

Full Stack Engineering (FSE) Training

Internship report submitted in fulfilment of the
requirement for the degree of Bachelor of Technology

In

**Computer Science and Engineering/Information
Technology**

By

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**An Internship Report with regard to Cognizant
Internship.**

Acknowledgements

This is a matter of pleasure for me to acknowledge my deep sense of gratitude to Jaypee University and my college, Jaypee university of information technology for giving me an opportunity to explore my abilities via this internship program. I would like to express my sincere gratitude to our TnP officer, Mr. Pankaj kumar and our faculty Coordinator, Dr. Nafis U Khan for this opportunity. I also wish to express my gratitude to my internship supervisor, for their valuable guidance and advice in completing this project.

I would like to record my sincere appreciation and gratitude towards all the officials and employees of cognizant, who assisted in my internship program would not have succeeded. The facts and other vital information provided by them have contributed towards making this report as comprehensive as possible. I am indeed thankful to them.

Last but not the least, I would like to express my sincere thanks to all my family members, friends and well-wishers for their immense support and best wishes throughout the internship duration and the preparation of this report.

I believe that this report will be a valuable asset not only for academic institutions, but will also be useful for all those who are interested to learn about internship experiences in auditing and consulting firms.

Project Report Undertaking

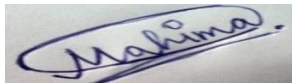
I **Ms. Mahima Gupta** Roll No. **171373** Branch **Computer Science Engineering** is doing my internship with **Cognizant Technology Solutions Corporation** from **11th February** to **12th July**

As per procedure I have to submit my project report to the university related to my work that I have done during this internship.

I have compiled my project report. But due to COVID-19 situation my project mentor in the company is not able to sign my project report.

So I hereby declare that the project report is fully designed/developed by me and no part of the work is borrowed or purchased from any agency. And I'll produce a certificate/document of my internship completion with the company to TnP Cell whenever COVID-19 situation gets normal.

Signature:

A handwritten signature in blue ink that reads "Mahima". The signature is written in a cursive style and is enclosed within a faint, hand-drawn oval border.

Name: Mahima Gupta

Roll No. : 171373

Date :24/05/2021

Candidate's Declaration

I hereby declare that the work presented in this report entitled “**Full Stack Engineering (FSE) Training**” in fulfilment of the requirements for the award of the degree of **Bachelor of Technology in Computer Science and Engineering /Information Technology** submitted in the department of Computer Science & Engineering and Information Technology, Jaypee University of Information Technology Waknaghat is an authentic record of my own work carried out over a period from Feb 2021 to May 2021 under the supervision of Ms. **Jenifer Nancy**(Coach at Cognizant).

The matter embodied in the report has not been submitted for the award of any other degree or diploma.

A handwritten signature in blue ink that reads "Mahima" with a period at the end, enclosed in a light blue oval.

Mahima Gupta(171373)

This is to certify that the above statement made by the candidate is true to the best of my knowledge.

Ms. Jenifer Nancy

Coach at Cognizant

Dated: 24/05/21

Contents

Acknowledgements	I
Project Report Undertaking	II
Candidate's Declaration	III
ABSTRACT	VII
Chapter 1	- 1 -
Introduction	- 1 -
1.1 Background:.....	- 1 -
1.2 Mission, Vision, Values and Objectives	- 2 -
1.3 Topics Covered and Performance Objective	- 3 -
1.4 About Domain, Program and Track	- 4 -
1.5 Program at a glance	- 4 -
1.6 Learning Model	- 5 -
1.7 Learning Platform	- 5 -
1.9 Key Learning Components of the Program	- 6 -
1.10 Program Completion Criteria	- 6 -
It is mandatory to complete all Coding Challenges and ICT with a benchmark of 70% in both stage 1 and stage 2. ICT will be held at the end of that milestone.	- 6 -
Chapter 2	- 7 -
INTERNSHIP PROGRAM SEQUENCE	- 7 -
2.1 Stage 1 (Engineering Concepts, User Interface Designing, SQL Programming, Java Programming Fundamentals, Unix and Shell Scripting, Design)	- 7 -
2.1.1 Stage 1: Milestone 1	- 7 -
2.1.2 Stage 1: Milestone 2	- 8 -
2.1.3 Stage 1: Milestone 3	- 9 -
2.1.4 Stage 1: Milestone 4	-10-
2.1.5 Stage 1: Milestone 5	-10-
2.1.6 Stage 1: Milestone 6	-12-
2.1.7 Stage 1: Milestone 7	-13-
2.1.8 Stage 1: ICT Prep up and ICT	-14-
2.2 Stage 2: Spring Core and Maven	-14-
2.2.1 Stage 2: Milestone 1	-15-
2.2.2 Stage 2: Milestone 2	-16-
2.2.3 Stage 2: Milestone 3	-17-
Chapter 3	-19-
SOFTWARE REQUIREMENT SPECIFICATION (SRS)	-19-
3.1 ECLIPSE IDE	-19-
3.2 WAMP	-20-
3.3 MySQL	-21-
3.4 ECLIPSE IDE for Java EE Developers	-21-
3.5 Apache Tomcat	-22-
	IV

