PPT content is played in the Tekstac platform player. Please click the "CC" button in the player to view the "**Notes**" content of the PPT slide. **This ALSO contain information for your learning.**



Day 1

Note: Behavioral training will be conducted for 3 Hrs. in the current work week.

Software Engineering Concepts, OOP, OOAD

- Software Engineering Concepts
  - Compute and Integrate - Software Engineering Concepts, OOP, OOAD, Software Architecture Styles
    - Software Engineering Fundamentals
    - Software Development Life Cycle Models
    - Software Scope and Estimate
    - Software Risks and Mitigation Approaches
    - Software Configuration Management
    - Quality and Unit, Integration Test Strategies
- OOP
  - Compute and Integrate - Software Engineering Concepts, OOP, OOAD, Software Architecture Styles
    - Object Oriented Principles
- OOA
  - Compute and Integrate - Software Engineering Concepts, OOP, OOAD, Software Architecture Styles
    - Object Oriented Analysis
- OOD
  - Compute and Integrate - Software Engineering Concepts, OOP, OOAD, Software Architecture Styles
    - Object Oriented Design

Day 2

Software Architecture Styles, UI Markup, Styling, RWD

- Types of Software Architecture
  - Compute and Integrate - Software Engineering Concepts, OOP, OOAD, Software Architecture Styles
    - Software Architecture styles
    - Service Oriented Architecture
- Test your understanding- Online Assessment
- UI Markup, Styling, RWD
  - Presentation - Responsive/Progressive Web Apps
    - User Interface Design
    - UI Design Process
    - Introduction to HTML5
    - Introduction to CSS3
    - Responsive Web Design (RWD)

Day 3

Mobile, Pervasive Computing, Security Principles

- Mobile Computing
  - Presentation - Mobile/Pervasive device engineering constructs
    - Mobile Computing
- Pervasive Computing and IoT
  - Presentation - Mobile/Pervasive device engineering constructs
    - Pervasive Computing and IoT
- Security Principles
  - Presentation - SSL/TLS/Certificates
    - Security Principles
- Test your understanding- Online Assessment

Day 4

Database and Storage

- Database Concepts
  - Database and Storage - (Non) relational/Object/Block data organization
    - Introduction to Database Management Systems
    - Introduction to Database Languages and DBMS Classifications
  - Database and Storage – ORM
    - Entity Type, Entity Sets, Keys and Constraints

- Database and Storage - ACID / BASE concepts
  - Normalization
- Database and Storage - ACID / BASE concepts
  - ACID and BASE Concepts
- Database and Storage – Transactions
  - Transaction Management (Page No. 1 to Page No. 11)
- Database and Storage – Transactions
  - Query Processing and Optimization

- Storage
  - Database and Storage - (Non) relational/Object/Block data organization
    - Storage Systems in DBMS
    - Data Models, Schemas, Instances
- Concurrency and Deadlocks
  - Database and Storage – Transactions
    - Transaction Management (Page No. 12 to Page No. 36)
- Test your understanding- Online Assessment.

Day 5

Compute and Integrate

- Deep dive of REST Architecture
  - Networking and Content Delivery - API and REST
    - RESTFUL Services
- Microservices Architecture
  - Compute and Integrate – Microservices
    - Microservices Services at Micro Level
- Cloud Computing
  - Compute and Integrate - Serverless Components
    - Introduction to Cloud Computing

Day 6

Note: Behavioral training will be conducted for 3 Hrs. in the current work week.

Compute and Integrate, Security and Identity

- Communication and Discovery
  - Compute and Integrate: Event Driven Components
    - Event Driven Components
- CI/CD and Containerization
  - Governance and Tooling – DevOps
    - Continuous Integration and Continuous Delivery (CI / CD)

        - Containerization (till page 30)
- Orchestration
    - Governance and Tooling – DevOps
        - Containerization (Page No. 31 onwards)
- Test your understanding- Online Assessment.
- Security Services
    - Security and Identity - Role Based Security, Non-repudiation
        - Security and Identity (Page No. 22 to Page No. 34)
- Key Terms
    - Security and Identity - Role Based Security, Non-repudiation
        - Security and Identity (Page No. 1 to 21)
- RBAC
    - Security and Identity - Role Based Security, Non-repudiation
        - Security and Identity (Page No. 35 to 38)
- IAM
    - Security and Identity - Role Based Security, Non-repudiation
        - Security and Identity (Page No. 39 to 51)

Day 7

Security and Identity, Governance and Tooling

- Classical Encryption Techniques
    - Security and Identity - Static/Dynamic Data Encryption
        - Security and Identity (Page No. 1 to Page No 23)
- Key Management
    - Security and Identity - Static/Dynamic Data Encryption
        - Security and Identity (Page No. 24 to Page No 31)
- Types of Attacks
    - Security and Identity - Static/Dynamic Data Encryption
        - Security and Identity (Page No. 32 to Page No 38)
- Test your understanding- Online Assessment.
- Governance and Monitoring
    - Governance and Tooling - Monitoring, Alerting
        - Governance and Monitoring (Page No. 1 to Page No. 31)
- Logging
    - Governance and Tooling - Monitoring, Alerting
        - Governance and Monitoring (Page No. 32 to Page No. 33)
    -
- Alerting
    - Governance and Tooling - Monitoring, Alerting
        - Governance and Monitoring (Page No. 34 to Page No. 40)
- Unit Testing
    - Governance and Tooling – DevOps
        - Introduction to Test Driven Development
        - Introduction to Unit Testing
        - Introduction to Integration Testing

Day 8

Governance and Tooling, Network and Content Delivery, Integrated Case Study

- Source Control
  - Governance and Tooling – DevOps
    - Source Control (Page No. 1 to Page No. 33)
- Integration tools
  - Governance and Tooling – DevOps
    - Source Control (Page No. 34 to Page No. 48)
- Network and Content Delivery
  - Networking and Content Delivery - Virtual Networking
    - Virtual Private Cloud (VPC)
- Test your understanding- Online Assessment.
- Integrated Case Study- Covering all Engineering Concepts

Day 9

Integrated Case Study

- Integrated Case Study continues

Day 10

Summative Knowledge based assessment

- Summative Knowledge based Assessment. **This is an Assess-Type-1 type of testing.**

Canonical model constructs		**Track wise skill list**
		Java
		Skill
Engineering concepts		Engineering concepts

Stage 1: Milestone 2

Canonical model constructs		Track wise skill list
		Java
		Skill
Programming Language	UI markup & styling	HTML5, CSS3, Javascript, Jquery, Bootstrap

Overall Duration: 8 days + 1 day (Behavioral)

Milestone 2 focuses on User Interface design

Udemy learnings are recommended in the Platform to understand the fundamental concepts. Apply the concepts learned and solve the Hands-on and Practice Case studies as recommended below.

Note: Practice case study is NOT mandatory to complete. It is available in the platform for you to practice as per your convenience.

Day 11

Note: Behavioral training will be conducted for 3 Hrs. in the current week.