3.5.1 Catalina -22-
3.5.2 Coyote -22-
3.5.3 Jasper -23-
3.6 Postman -23-
Chapter 4 -24-
Performance Analysis -24-
4.1 Overall Performance -24-
4.2 Performance in ICT 1 -26-
Chapter 5 -27-
Conclusion -27-
References -28-

Table of Figures

Figure 1:Points gained and ranking	-24-
Figure 2: Performance progress	-24-
Figure 3: Assessment Scores	-25-
Figure 4: Percentage of path completed	-26-
Figure 5: ICT Result	-26-

ABSTRACT

This is a report on what I have learned from my internship at Cognizant as an Intern. I was taught HTML5, CSS3, Bootstrap, Core Java, MySQL, Advanced Java, JDBC, Spring Core, Maven, Junit, Git Bash, Spring MVC.

Not only the technical but also behavioral and professional skills were taught. Many sessions were held with trainer and coach to understand concepts and the path to be taken. I was selected as an intern for the domain of Full Stack Engineering and my internship duration is from 11th February to 12th July.

I was taught basic concepts and languages for both front-end and back-end development of an web-application. Currently I am in stage 2.

The marking and scoring pattern in this course depend on many factors like learning progress, practice check, quizzes, hands-on, final check, code challenges and integrated capability test (ICT).

This internship has proved for me to be great opportunity to learn new concepts and make myself corporate ready.

Chapter 1

Introduction

1.1 Background:

During my 7th semester our college started our campus placement and out of them one such company was Cognizant. Fortunately, and with efforts I got selected for GEN C program by Cognizant. After that one more exam was conducted by Cognizant to allot domains to new Interns and I got selected for CDE path FSE (Full Stack Engineering) course.

Internship has different stages. We are allotted different trainers for different stages in our internship. My Coach is Jenifer Nancy and also, we are allotted a mentor and 3 POCs (Point of Contact) who help us to complete is training systematically.

Since I got the domain as FSE various concepts were taught to me that were both for front-end development as well as backend development. Behavioural Sessions were also held to make us professionally ready and to become an asset to our company. Our behavioural sessions were held and coordinated by Murugan Balachandran.

This Whole internship was virtual because of the situation of COVID 19. Many Exams and assessments were held during this course of internship to test our knowledge and to understand the concepts.

Cognizant is a well known MNC and aims for highest productivity as possible. The stipend that we received during our internship was 10800 (12000-taxes). The duration of internship in my case is from 11th February to 12th July.

Our internship was mostly self-paced that is we were provided with all the required data and assistance and we had to complete our learning by our own by using different learning material provided to us.

The model that was used during my course of internship was canonical model. We completed different learning in different steps and started from basics to advanced.

Every stage in our learning is very important and different measures are taken to monitor our growth and to check our learnings on the topic.

There were two languages that were provided to us JAVA and other one was .NET. I choose JAVA as my Core language during this internship.

1.2 Mission, Vision, Values and Objectives

Mission – Cognizant's single-minded mission is to dedicate their business process and technology innovation know-how, worldwide resources and deep industry expertise so as to work together with their clients and make their businesses stronger.

Vision - The vision when it comes to Cognizant is its strategic plan for the future which defines where and what as a company Cognizant aims to be in the future. Its vision is to identify the goals of Cognizant to facilitate its strategic, managerial, as well as general decision making processes.

The vision Statement of Cognizant is Concise that means that they don't use long dialects and dialogues to deliver its opinion and stand in public. Vision statement should not only be brief but also holistic in nature therefore it should be complete in its information and description and perfectly convey the company's desires on what their long term goals are and how they are going to achieve it.

Values - Each member in the team takes the responsibilities to create an environment and culture that enables exceptional outcomes.

the following are the core values at Cognizant:

- a. Start with a point of view: Apply my expertise to gain trust of our clients and lead them forward.
- b. Seek data, build knowledge: To use facts and rationality to guide my actions and decisions.
- c. Always strive, never settle: To act with agility and creativity and be determined to stay one step ahead.
- d. Work as one: To deliver solutions that draw upon the full power and scale of the company.
- e. Create conditions for everyone to thrive: Include, enable and invest in everyone around me.
- f. Do the right thing, the right way: To always make a choice that is ethical.

Objectives - The objectives of Cognizant are:

- a. The main objective is to focus on activities directed towards the specialization that is assigned and become a leader in this niche in the country.
- b. To expand the business in a way such that it is both challenging as well as manageable and serves the market with new innovations and adaptability.

1.3 Topics Covered and Performance Objective

During my Internship the following are the topics that were covered in my learning:

- a. Web Designing using HTML5, CSS3, Bootstrap, JavaScript and JQuery.
- b. Java Programming
- c. Unix and Shell Scripting
- d. Oracle PL/SQL
- e. Database using MySQL
- f. JSON and YAML
- g. Junit, Mockito and Code Quality
- h. Design principles and patterns
- i. Engineering Concepts
- j. Data Structures and Algorithms
- k. Spring Core, Maven

Performance Objectives during my internship:

- a. To explain the key concepts of Web Designing using HTML5, CSS3, Bootstrap, JavaScript and JQuery.
- b. To use HTML5, CSS3 and Bootstrap to create user interfaces.

- c. To interpret the functional requirements and develop simple level coding components
- d. To fix simple issues/defects in web UI layer with minimum support
- e. To develop a simple component or module using Java language, following a component design specification
- f. To interpret the entities and relationships and create simple tables in database
- g. To describe relationships between tables and write simple queries to retrieve data from the database
- h. To write simple Stored Procedures, Functions, Triggers and Packages for a given Low Level Design
- i. To use basic Unix Command and VI editor to write Shell Scripts
- j. To continuously build and deploy a simple application in a web server

1.4 About Domain, Program and Track

The domain that I got during my internship is that of a Full Stack Engineer (FSE) with Java Track. Full Stack Prep-up program engages the interns with a comprehensive pathway to learning and giving us millennials an opportunity to become a Full Stack Engineer. It also helps us to understand the corporate environment and to groom ourselves before onboarding as a full time employee into cognizant.

Cognizant emphasizes on Learner Autonomy where students are incharge of their own learning and all the required tools and resources are provided to them.

1.5 Program at a glance

This learning track has following 5 stages

- a. Stage 1
- b. Stage 2

c. 3 Full Stack Prep-up Modules

1.6 Learning Model

The FSE program is based on the Canonical model. In this model the importance of theory is followed by appropriate practice that aims for higher learning effectiveness. Learning is followed by hands-on and a great importance is given to increase understanding in foundational concepts.

The complete journey consists of adult learning principles like problem solving and applying such skills in real scenarios.

Stage 1 deals with Core Programming Fundamentals while stage 2, 3 & 4 deals with Deep Learnings & FSE modules (Products and Frameworks and Platforms).

1.7 Learning Platform

The learning path is set on the GEN C Learn Platform where you can login using SSO and online platforms for compiling and running code are also provided. This platform allows the intern to watch their progress and also learn about the schedule of assessments.

1.8. Ice breaker

Icebreaker session is conducted for a duration of 6 days

Week 1:

- Corporate induction.
- Talent Manager connects.
- Cognizant Agenda session on core values.
- Leaders Talk(Academy)
- Alumni
- BU Mentor connects

- Self-paced behavioral learning(consulting approach to problem solving, change management, creating a mindset for change, relationship management)

1.9 Key Learning Components of the Program

Cognizant is in collaboration with Udemy and provides online video lectures for self paced learning process in internship. The prep up program continuously evaluates if you are able to apply those skills that you learnt . Given below are the three key learning components.