HTML5, CSS3

Continuous Learning: Technical Enablement

Learn the basics of HTML5 & CSS3

Responsive Web Design: HTML5 + CSS3 for Entrepreneurs 2018

- Learn the sections listed below in this Udemy course and complete the corresponding hands-on coding given below.
  - Lets Learn Some HTML 5
  - CSS3 & First Project
  - PROJECT: Awesome Landing Page Website
- Implement the examples along with the author.

Go through the below topics to enhance the learning.

- Visual Studio Code Features
- Google Chrome Developer tools

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Simple Calculator
- Learning Material Styling

Day 12

HTML5, CSS3

Continuous Learning: Technical Enablement

RWD, Media Queries

- RWD Introduction
- Media Queries
- RWD Viewport

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Feedback Details
- Bill Calculator
- Trainer Feedback Rating Chart

Additional Hands-on

- Rate Card For Boat Riding
- ACTB connection portal

Additional Learning:

Devtools Pro: The Basics of Chrome Developer Tools

- Learn the sections listed below in this Udemy course

Day 13

JavaScript

Learn the basics of JavaScript

Learn and Practice:

Javascript basics for beginners

- Learn the sections listed below in this Udemy course and complete the corresponding hands-on coding given below.
  - Getting Started
  - Basics
  - Operators
  - Control flow
- Implement the examples along with the author.

Mandatory Hands-on

- Greetings - DOM
- Fixed And Reducing Interest Loan Estimator
- Word Play - Operators, Conditional Control Statements & Loops
- Find Unique Characters - Functions

Additional Hands-on

- EMI Calculator
- Validate Pan Card - DOM

Technical Quizzes:

Quiz: HTML 5 & CSS 3 & Javascript

Day 14

Learn and Practice:

[Javascript basics for beginners]

- Learn the sections listed below in this Udemy course and complete the corresponding hands-on coding given below.
  - Control flow
  - Objects

Go through **W3Schools** web pages for learning below specific topics

[Form Validation]
- JavaScript Form Validation
- JavaScript can validate numeric input
- Data Validation

[String Methods]
- String Length
- The substring() Method
- String.trim()

[JavaScript HTML DOM]
- The HTML DOM (Document Object Model)
- What is DOM?
- What is the HTML DOM?

[Window alert() Method]
- Definition and Usage
- Example

[Javascript Arrays]
- All topics except Associative Arrays

[JSON]

[Regular Expression]

[isNan() function]

[indexof function]

Go through **javascript-coder.com** web page for learning form submission

javascript-coder.com

[JavaScript Form Submit Example]
- Refer code example in this web page

Mandatory Hands-on

- Placing Order For Cake - String & Math
- Validate Email - Regular Expression & test Function
- Employee Experience Details - Class and Object & Date

Additional Hands-on

- Electricity Bill Calculation - Operators & Conditional Control Statements
- Prime Number Check - Operators, Conditional Control Statements & Loops

Additional Learning

Go through web pages for learning below specific topics

- HTML5 Events
- HTML5 - Geo location
- HTML5 - Web Storage
- HTML5-Web SQL Database
- WEB Forms 2.0

Day 15

JQuery

Learn the basics of Bootstrap

The Complete jQuery Course: From Beginner To Advanced!

- Learn the sections listed below in this Udemy course and complete the corresponding hands-on coding given below.
    - Section 1: Introduction
    - Section 3: Element Selectors
    - Section 4: Manipulating the DOM I – Inserting, Replacing and Removing Elements

Implement the examples along with the author.

Mandatory Hands-On:

- Load jQuery
- Welcome Message

Assess-Type-1: Code Challenge (Platform: Tekstac)

- All code challenges

Day 16

Note: Behavioral training will be conducted for 3 Hrs. in the current week.

JQuery

Learn the basics of Bootstrap

[The Complete jQuery Course: From Beginner To Advanced!]

- Learn the sections listed below in this Udemy course and complete the corresponding hands-on coding given below.
    - 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

Implement the examples along with the author.

Go through the below mentioned topics on JQuery Ajax

Introduction

Load()

Post()

Mandatory Hands-On:

- Three Divisions
- Select the Boxes
- Customer Data
- Vertical Menu
- Get JSON Data
- Error Message
- Login Form
- Alternate Rows - Selectors
- Ice Cream Flavours - Selectors

Additional Hands-on

- Change Case - Selectors
- Missing Values -Selectors
- Describe Yourself - Selectors
- Rectangle Click - Events
- Jelly Beans – Events

Day 17

Bootstrap

Learn the basics of Bootstrap

The Bootstrap 4 Bootcamp

- Learn the sections listed below in this Udemy course and complete the corresponding hands-on coding given below.
    - Getting Started With Bootstrap 4
    - Bootstrap 4 Basics
    - Super Useful Utilities
    - Forms

Implement the examples along with the author.

Mandatory Hands-On:

- Contact US
- BS Feedback Form

Additional Hands-on

- Bootstrap Typography
- Bootstrap Panel
- Nested Containers

Additional learning:

Beginner VS Code

- Learn the sections listed below in this Udemy course to know how to use Visual studio code for Bootstrap practice

Note: You can use Visual studio code to practice Bootstrap hands-on on local machine

Day 18

Bootstrap

Learn the basics of Bootstrap

The Bootstrap 4 Bootcamp

- Learn the sections listed below in this Udemy course and complete the corresponding hands-on coding given below.
    - Navbars and Flexbox!

- The Magical Grid System
- Cards and List Groups

Implement the examples along with the author.

Go through web pages for learning below specific topics

Overriding Bootstrap Styles

Mandatory Hands-On:

- Bootstrap's Navigation Bar
- Page Layout
- Responsive Web Page

Additional Hands-on

- Bootstrap Responsive Grids
- Scrum Cards - Responsive Grid
- Bootstrap Badges and GMIs
- Bootstrap Cards
- BS Loan Request Form
- Overriding Bootstrap Styles

Canonical model constructs		Track wise skill list
		Java
		Skill
Programming Language	UI markup & styling	HTML5, CSS3, Javascript, Jquery, Bootstrap

Stage 1: Milestone 3

Canonical model constructs		Track wise skill list
		Java
		Skill
Data management	Databases	ANSI SQL using MySQL
Products and Frameworks	Database and Storage	Oracle PL/SQL

Overall Duration (Including Behavioral): 5 days

Milestone 3 focuses on SQL Programming

Udemy learnings are recommended in the Platform to understand the fundamental concepts.

Apply the concepts learned and solve the Hands-on and Practice case study as recommended below.

Note:

Recommended Hands-on needs to be completed.

Additional Hands-on can be taken up for better understanding on the concepts based on the availability of time.

Practice case study is NOT mandatory to complete. It is available in the platform for you to practice as per your convenience.