Integrated Capability Test (ICT/Assess-Type-2): Solve an Integrated case study and showcase your ability in the learnt courses.

Code Challenges(Assess-Type-1): Solve the problem to measure the programming skills gained.

Hands-on/Quizzes: Solve Hands-on/Quizzes on the specific skills to showcase your understanding on the topic.

1.10 Program Completion Criteria

It is mandatory to complete all Coding Challenges and ICT with a benchmark of 70% in both stage 1 and stage 2. ICT will be held at the end of that milestone.

MFPE consists of project evaluation based on functionality and technicalities of the features. The benchmark for MFPE is 70%.

MFPE along with a final assessment on HackerRank and other aspects of learning will get us accredited to join Cognizant Digital Engineering (CDE).

Chapter 2

INTERNSHIP PROGRAM SEQUENCE

The given below are stages I have completed till now in my internship.

2.1 Stage 1 (Engineering Concepts, User Interface Designing, SQL Programming, Java Programming Fundamentals, Unix and Shell Scripting, Design)

In this stage I learned key concepts of Web Designing using HTML5, CSS3 and JavaScript. I also learned how to use HTML5 and CSS3 libraries to create user interfaces, explain the Java Programming constructs and apply different Java Programming aspects to solve problem statements. In this stage I also learned how to use SQL programming using MySQL. I got familiarized with the concept of writing simple stored procedures, functions, triggers and packages and fixing simple bugs and defects. I was also provided learning and handson content for basic Unix commands and VI editor to write Shell Scripts.

2.1.1 Stage 1: Milestone 1

Overall Duration - 9 days + 1 day (Behavioral Sessions)

This milestone focuses on base theories of Software Engineering that is Engineering Concepts. This forms the building fundamentals for the learning of software, it's significance as well as it's implementation.

- Software Engineering Concepts
- OOP
- OOAD
- Software Architecture Styles
- UI Markup, Styling

- RWD
- Mobile Pervasive Computing
- Security Principles
- Database and Storage
- Compute and Integrate
- Security and Identity
- Governance and Tooling
- Network and Content Delivery
- Integrated Case Study
- Hands-on
- Day 10: Summative Knowledge based assessment

2.1.2 Stage 1: Milestone 2

Overall Duration: 8 days + 1 day (Behavioral)

This milestone focuses more on User Interface design. Udemy learning courses are provided to understand the fundamental concepts and to apply them further to solve the handson and Case studies given on the Teckstac platform.

- Behavioral training
- HTML5 & CSS3
- JavaScript
- JQuery
- Assess Type 1: Code Challenge
- Bootstrap
- Hands-on

2.1.3 Stage 1: Milestone 3

Overall Duration (Including Behavioral sessions): 5 days

This milestone focuses more on SQL Programming. Udeemy courses on PL/SQL and SQL for beginners are provided which are to be completed for learning and then a separate module for SQL Programming is provided where you have to solve mandatory as well as additional handson.

- DDL Commands
- DML Commands
- Hands-on
- Behavioral Training
- Relational Database Design
- ANSI SQL
- PL/SQL Basics
- Processing Data via PL/SQL
- Blocks
- Exceptions
- Working with Records
- Cursors
- Collections
- Triggers

2.1.4 Stage 1: Milestone 4

Overall Duration: 2 days

This Milestone was concentrated on studying concepts of shell scripting. Udemy courses on Shell scripting and Bash scripting were provided. For more enhanced learning a separate module with hands-on was provided for Bash Scripting and Shell Scripting.

- Bash Scripting and Shell Programming
- Linux Basics
- Bash
- PowerShell vs Bash
- vi Editor
- Kill a Process
- Assess Type 1: Code Challenge of ANSI SQL

2.1.5 Stage 1: Milestone 5

Overall Duration: 10 days

This Milestone is based upon developing Java Programming along with behavioral skills. Udemy courses like Java in depth, Core Java made easy and Java with JDBC.

This Milestone concentrates both on Core Java Concepts as well as Advanced Java concepts.

It also introduces us to concepts of JSON and YAML.