Day 20

Database design

DDL Commands, DML Commands

Learn and Practice:

Sql for beginners

- Learn the sections listed below in this Udemy course and complete the corresponding hands-on coding given below.
  - Installation and Setup
  - Data Definition Language
  - More On Alter Table
  - Data Manipulation Language
  - Selecting from a Table

Tekstac Hands-On:

Recommended

- Insert Records - Department
- Department name based on block number
- Student and their Department Based on City
- Hunger eats - update table
- Delivery Partner details based on rating
- car rental system - Insert values
- Customers having gmail id
- Car details based on type and name
- Car & owner details based on car type

Additional

- Car rental system - Create Table
- Car rental system - add new column
- Hunger eats - change datatype
- Hunger eats - Change the field name

Day 21

Note: Behavioral training will be conducted for 3 Hrs. in the current week.

Database design

Operators, Aggregate, String, Date Functions

Learn and Practice:

Sql for beginners

- Learn the sections listed below in this Udemy course and complete the corresponding hands-on coding given below.
  - Selecting From Multiple Tables
  - Database Design
  - Aggregate Functions
  - Subqueries

Relational Database Design

- Learn all the sections in this Udemy course

Tekstac Hands-On:

Recommended

- Concatenating Details
- Hotels that took order based on month
- Hotel_info
- Rental details based on date
- Password Generation
- Customer using HDFC bank

Additional

- Total sale daywise
- Hotels that took order more than five times
- Credential details
- Maruthi car owner details
- Cars not taken for rent
- No of time rented by each car

- Customer mail details
- Order details
- Hotels not taken orders in a specific month
- Number of Tickets Booked
- Buses based on Source and Destination

Technical Quizzes:

- Quiz 1 - Database concepts
- Quiz 2 - ANSI SQL

Additional learning

- Please go thru the links on **SQL Rank function** and **Introduction to NoSQL** in the platform

Day 22

Oracle PL/SQL

PL/SQL Basics, Processing Data via PL/SQL, Blocks, Exceptions, Working with Records

Learn and Practice:

Refer Sections: 2.2.2 Schema Object Names, 2.2.3 Table Design Considerations, 2.3.1 Supported Oracle Data Types

MYSQL vs Oracle SQL

PL/SQL by Example - Beginner to Advanced PL/SQLUdemy

- Learn the sections listed below in this Udemy course and complete the corresponding hands-on coding given below.
    - PL/SQL Basics
    - Processing Data via PL/SQL
    - PL/SQL Blocks
    - Exceptions
    - Working with Records

Mandatory Hands-On:

- Insert Record using Anonymous Block
- Update Location
- Area of a Circle
- Insert Credit Procedure
- Select city – Procedure

Day 22 and 23

Oracle PL/SQL

Cursors, Collections, Triggers

Learn and Practice:

PL/SQL by Example - Beginner to Advanced PL/SQL Udemy

- Learn the sections listed below in this Udemy course and complete the corresponding hands-on coding given below.
  - Cursors
  - Collections
  - Triggers

Mandatory Hands-On:

- Display department names using Cursors
- Package with a Procedure to update salary
- Insert a Record – Triggers
- Procedure with Exception Handling

Additional

- Procedure select invoice -Cursors
- Find authorization - Cursors
- Function with Exception Handling
- Delete a Record – Triggers

Go through the below topics to enhance the learning.

Stored Procedure Security

Privileges, Roles and Security Policy

Canonical model constructs		Track wise skill list
		Java
		Skill
Data management	Databases	ANSI SQL using MySQL
Products and Frameworks	Database and Storage	Oracle PL/SQL

Stage 1: Milestone 4

Canonical model constructs		Track wise skill list
		Java
		Skill
Programming Language	Shell scripting	Unix and Shell scripting

Overall Duration: 2 days

Day 24

Continuous Learning: Technical Enablement

Learn and Practice

Bash Scripting and Shell Programming (Linux Command Line).

- Go through entire course.
- Implement the examples along with the author.

Additionally, please go thru links on

Linux basics

Bash

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- List of Files 2
- List of Files 3
- Find string 7
- Find string 8
- Grep Command – 1
- Grep Command – 2

Day 25

Continuous Learning: Technical Enablement

Learn and Practice

Go through web pages for learning below specific topics

PowerShell vs Bash
vi Editor
Kill a Process

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Copy File 5
- Copy File – 6
- Copy Directory
- Copy Complete Directory
- Move File 1
- Move File 2
- Script - Pattern Printing
- Shell scripting
- Script to Count

Assess-Type-1: Code Challenge of ANSI SQL

- All code challenges

Canonical model constructs		Track wise skill list
		Java
		Skill
Programming Language	Shell scripting	Unix and Shell scripting

Stage 1: Milestone 5

Canonical model constructs		Track wise skill list
		Java
		Skill
Programming Language	Application languages	Java
Programming Language	Data access languages	JDBC
Programming Language	Data markup	JSON/YAML

Overall Duration (including Behavioral Modules): 10 days

Milestone 5 focuses on Java Programming along with behavioral skills*

Udemy learnings are recommended in the Platform to understand the fundamental concepts. Apply the concepts learned and solve the Hands-on and Practice Case studies as recommended below

Note:

Recommended Hands-on needs to be completed.

Additional Hands-on can be taken up for better understanding on the concepts based on the availability of time.

Practice case study is NOT mandatory to complete. It is available in the platform for you to practice as per your convenience.

Day 26

Note: Behavioral training will be conducted for 3 Hrs. in the current week.

Core Java

Continuous Learning: Technical Enablement

Overview, First Java Program, Variables, Datatypes, Literals, Operators, Expressions and Conditional Statements.

Learn and Practice

Java In-Depth: Become a Complete Java Engineer!.

- Java: A High-level Overview
- Skip installation steps.
- Implement the HelloWorld Program along with the author.

Core Java Made Easy.

- Datatypes, Literals, Variables, Type Conversion, Casting & Promotion
- Operators and Assignments
- Flow Control Statements
  - Flow Control Statements Introduction
  - IF-ELSE
  - Assignment 2: If Else Ladder

* Please refer the link for providing the user inputs from the console for Java samples.

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Display Characters
- Fuel Consumption Calculator
- Highest Placement

Additional Hands-on

- Bill Generation
- Movie ticket calculation

Day 27

Core Java

Continuous Learning: Technical Enablement

Overview, String, Arrays, Looping Statements, Methods, Class, Object, static.

Learn and Practice

Core Java Made Easy.
- Flow Control Statements
  - Switch,While,Do-While,For Loop, Break, Continue
- Static Members and their execution control flow.
- Non-Static Members and their execution control flow.

Java In-Depth: Become a Complete Java Engineer!.
- Classes, Objects and their Members.
  - Chapter Introduction
  - Class & Objects

Core Java Made Easy.
- String Handling
- Arrays

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Least offer
- String Concatenation
- Ticket Price Calculation – Static
- Student Details - Constructor

Additional Hands-on

- Increment Calculation
- Find Average Age

Day 28

Core Java

Continuous Learning: Technical Enablement

Access Modifiers, Packages, Inheritance, Abstraction.

Learn and Practice

Go through below mentioned sections and implement the examples along with the author.

Core Java Made Easy.