- Behavioral training
- Core Java
 - Overview
 - Variables
 - Datatypes

- Literals
- Operators
- Expressions
- Conditional Statements
- String
- Arrays
- Looping Statements
- Methods
- Class
- Object
- Static
- Access Modifiers
- Packages
- Inheritance
- Abstraction
- Polymorphism
- Encapsulation
- Inheritance
- Object Methods
- Collection Framework
- ArrayList
- Map
- Set
- File Handling
- Annotations

- Threads and Garbage Collections
- Exception Handling
- Enums
- Java 8 features

- JDBC
 - Introduction
 - Connection
 - Statement
 - Prepared Statement
 - Callable Statement
 - Transactions
 - Meta Data

- JSON

- YAML

2.1.6 Stage 1: Milestone 6

Overall Duration: 3 days

This Milestone concentrates on learning Design patterns and principles that help the developers to make a good system design and provide solutions to common problems that occur during software designing.

- Behavioral training (3 hrs)
- SOLID principles
- Need and benefits of Design patterns

- Creational and structural design patterns
- Structural and Behavioral design patterns

2.1.7 Stage 1: Milestone 7

Overall Duration: 5 days

This Milestone concentrates on learning of the topic Data Structures and Algorithm. In case of this milestone Udemy courses are provided but the hands-on are provided on hackerrank platform.

- Array
- Stack
- Queue
- Linked list
- Matrix
- Assess Type-1: Code Challenge Java
- Trees
- Graphs
- Behavioral training
- Searching
- Sorting
- Pattern Searching
- Divide and Conquer
- Hackerrank assessment-practice
- Hackerrank assessment-final

2.1.8 Stage 1: ICT Prep up and ICT

Overall Duration: 1 day

ICT or Integrated Capability Test is the test that occurs at the end of each stage to check an overall understanding of all the concepts taught in that stage. This holds a lot of points and only 2 attempts are provided in this case.

This Milestone Alone carried 100 points.

- Assess-Type-2 Preparation
 - Mock Assess-Type-2
- Assess-Type-2: Integrated Capability Test (ICT)
 - Java
 - JDBC
 - MySQL

2.2 Stage 2: Spring Core and Maven

This Stage combined concepts of Advanced Java to produce a simple web server using Spring Boot. This stage introduces the intern step by step into the world of Spring, Maven and testing of products.

It has Total 3 Modules and 1 ICT along with 1 Code Challenge

- Spring Core, Maven
- Testing using Junit
- Spring MVC
- Assess-Type-1: Code Challenge
- ICT 2

2.2.1 Stage 2: Milestone 1

Overall Duration: 3 days

This Milestone is about learning Spring Core and Maven.

- Maven
 - Needs and benefits
 - Maven Project Creation
 - POM.xml
 - Build lifecycle
 - Repositories
 - Scopes
 - Profiles
 -
- Core Spring
 - Setter Based Injection
 - Injecting collections
 - Dependency check
 - Inner Beans
 - Scope
 - Constructor based injection
 - Spring Core Concepts
 - Autowiring
 - Usage of properties
 - Stereotype Annotations

- Injecting interfaces
- Aspect Oriented Programming
- Spring AOP
- Spring JDBC

- Agile Basics
 - The key concepts and tools of Agile Development
 - Agile Project Delivery
 - Agile Project Management

2.2.2 Stage 2: Milestone 2

Overall Duration: 3 days

This Milestone is basically for interns to understand concepts of software testing. The main learning here is on how to use JUnit.

- JUnit
 - Writing basic tests
 - Assert Statements
 - Testing Exceptions
 - Comparing Arrays
 - Parameterized Tests
 - Test Suites

- Mockito

- Code Quality

- Test Driven Development

- Automated test
- test code

2.2.3 Stage 2: Milestone 3

Overall Duration: 4 days

This Milestone focuses on learning Spring MVC using Spring Boot. This milestone is very important because in this module we learn how to make simple web apps using eclipse jee, mysql, postman and tomcat.