- Access Modifiers
- Packages
- Event Management Use case
- Inheritance
- Abstraction

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Contact Details of Hosteller
- Account Manipulation - Abstract class

Additional Hands-on

- Shape - Area Volume Calculator

Additional Learning:

Technical Quizzes:

- Quiz - Java Operator, Control flow statement
- Quiz - Applying Object Oriented Concepts in java

Day 29

Core Java

Continuous Learning: Technical Enablement

Polymorphism, Encapsulation, Interface, Object Methods

Learn and Practice

Go through below mentioned sections and implement the examples along with the author.

Core Java Made Easy.

- Polymorphism
- Encapsulation
- Object class methods

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- BankAccountDetails
- Employee Loan Eligibility – Polymorphism
- Vehicle-Loan-Insurance - Use Interface

Day 30

Core Java

Continuous Learning: Technical Enablement

Collection Framework, ArrayList, Map, Set.

Learn and Practice

Go through below mentioned sections and implement the examples along with the author.

Core Java Made Easy.

- Collections with Generics
  - Collections Introduction
  - List Introduction
  - ArrayList Hands On
  - Restricting the ArrayList Type
  - Inserting and Replacing Objects
  - addAll and contains Methods
  - size get and remove Methods
  - Set Introduction
  - Using HashSet
  - Different Set Classes
  - Iterator
  - ListIterator
  - Comparable and Comparator
  - Create a StringBuffer Comparator
  - Sort Strings by Length
  - Sorting Objects
  - Create a Object Comparator
  - Map Introduction
  - HashMap Demo
  - Arrays and Collections Classes
  - Collections Sort
  - Reversing a List
  - Arrays sort()
  - Array to List conversion
  - Generics
  - Generic class structure
  - Create your own Generic Class

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Insurance Bazaar
- Number of New Words
- Phone Book Manipulation

Additional Hands-on

- Count of Each Words
- Book Manipulation

Additional Learning:

Technical Quizzes:

- Quiz - Collections Framework

Day 31

Note: Behavioral training will be conducted for 3 Hrs. in the current week.

Core Java

Continuous Learning: Technical Enablement

File Handling, Annotation, Threads and Garbage Collections, Exception Handling, Enums.

Learn and Practice

Go through below mentioned sections and implement the examples along with the author.

Core Java Made Easy.

- IO Streams (File IO)
  - IO Streams Introduction
  - Read a File Using FileInputStream
  - Copy A File using FileOutputStream
  - Using Reader And Writer
- Java Annotations
  - Introduction
  - Using @Deprecated
  - Using @Override
  - Using @SuppressWarnings
- Multithreading
- Garbage Collection & Types Of Objects
- Exception Handling and Assertions
- Enums

Go through the below mentioned topics.
String Tokenizer
Number Class
Calendar
Resource Bundle
Currency
Comparable Interface

Math
Class loader
System
Process
Runtime

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Array Manipulation - Use try with multi catch
- Employee Promotion
- Register a Candidate - User defined Exception(with throw and throws)
- Retrieving Data from file

Additional Hands-on

- Visitors Details
- Divide two numbers - Use finally

Day 32

Core Java

Continuous Learning: Technical Enablement

Java 8 Features - Lambda Expressions, Streams, Filters, java.time.

Learn and Practice

Go through below mentioned sections and implement the examples along with the author.

Core Java Made Easy.

- Java 8 Features

Java In-Depth: Become a Complete Java Engineer!.

- Date & Time API ~ Covers Java 8 & also Legacy API

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Mall Parking System
- Validate Name
- Travel Agency – Lamda
- Fruit Basket Estimation -Stream

Additional Hands-on

- Participant List Manipulation - Streams
- College Account

Day 33

Core Java

Continuous Learning: Technical Enablement

Java 8 Features - Streams and Optionals. Asynchronous and Parallel Programming in Java 8

Go through web pages for learning below specific topics

Serial Sort Vs Parallel Sort
Asynchronous and Parallel Programming
Streams
Optional

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Employee Loan Eligibility
- Placement Enrollment Count
- Auditing

Additional Learning:

Technical Quizzes:

- Quiz - Advanced Java Concepts

Day 34

JDBC

Continuous Learning: Technical Enablement

Introduction, Connection, Statement, Prepared Statement, Callable Statement, Transactions and Meta Data.

Learn and Practice

Java Database Connection: JDBC and MySQL.

- Go through entire course.
- Implement the examples along with the author.

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Add Flight using JDBC
- Search for Trains – JDBC
- Player Selection System_JDBC

Additional Hands-on

- Retrieve customer count based on loan type_JDBC
- Retrieve ID and Price of mobiles with in the range_JDBC

Day 35

JSON

Overview
Syntax
Data Types
Objects
Stringify

YAML

Introduction
Basics

Canonical model constructs		Track wise skill list
		Java
		Skill
Programming Language	Application languages	Java
Programming Language	Data access languages	JDBC
Programming Language	Data markup	JSON/YAML

Stage 1: Milestone 6

Canonical model constructs		Track wise skill list
		Java
		Skill
Data management	Data structures and algorithms	Design patterns an Principles

Overall Duration: 3 days

Milestone 6 focuses on design patterns and principles that help the developers to make a good system design. Design patterns provide solutions to common problems, occur in the software design.

Note: Practice check & Final check given in the platform for design patterns need NOT be compelted.Ignore the same.

Day 36

Note: Behavioral training will be conducted for 3 Hrs. in the current week.

SOLID principles, Need and benefits of Design patterns

Learning reference:

genc-DesignPrinciples-objectives

- Refer the objectives with session Id DP-T01

Hands-On:

- Day 1 - Session 1

Design Patterns - Creational

Learning reference:

genc-DesignPrinciples-objectives

- Refer the objectives with session Id DP-T02

Hands-On:

- Day 1 - Session 2

Day 37

Creational and structural design patterns

Learning reference:

genc-DesignPrinciples-objectives

- Refer the objectives with session Id DP-T03 & DP-T04

Hands-On:

- Day 2 - Session 1
- Day 2 - Session 2

Day 38

Structural and Behavioral design patterns

Learning reference:

genc-DesignPrinciples-objectives

- Refer the objectives with session Id DP-T05 & DP-T06

Hands-On:

- Day 3 - Session 1
- Day 3 - Session 2

Canonical model constructs		Track wise skill list
		Java
		Skill
Data management	Data structures and algorithms	Design patterns an Principles

Stage 1 – Milestone 7

Canonical model constructs		Track wise skill list
		Java
		Skill
Data management	Data structures and algorithms	Data structures and algorithms

Overall Duration: 5 days

Milestone 7 focuses on Data Structures and Algorithms that are an integral part of a computer program.

Data Structures determine memory organization principles of data, which help in efficient storage of data in storage device

Algorithm is a step-wise representation of a solution to a given problem, which makes it easy to understand and is not dependent on any programming language.

Data structures and Algorithms would be done on Hacker rank platform (https://www.hackerrank.com/).

Day 39

Data Structure

Linear Data Structure- Array, Stack, Queue, Linked list, Matrix

Learning reference:

	Data Structures in Java - Part I (+INTERVIEW QUESTIONS) • Refer section listed below in this Udemy course and follow the instructor for guided hands on. ○ Introduction ○ Arrays ○ Linked Lists ○ Stacks ○ Queues

Hands-On:

- Hands On 1
- Hands On 2
- Hands On 3
- Hands On 4
- Hands On 5

Day 40

Assess-Type-1: Code Challenge

- All code challenges of core java

Data Structure

Non-Linear Data Structure- Trees, Graphs

Learning reference:

	Data Structures in Java - Part I (+INTERVIEW QUESTIONS) • Refer section listed below in this Udemy course and follow the instructor for guided hands on. ○ Binary Search Trees

Go through the following links for better understanding of the other data structures

- Graph Data Structure
- Heap Data Structure
- Hash Data Structure

Day 41

Note: Behavioral training will be conducted for 3 Hrs. in the current week.

Hands-On:

- Hand On 1
- Hand On 2
- Hand On 3
- Hand On 4
- Hand On 5

Day 42 and 43

Algorithm

Algorithm- Searching, Sorting, Pattern Searching, Divide and Conquer

Learning reference:

	Algorithms and Data Structures in Java - Part II
	• Refer section listed below in this Udemy course and follow the instructor for guided hands on.
	  ○ Substring Search
	  ○ Strings
	  ○ Basic Sorting Algorithm

Hands-On:

- Hands On 1
- Hands On 2
- Hands On 3
- Hands On 4
- Hands On 5

Online references:

https://www.geeksforgeeks.org/data-structures/
https://www.geeksforgeeks.org/fundamentals-of-algorithms/

Additional Hands-on reference:

Hands-on Problem Statements: Reference 2

Day 44 - Forenoon

Practice Check:

- Hackerrank assessment – Practice

Day 44 – Afternoon

Final Check:

- Hackerrank assessment - Final

Stage 1: ICT Prep up and ICT

Day 45

Additional Learning:

Assess-Type-2 Preparation

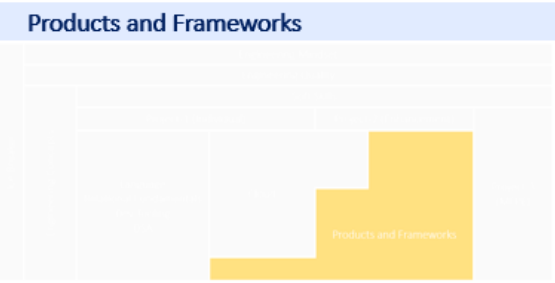
Mock Assess-Type-2

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

- Java, JDBC, MySQL – 4 hours

Canonical model constructs		Track wise skill list
		Java
		Skill
Data management	Data structures and algorithms	Data structures and algorithms

Stage 2 & 3 – Products and Frameworks



Products and Framework accelerate software engineering by supplementing cloud services and providing a richer reusable layer.

- Develop working knowledge of features and framework constructs
- Ability to debug and troubleshoot applications using these products and frameworks

Stage 2: Milestone 1

Canonical model constructs	Track wise skill list
	Java
	Skill

Products and Frameworks	Presentation	Spring Core and Maven

Overall Duration: 3 days
Milestone 1 focuses on Spring Core and Maven

Note: Practice case study is NOT mandatory to complete. It is available in the platform for you to practice as per your convenience.

Day 46

Note: Behavioral training will be conducted for 3 Hrs. in the current week.

Maven

Needs and benefits, Maven Project Creation, POM.xml, Build lifecycle, repositories, Scopes and Profiles.

Learn and Practice

Refer this document for Maven Installation and Web Project Creation.
Go through the below mentioned sections and perform maven build along with the author of this course.

Maven Crash Course.

- Introduction
- Maven Project Creation and Key Concepts
- Scopes
- Profiles

Core Spring

Setter Based Injection

Learn and Practice

Go through the below mentioned sections and implement examples along with the author of this course.

Spring Framework in Easy Steps

- Introduction
- Software Setup
  - Troubleshooting Maven Projects
- Setter Injection
  - Create a Maven Project

- Create the Java Bean
- Create the Spring Configuration
- Create and run the test
- Value as attribute
- Using p:schema or p: namespace

Tekstac Hands-On

- DBConfig-SetterBasedInjection
- EZEE Transport

Day 47

Injecting collections, dependency check, Inner Beans and Scope.

Learn and Practice

Go through the below mentioned sections and implement examples along with the author of this course.
Spring Framework in Easy Steps

- Setter Injection
  - Injecting Collections
  - List - Create the Spring Bean
  - List - Create the Configuration file
  - List - Create the Test
  - Running the test and flow
  - Two More Things About List

Tekstac Hands-On

- CurrencyConverter-Collections (Refer section 4.34 and 4.35 of Udemy course to implement this hands on)

Core Spring

Learn and Practice

Spring Framework in Easy Steps

- Dependency Check , Inner beans and Scopes

Tekstac Hands-On

- Customer-Address-Scope
- Customer-Address Inner Bean

Agile Basics

The key concepts and tools of Agile Development, Agile Project Delivery and Agile Project Management.

Learn and Practice

Agile Crash Course: Agile Project Management; Agile Delivery

- Go through entire course

Constructor based Injection, Spring Core Concepts, Autowiring, Usage of Properties.

Learn and Practice

Spring Framework in Easy Steps

- Constructor Injection
- Spring Core Concepts
- Using Properties

Tekstac Hands-On

- Constructor Injection
- Engine Analysis

Learn and Practice

Spring Framework in Easy Steps

- Auto-Wiring

Tekstac Hands-On

- Autowiring

Core Spring

Stereotype Annotations, Injecting Interfaces

Learn and Practice

Spring Framework in Easy Steps

- Stereotype Annotations
- Injecting Interfaces

Mandatory Hands-On

- EBanking Hands on
- Passport Service

Additional Hands-On

- Patient Management

Day 48

Core Spring

Continuous Learning: Technical Enablement

Aspect Oriented Programming (AOP) using Spring AOP and AspectJ.

Learn and Practice

Spring Framework in Easy Steps

- Spring AOP
- Implement the examples along with the author.

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Spring AOP Demo

Core Spring

Continuous Learning: Technical Enablement

Spring JDBC

Learn and Practice

[Spring Framework in Easy Steps]

- Spring JDBC
- Implement the examples along with the author.

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Billing Software Application

Additional Hands-on

- EBill

Canonical model constructs		Track wise skill list
		Java
		Skill
Products and Frameworks	Presentation	Spring Core and Maven

Stage 2: Milestone 2

Canonical model constructs		Track wise skill list
		Java
		Skill
Engineering quality	Unit testing	TDD, Unit Testing with Mockito
Engineering quality	Code quality	SonarQube, Code quality

Overall Duration (including Behavioral Modules): 3 days

Milestone 2 focuses on Unit testing thru JUnit

Day 49

JUnit

Writing basic tests, Assert Statements

Learn and Practice
Go through the below mentioned sections and implement examples along with the author of this course.