- Servlets and JSP
 - Overview
 - Understanding Servlets
 - Web Application Request Flow
- Spring MVC using Spring Boot
 - Spring initializer
 - @SpringBootApplication
 - SpringApplication.run()
 - Controller
 - @RequestMapping
 - @ResponseBody
 - JSTL tags
 - Spring MVC form tag library
 - Validations
 - initBinder
- Spring Boot Web Application
 - View Resolver

- @RequestParam
- ModelMap
- Dispatcher Servlet
- Spring MVC Web request flow
- Web Application Architecture
- Session Scope
- Request Scope
- @SessionAttributes
- Quiz 1- Spring MVC and Spring Boot
- Assess-Type-1: Code Challenge

Chapter 3

SOFTWARE REQUIREMENT SPECIFICATION (SRS)

During the internship many software were required for learning and practicing concepts. Although most of the practicing and hands-on could be done on the teckstac platform, the following software was also required to make the understanding complete.

3.1 ECLIPSE IDE

Eclipse is one of the most popular and used Java tools by Java developers. In case of eclipse, foundation allows development by providing infrastructure and also a structured process to enable development.

It's foundation has built its own open source community as well as an ecosystem with products and services since 2001.

Eclipse IDE (Integrated development environment) for Java is a leading development environment and has a market share of approximately 65%, which can be also extended with additional software components (these software components are called plugins which are grouped into features).

Many of the companies have extended this IDE on top of eclipse framework and it is also to be noted that eclipse IDE is also available for other languages as well.

This IDE for Java is designed in such a way that it not only enables the developer to perform java development but also make Maven project and perform actions like Git version controlling

Basic concepts used here are:

- Workspace

This is located at the physical location of the file path where we can store certain data like meta data, projects, source files, images, and other artifacts.

- Views and editors

These are used to navigate and change content in eclipse. A View is used when the

developers work on a set of data which are hierarchical in structure. When the data is changed by using view, the underlying data is changed directly.

- Eclipse project

It is an open source data with configurations and binary files that are related to perform a certain task. These files are grouped into buildable and reusable units. These projects can also have natures assigned to them which describe the purpose of the project.

3.2 WAMP

You can use other platforms like brackets to run UI made using HTML5, CSS3 and Bootstrap. Wamp Server is a solution stack for Windows OS created by Romain Bourdon.

It consists of Apache web server, OpenSSL, MySQL database and PHP programming language.

You can also find equivalent for WAMP like:

- LAMP (for Linux operating system)
- MAMP (for macOS operating system)
- WIMP (Apache replaced with IIS)
- SAMP (for Solaris operating system)
- WISA (uses IIS, Microsoft SQL Server, ASP.NET)
- XAMPP

WAMP stands for “Windows, Apache, MySQL, and PHP”. It is used for internal testing, web development and to also serve live websites.

Apache is a HTTP Server which is used to run web servers within Windows to test web pages in a web browser without publishing them live on the internet. WAMP also includes MySQL and PHP which are the most common technologies used by developers for creating dynamic websites.

MySQL is a high speed database and PHP is a scripting language used to access information from the database. WAMP gives a comfortable environment where all these technologies are

connected and also are not required to be installed individually.

WAMP is like a virtual server on your computer which allows you to test features of WordPress without connecting to the internet and only making changes inside your local machine.

3.3 MySQL

It is an open source RDBMS (Relational Database Management System). My in MySQL stands for the name of co-founder Michael Widenius's daughter and SQL stands for Structured Query Language.

In my case I used the community version of MySQL. I used not only the shell but also SQL workbench. MySQL during the course of my internship was used separately as well as used along with Eclipse IDE and Eclipse JEE with the help of a JDBC Driver.

Relational database is used to organize data into multiple data tables in order such that the relationship between them can be established. In such cases MySQL comes in very handy as it creates, modifies, and extracts data from these relational databases or data tables.

MySQL also controls user access to the database and allows creation of backups as well. MySQL is under the terms of GNU General Public licenses and was owned and sponsored before by a Swedish company named MySQLAB which was bought by Sun Microsystems (Oracle Corporation).

MySQL also has stand-alone clients and they allow the users to interact directly with a MySQL database. It is most often used along with other programs to implement applications with relational database capability.

MySQL is available under two editions: open source community server and the proprietary enterprise server.

3.4 ECLIPSE IDE for Java EE Developers

It is a special eclipse platform for creating web applications. It's package consists of tools for java development, including a java IDE, along with tools for Java EE, JPA, JSF, Mylyn, EGit and others.

This package includes the following

- Data Tools Platform
- Mylyn Task List
- Eclipse Git Team Provider
- Eclipse Java EE Developer Tools
- Eclipse Java Development Tools
- Eclipse Plug-in Development Environment
- Remote System Explorer
- Eclipse XML Editors and Tools
- Javascript Development Tools
- Maven Integration for Eclipse

3.5 Apache Tomcat

Apache Tomcat, also called Tomcat is a free open source implementation of the Java Servlet, Java Expression Language, websocket technologies and javaserver pages.

It was Developed by Apache Software foundation and released in 1999. Tomcat has components like Catalina (a servlet container), Coyote (an HTTP connector) and Jasper(JSP engine).

3.5.1 Catalina

It is a servlet container which implements Sun Microsystem's specifications for JavaServer pages and servlets. The Tomcat element represents a database of usernames, passwords and roles assigned to users.

3.5.2 Coyote

It is a Connector component in Tomcat that supports HTTP 1.1 protocol as a web server and allows Catalina or any other java servlet container to also act as a plain webserver and serve

local files as HTTP documents. Coyote listens for any incoming connections to the server using any specific port. It listens and then forwards those requests to Tomcat Engine where the request is processed and sent back as a response to the client.

3.5.3 Jasper

Jasper is a Tomcat JSP Engine which does the function of processing client requests and sending appropriate responses.

Important features include:

- JSP Tag library pooling allows each tag markup in a jsp file to be handled by a tag handler class whose objects can be pooled and reused in the jsp server.
- When we recompile modified jsp java codes, the older versions are not deleted and still remain but jasper does this function of deleting older versions.
- Jasper also recompiles jsp when it is included in page changes.
- Newer versions of jasper can use JDT (Java Development tools) instead of javac (Java Compiler).

3.6 Postman

It is a scalable API testing tool started in 2012 that integrates into CI/CD pipeline. It was started by Abhinav Asthana to simplify API (Application Programming Interface) workflow in testing and development.

You can use this to perform HTTP requests like GET , POST, DELETE, and many more by providing an API Link and communicate with each other using API calls.

The main reason why Postman is so popular is because it is accessible, uses collections, can collaborate (like with Android studio and Eclipse EE) , has multiple environment aids, has testing checkpoints and many more.

Postman also allows automated testing with the help of Collection Runner or Newman. It can also perform debugging by checking what data has been retrieved.

Chapter 4

Performance Analysis

4.1 Overall Performance



Figure 1: Points gained and ranking

My Performance

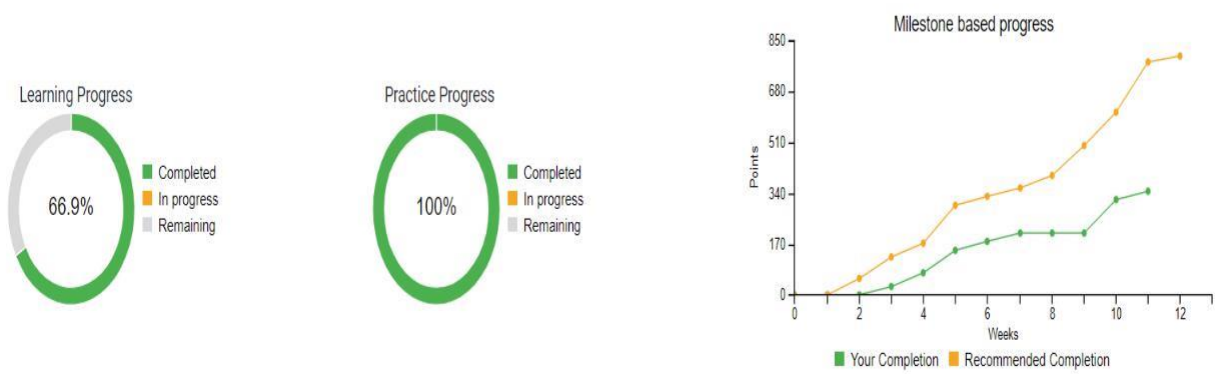


Figure 2: Performance progress

Type	XP
Assess Type 1 - Assess-Type-1: Code Challenge - Function-Scalar & Aggregate	13.00
Assess Type 1 - Assess-Type-1: Code Challenge - Functions & SubQueries	13.00
Assess Type 1 - Assess-Type-1: Code Challenge - Group 1	21.00
Assess Type 1 - Assess-Type-1: Code Challenge - HTML5 and CSS3	22.00
Assess Type 1 - Assess-Type-1: Code Challenge - RDBMS Select Statements	13.00
Assess Type 1 - Assess-Type-1: Code Challenge - Spring MVC with Spring Boot	40.00
Assess Type 1 - Assess-Type-1: Code Challenge - Summative KBA	55.00
Assess Type 2 - Java Assess-Type-2: Integrated Capability Test (ICT)	100.00
Coding Activity	347.00
Total	624