[Learn Java Unit Testing with Junit & Mockito in 30 Steps]

- Introduction
- Unit Testing with Junit
  - JUnit Step 1: Why is Unit Testing Important?
  - JUnit Step 2: Setting up your first JUnit
    Step 03: First Successful JUnit. Green Bar and assertEquals
  - Step 04: Refactoring Your First Junit Test
  - Step 05: Second JUnit Example assertTrue and assertFalse
  - Step 06: @Before @After
  - Step 07: @BeforeClass @AfterClass

Mandatory Hands-On

- Electricity Bill
- Testing using Assertion.

Additional Hands-on

- Loan EMI Calculator

Day 50

JUnit

Testing Exceptions, Comparing Arrays, Parameterized Tests, Test Suites.

Learn and Practice
Go through the below mentioned sections and implement examples along with the author of this course.

[Learn Java Unit Testing with Junit & Mockito in 30 Steps]

- Unit Testing with Junit
  - Step 08 : Comparing Arrays in Junit Tests
  - Step 09 : Testing Exceptions in Junit Tests
  - Step 10 : Testing Performance in Junit Tests
  - Step 11 : Parameterized Tests
  - Step 12 : Organize JUnits into Suites

Tekstac Hands-On

- Product Login Test Suite
- Parameterized

Mockito

Learn and Practice

[Learn Java Unit Testing with Junit & Mockito in 30 Steps]

- Getting Ready for Mockito
- Need For Mockito
- Mockito Basics

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Verify Call - JUnit using Mockito
- TestMockDB

Additional Hands-on

- Test Callback

Day 51

Test Driven Development

Test Automation, Test Code Optimization and Test Driven Development

Learn and Practice
Go through the below mentioned sections and implement examples along with the author of this course.

[Learn TDD in 24 Hours]
- Getting started with automated tests.
- Taking care of the test code
- Test-Driven Development

Code Quality

The concepts include importance of code quality and coding standards.

Master class
To be driven by SME.

Learn and Practice

Refer this document.

Mandatory Hands-on

- Hands On - LMS Refactoring

Additional Learning
- Please go thru the links on **PMD, Checkstyle, FindBugs, SONAR** in the platform

Canonical model constructs		Track wise skill list
		Java
		Skill
Engineering quality	Unit testing	TDD, Unit Testing with Mockito
Engineering quality	Code quality	SonarQube, Code quality

Stage 2: Milestone 3

+

Canonical model constructs	Track wise skill list
	Java

		Skill
Products and Frameworks	Presentation	Spring MVC with Spring Boot

Overall Duration: 4 days

Milestone 3 focuses on Spring MVC with Spring Boot

Note: Practice case study is NOT mandatory to complete. It is available in the platform for you to practice as per your convenience.

Day 52

Servlets and JSP

Continuous Learning: Technical Enablement

Overview, Understanding Servlets, Web Application Request Flow.

Learn and Practice

Java In-Depth: Spring MVC For Beginners - Build Java Web App in 25 Steps.

- Part 1: Basic Java Web Application with JSP and Servlets..

Additional Learning:

- Please go thru the links on **Web and Application Servers, MVC frameworks** in the platform

Spring MVC using Spring Boot

Continuous Learning: Technical Enablement

Spring initializer, https://start.spring.io,pom.xml, @SpringBootApplication, SpringApplication.run (), Controller,@RequestMapping,@ResponseBody

Learn and Practice

Learn Spring Boot in 100 Steps - Beginner to Expert.

- Web Application with Spring Boot
  - Introduction
  - Skip Installation steps.
  - Step 0 : Web Application with Spring Boot - Section Introduction
  - Step 01: Part 1 Basic Spring Boot Web Application Setup
  - Step 01: Part 2 Pom.xml, Spring Boot Application and application properties
  - Step 02: Part 1 First Spring MVC Controller, @ResponseBody, @Controller
  - Fastest Approach to Solve All Your Exceptions
  - Step 02: Part 2 Understanding HTTP Request Flow
  - Step 03: Demystifying some of the Spring Boot magic

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Age Calculator
- BodyMassIndex

Day 53

Spring Boot Web Application

Continuous Learning: Technical Enablement

View Resolver,@RequestParam, ModelMap,Dispatcher Servlet, Spring MVC Web request flow, Web Application Architecture, Session scope, Request scope,@SessionAttributes.

Learn and Practice

Learn Spring Boot in 100 Steps - Beginner to Expert.

- Web Application with Spring Boot
  - Step 04: Redirect to Login JSP -
  - @ResponseBody and View Resolver
  - Step 05: Show userid and password on welcome page - ModelMap and @R…
  - Step 06: DispatcherServlet and Spring MVC Flow
  - Step 07: Your First HTML form
  - Step 08: Add hard-coded validation of userid and password
  - Step 09: Magic of Spring

        - Step 10: Create TodoController and list-todos view. Make TodoService a @S…
        - Step 11: Architecture of Web Applications
        - Step 12: Session vs Model vs Request- @SessionAttributes
        - Step 13: Add new todo

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- Zee Zee Login
- Bakingo Cake Service

Day 54

Spring MVC using Spring Boot

Continuous Learning: Technical Enablement

JSTL tags, Spring MVC form tag library, Validations, initBinder

Learn and Practice

Learn Spring Boot in 100 Steps - Beginner to Expert.

- Web Application with Spring Boot
    - Step 14: Display Todos in a table
    - using JSTL Tags
    - Step 15: Bootstrap for Page Formatting using webjars
    - Step 16: Let's delete a Todo
    - Step 17: Format Add Todo Page and Adding Basic HTML5 form validation
    - Use modelAttribute instead of commandName
    - Step 18: Part 1 Validations with
    - Hibernate Validator - Using Command …
    - Step 18: Part 2 Using JSR 349 Validations
    - Step 19: Updating a todo
    - Step 20: Let's add a Target Date for Todo - Use initBinder to Handle Date Fields

Step 25: Exception Handling

Spring MVC Internationalization (i18n) - implement internationalization using the Spring MVC framework.

Learn and Practice

Refer this document and implement the example.

Continuous Learning: Technical Hands-on

Mandatory Hands-on

- HolidayParty-Validations
- Front End-Internationalization

Day 55

Technical Quiz:

- Quiz 1 - Spring MVC and Spring Boot

Assess-Type-1: Code Challenge

- All code challenges

Git Basics

Learn Git by Doing: A step-by-step guide to version control.