Figure 3: Assessment Scores

My Learning Path

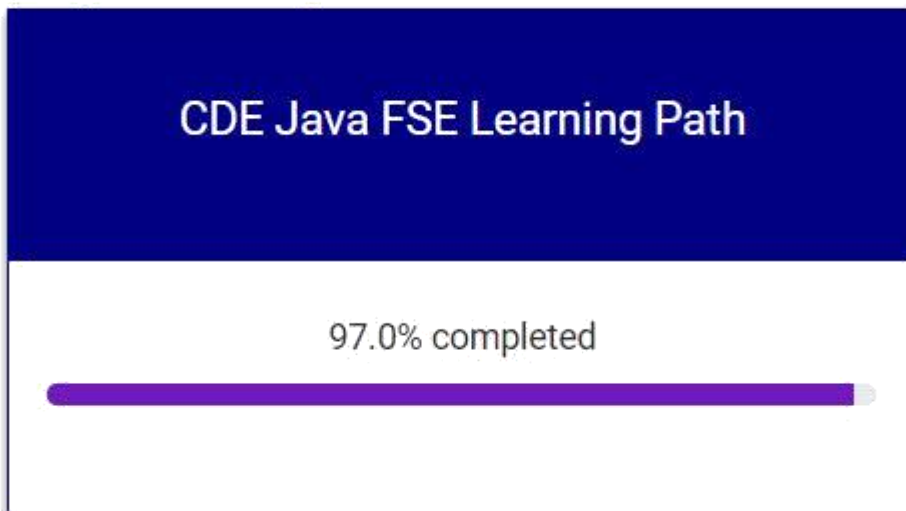


Figure 4: Percentage of path completed

4.2 Performance in ICT 1

Skill Analysis

Topic name	Status	Evaluation Comments
DB Handling	Demonstrated Successfully	You have a good understanding in DB Handling
Validation for Consumer Number	Demonstrated Successfully	You have a good understanding in Validation for Consumer Number
Calculating Bill Amount	Demonstrated Successfully	You have a good understanding in Calculating Bill Amount
Adding records into collection	Demonstrated Successfully	You have a good understanding in Adding records into collection
Comments and best practices/standards	Not Demonstrated	You need to focus more on Comments and best practices/standards

Figure 5: ICT Result

Chapter 5

Conclusion

3.1 Conclusion

First of all I would like to thank Mr. Pankaj Kumar and Dr. Nafis U. Khan Sir for always being present for us throughout the placement process and for providing us with opportunities to get placed. I would also like to thank the staff of my college (Jaypee University of Information Technology) for helping me throughout the whole journey even in this pandemic situation.

My Internship is to end on 12 th July and the project will be assigned in June. I am currently in the learning process of my internship and I got to learn a lot of new concepts like Advanced Java, JDBC, Spring, Maven and many more. I completed my hands-on and learnings successfully on time. I passed most of the coding challenges I was given and also successfully completed ICT during my internship.

I would like to thank my trainer Mr. Rahul Padhke, my coach Ms. Jennifer Nancy for guiding me through this internship and clearing all my doubts.

References

- [1] Cognizant Hand book FSE Java path
- [2] Internship experience
- [3] https://en.wikipedia.org/wiki/Apache_Tomcat
- [4] [https://en.wikipedia.org/wiki/Eclipse_\(software\)](https://en.wikipedia.org/wiki/Eclipse_(software))
- [5] <https://en.wikipedia.org/wiki/WampServer>
- [6] <https://en.wikipedia.org/wiki/MySQL>
- [7] <https://www.geeksforgeeks.org/introduction-postman-api-development/>
- [8] <https://techterms.com/definition/wamp>
- [9] https://en.wikipedia.org/wiki/Spring_Framework
- [10] <https://en.wikipedia.org/wiki/JUnit>