- Go through the entire course

Canonical model constructs		Track wise skill list
		Java
		Skill
Products and Frameworks	Presentation	Spring MVC with Spring Boot

Stage 3: Spring Data JPA

Canonical model constructs	Track wise skill list
	Java
	Skill

Products and Frameworks	Compute and Integration	Hibernate, Spring Data JPA

Overall duration: 3 days

This module deals with topics on Spring Data JPA**.**

Day 56

Learning reference:

genc-spring-data-jpa-objectives

- Refer the objectives with objective ORM-001 to ORM-006

Hands-On:

- Day 1 - Session 1 and 2

Day 57

Learning reference:

genc-spring-data-jpa-objectives

- Refer the objectives with objective ORM-007 to ORM-0010

Hands-On:

- Day 2 – Session 1
- Day 2 – Session 2

Day 58

Practice Check:

Step 1: Skeleton code (Standalone Core Java application) has been provided in the SharePoint link.
Step 2: Spring Core specification (truYum-spring-core-specification.docx) given should be implemented.
Step 3: Spring Data JPA specification (truYum-fse-spring-data-jpa-hibernate-specification.docx) should be implemented.

- TruYum Practice Case Study Artifacts

Canonical model constructs		Track wise skill list
		Java
		Skill
Products and Frameworks	Compute and Integration	Hibernate, Spring Data JPA

Stage 3 – Lombok, Sonar

Canonical model constructs		Track wise skill list
		Java
		Skill
Engineering quality	Code quality	Slf4j and Lombok

Overall duration: 2 days

Day 59

Objectives:
Lombok-SONAR-objectives

- Refer the objectives with objective SQW-006 to SRW-009

Reference Links:
http://www.javabyexamples.com/lombok-log4j-slf4j-and-other-log-annotations

https://projectlombok.org/

https://www.sonarqube.org/

https://dzone.com/articles/how-quickly-get-started-sonar

Stage 2: ICT Prep up and ICT.

Day 60

Additional Learning:

Assess-Type-2 Preparation

Mock Assess-Type-2

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

Stage 3 –Lombok, Sonar

Day 61

Lombok, SONAR:

Hands On:

Flight Management

Patient Intake System

Trainee Manager

Canonical model constructs		Track wise skill list
		Java
		Skill
Engineering quality	Code quality	Slf4j and Lombok

Stage 3: Angular

Canonical model constructs		Track wise skill list
		Java
		Skill
Products and Frameworks	Presentation	Angular

Overall duration: 5 days

This module deals with topics on Angular

Day 62

Learning reference:

genc-angular-objectives

- Refer the objectives with objective SPA-001 to SPA-011

Hands-On:

- Day 1 - Session 1
- Day 1 – Session 2

Day 63

Learning reference:

genc-angular-objectives

- Refer the objectives with objective SPA-012 TO SPA--18

Hands-On:

- Day 2 – Session 1
- Day 2 – Session 2

Day 64

Learning reference:

genc-angular-objectives

- Refer the objectives with objective SPA-019 TO SPA--20

Hands-On:

- Day 3 – Session 1
- Day 3 – Session 2

Day 65

Learning reference:

genc-angular-objectives

- Refer the objectives with objective SPA-021 TO SPA--23

Hands-On:

- Day 4 – Session 1

- Day 4 – Session 2

Day 66

Learning reference:

genc-angular-objectives

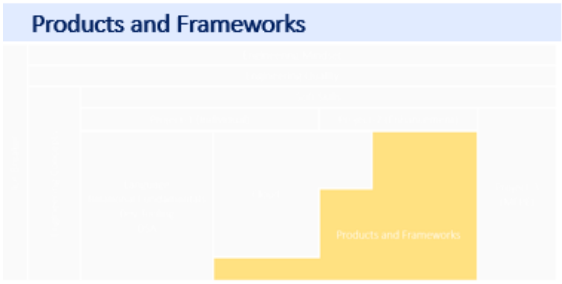
- Refer the objectives with objective SPA-024 TO SPA--26

Hands-On:

- Day 5 – Session 1
- Day 5 – Session 2

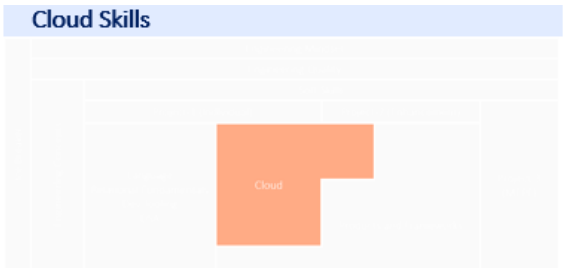
Canonical model constructs		Track wise skill list
		Java
		Skill
Products and Frameworks	Presentation	Angular

Stage 4 – Products and Frameworks & Platforms



Products and Framework accelerate software engineering by supplementing cloud services and providing a richer reusable layer.

- Develop working knowledge of features and framework constructs
- Ability to debug and troubleshoot applications using these products and frameworks



It is essential that FSE community members have working knowledge of managed services offered by cloud platforms.

GenCs are expected to have working knowledge of service APIs related to the highlighted categories.

Stage 4 – Spring Restful Webservices

Canonical model constructs		Track wise skill list
		Java
		Skill
Products and Frameworks	Compute and Integration	Spring REST with Spring Security using Spring Boot, Swagger documentation
Engineering quality	Secure coding	JWT authentication in Spring REST

Overall duration: 6 days

Day 67

Learning reference:

genc-spring-rest-objectives

- Refer the objectives with objective SPRING-CORE-T01 and SPRING-REST-T02

Hands-On:

- Day 1 - Session 1 and 2

Day 68

Learning reference:

genc-spring-rest-objectives

- Refer the objectives with objective SPRING-REST-T03 and SPRING-REST-T04

Hands-On:

Day 2 - Session 3 and Session 4

Day 69

Learning reference:

genc-spring-rest-objectives

- Refer the objectives with objective JWT-T09.

Hands-On:

Day 3 - Session 5 and Session 6

Day 70

Learning reference:

genc-spring-rest-objectives

- Refer the objectives with objective id SRW-005

Hands-On:

- Day 4 - Session 1 and 2

Day 71 and 72

Practice Check:

Step 1: Standalone Core Java application) will be provided to you.
Step 2: Spring Restful Webservices specification should be implemented.

Canonical model constructs		**Track wise skill list**
		Java
		Skill
Products and Frameworks	Compute and Integration	Spring REST with Spring Security using Spring Boot, Swagger documentation
Engineering quality	Secure coding	JWT authentication in Spring REST

Stage 4 – Project simulation

This is a phase where a set of design considerations will be provided before-hand to the GenC's. They'll have to come up with requirements to be done using the Stage 3 & concepts learnt thus far. It'll be done in POD model and with trainer support.
This runs for 3 days.

Stage 4 – AWS Intro, CI/CD

Canonical model constructs		Track wise skill list
		Java
		Skill
Platforms	Compute	Amazon EC2 and ECS
Platforms	Database	Amazon Dynamo DB & RDS
Platforms	Storage	Amazon Simple Storage Service(S3)
Platforms	Compute	VPC, Security Groups, Gateway, NACL
Platforms	Developer tools	AWS Code commit
Platforms	Developer tools	DevOps CI/CD pipeline

Overall Duration: 2 days

Day 76

Compute: Cloud Fundamentals, Network and Delivery, VPC, Security Groups, Gateway, NACL, Different Services Available in AWS

Learning Reference:

Genc-AWS-Objectives.

- Refer the Objectives with Objective Ids: AWS-001, AWS-002, ECC-001 to ECC-005, SSS-001 to SSS-003, AWSDB-001 to AWSDB-005, AWSNET-001

Hands-On:

- EC2-Hands-on
- S3-Hands-on
- RDS-Hands-on
- DynamoDB-Hands-on
- AWS-lab-hands-on-practice.mp4

Day 77

Developer Tools: DevOps, AWS Code Commit, AWS CI/CD

Learning Reference:

Genc-AWS-Objectives

Refer the Objectives with the Objective Ids: DevOps-001 and DevOps-002

Hands-On:

cicd-lab.mp4

Canonical model constructs		Track wise skill list
		Java
		Skill
Platforms	Compute	Amazon EC2 and ECS
Platforms	Database	Amazon Dynamo DB & RDS
Platforms	Storage	Amazon Simple Storage Service(S3)
Platforms	Compute	VPC, Security Groups, Gateway, NACL
Platforms	Developer tools	AWS Code commit
Platforms	Developer tools	DevOps CI/CD pipeline

Stage 4 – MicroServices

Canonical model constructs		Track wise skill list
		Java
		Skill
Products and Frameworks	Compute and Integration	MSA with Spring Security using Spring Cloud
Platforms	Compute	Containerization using Docker
Platforms	Compute	Orchestration using Kubernetes

Overall duration: 5 days

Day 78 to 79

Learning reference:

genc-microservices-objectives

- Refer the objectives with objective SPCLD-001 to SPCLD-005

Hands-On:

- Day 1 to 2

Day 80 to 81

Learning reference:

genc-microservices-objectives

- Refer the objectives with objective SPCLD-007 to SPCLD-012

Hands-On:

Demo Reference: Day 3 and Day 4

Note:
The GenC need not implement Docker Hands-on
Trainer to show the demo of the given objectives.

Day 82

- TruYum Practice Check Specification

Canonical model constructs		Track wise skill list
		Java
		Skill
Products and Frameworks	Compute and Integration	MSA with Spring Security using Spring Cloud
Platforms	Compute	Containerization using Docker
Platforms	Compute	Orchestration using Kubernetes

Stage 4 – Cloud and AWS

Canonical model constructs		Track wise skill list
		Java
		Skill
Platforms	App Integration	Apache Kafka, Amazon SQS
Platforms	Database	Amazon DynamoDB
Platforms	Developer tools	DevOps CI/CD pipeline with deployment using ECS/EKS, Fargate deployment, Feign client usage

Overall Duration: 8 days

Day 83

Integrate: Pub/Sub messaging using Apache Kafka and AWS MSK using S3 buckets

Learning References:

Genc-AWS-Objectives

- Refer the Objectives with the Objective Ids: MSGNG-001 to MSGNG-005

Hands On:

- SQS-Hands-on
- Apache-Kafka-On-Prem-Hands-on

Note: Trainer to demonstrate starting up the Kafka Server, Zookeeper and implement producer and consumer on the local system using Kafka-console-producer and Kafka-console-consumer.

Day 84

Integrate: Pub/Sub messaging using Apache Kafka and AWS MSK using S3 buckets

Learning References:

Genc-AWS-Objectives

- Refer the Objectives with the Objective Ids: MSGNG-006 and MSGNG-007

Hands-On:

- Creating-MSK-Cluster-Hands-on
- Deploy-Producer-Consumer-in-EC2-Hands-on

Day 85

Integrate: Pub/Sub messaging using Apache Kafka and AWS MSK using S3 buckets

Learning References:

Genc-AWS-Objectives

- Refer the Objectives with the Objective Ids: MSGNG-008 and MSGNG-009

Hands-On:

- Apache-Kafka-S3-Hands-on

Day 86

AWS Dynamo DB, ECS, ECR, ALB, Fargate Deployment, CI/CD

Learning References:

Genc-AWS-Objectives

- Refer the Objectives with the Objective Ids: AWSSRV-001 to AWSSRV-003

Hands-On

Microservice-with-DynamoDB-backend

Note: Trainer to demonstrate creating a simple “Hello World” Microservice, creating an image, pushing the image to the ECR, creating a container out the of image from ECR using the “Getting Started” wizard of ECS and deploy the application in ECS. Access the application from anywhere. Gencs to replicate the same demo done by the trainer.

Day 87

AWS Dynamo DB, ECS, ECR, ALB, Fargate Deployment, CI/CD

Learning References:

Genc-AWS-Objectives:

- Refer the Objectives with the Objective Ids: AWSSRV-004 and AWSSRV-005

Hands-On:

- Spring-Boot-Microservices-AWS-Fargate-ECS-CICD.mp4
- Swagger-Hands-on

Day 88

AWS Dynamo DB, ECS, ECR, ALB, Fargate Deployment, CI/CD

Learning References:

Genc-AWS-Objectives:

- Refer the Objectives with the Objective Ids: AWSSRV-006 and AWSSRV-007

Hands-On:

- Angular-Spring-REST-Integration-Hands-on

Day 89 and 90

Integrate: AWS Dynamo DB, ECS, ECR, ALB, Fargate Deployment, CI/CD

Microservices with AWS and Spring Security

- Practice Check (Apply all the topics covered so far in Microservices and AWS with Spring Security)

Canonical model constructs		Track wise skill list
		Java
		Skill
Platforms	App Integration	Apache Kafka, Amazon SQS
Platforms	Database	Amazon DynamoDB
Platforms	Developer tools	DevOps CI/CD pipeline with deployment using ECS/EKS, Fargate deployment, Feign client usage

Stage 4- My First POD Engagement (MFPE)

Overall duration: 10 days

Every GenC will undergo MFPE towards the end of their learning journey. This will help them to apply the skills acquired on a business case study while being in Agile POD team.

The requirements expects the knowledge on ALL the elements of the Canonical model viz., Engineering concepts, Programming Language, Products and Frameworks, Platforms, Engineering quality and Engineering mindset. All the learnings should be used in the project implementation.

Mentors will guide them throughout in this two weeks engagement.

The evaluation mode will be at three levels. Level one will be a self-evaluation by the GenCs, followed by Trainer evaluation for Level 2 and finally by the mentor for Level 3. Video of the application can be taken or a live demo can be provided to the trainers and mentors for the evaluation. Evaluation will be done based on the application of the concepts learnt and thru the various technical layers.

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?
   Students who have enrolled for Full Internship can participate in this program.
2. Is there any pre-learning I should do?
   No. This program is open to all students from any academic discipline.
3. What is the significance of Hands-on in the overall learning journey?

   Hands-on focuses on specific topics in a Skill, which you can try and execute in the Platform. Group of such Hands-on exercises will be packaged together as a Code Challenge. This Code Challenge will allow you to benchmark your skills in the learning journey.

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

   A case study problem statement will be provided to you, that you may need solve using the combination of Skills learnt in the given stage.

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

   Coach is your point of contact.
6. Is there Code Challenge and ICT for Stage 3?
   No, since it is not executed on Tekstak platform