

INTERNSHIP PROGRESS REPORT

Submitted in the partial fulfilment for the award of the degree of

BACHELOR OF ENGINEERING

IN

INTERNET OF THINGS

Submitted by:

Rishabh Anand

19BCS4525

AT

HIGHRADIUS



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

APEX INSTITUTE OF TECHNOLOGY

CHANDIGARH UNIVERSITY, GHARUAN,

MOHALI - 140413, PUNJAB

MARCH 2022

MONTHLY INTERNSHIP REPORT

The purpose of the Internship Progress Report is to evaluate the actual progress of the internship. It is one way to update university on your activities and progress during the internship period.

The very **first page of the report** needs to carry the following information:

A. Internship Contact Information

Student Name	Rishabh Anand
Student UID	19BCS4525
Student Email (@cuchd.in)	cse.19BCS4525@gmail.com
Student Contact No.	9123415629
Internship Organization Name	High Radius Corporation
Organization Address	High Radius Corporation Westlake 4 building 200 Westlake park Blvd. 8 th floor Houston, TX 77079
Internship Supervisor	Kajal Kumari and Kuldeep Singh
Internship Supervisor Phone	
Internship Supervisor Email	
Report period (start date)	23-03-2022
Report period (end date)	23-04-2022

B. Distribution of hours:

Orientation - **7-8hrs/week**

Observing – **0.5hr/day**

Meetings (e.g. staffing, working with the team, etc) - **6hrs/day**

Lectures, Seminars, Conferences - **10hrs/day**

Assessment - **4hrs/day**

Planning (activity analysis, goals and objectives, etc) **4-5hrs/day**

Studying/Researching - **6hrs/day**

C. Implementation (in *hours* which so ever is applicable. Otherwise mention Not Applicable):

a. Leadership **3hrs/week**

b. Counselling **NA**

c. Supervision **1hr/day**

d. Evaluation **1hr/week**

e. Documentation **NA**

f. Discharge/Transition Plans **NA**

g. Other (Please specify) **NA**

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INTRODUCTION

The internship was commenced on 27th January 2022 and because of the pandemic situation the internship was taken virtually via Zoom platform. Talking about the company HighRadius Corporation, it was established in 2006 by Sashi Narahari and the location is Houston.

HighRadius is a Fintech enterprise Software-as-a-Service (SaaS) company that leverages Artificial Intelligence-based Autonomous Systems to help 600+ industry-leading companies automate their Accounts Receivable and Treasury processes.

It uses Data-driven AI software platform to lower DSO, optimize working capital, fast-track financial close and improve productivity.

The Leading partners of HighRadius Corporation are Sony, herseys, Uber, Warner Brothers, Hindustan Unilever, Jhonson&Jhonson, dell and many more.

Some achievements of HRC are: -

1. HighRadius is Named to 2021 CB Insights Fintech 250 List of Top Fintech Startups for the Second Consecutive Year.
2. HighRadius Named to 2021 Forbes Cloud 100 List for the Second Straight Year.
3. HighRadius Raises \$300M Series C at \$3.1 Billion Valuation to Accelerate Growth in Order-to-Cash and Treasury Markets.
4. HighRadius Named an IDC Market Scape Leader For Accounts Receivable Automation Software for Large and Midsized Businesses Second Time in a Row.

HighRadius goes with the values that efficiency and productivity enhancements are central to the value HighRadius provides to our customers. Regardless of what ERP, Accounts Receivable or Treasury Management system you are using, our products automate manually-intensive tasks, streamline communication, and allow standardization of processes to drive best practices into your receivables and treasury processes.

We empower our customers to be able to work more accurately and efficiently, forecast and manage cash, get paid faster, and improve key metrics like Days Sales Outstanding (DSO) and improve working capital availability.

And it goes with a slogan “Go Gritty or Go home”.

ACCOMPLISHMENTS AND WORK DONE

The tenure of the internship is of 11 weeks wherein I have to build an AI Enabled Fintech B2B Invoice Management Application.

BRIEF ABOUT THE PROJECT

The B2B world operates differently from the B2C or C2C world. Businesses work with other businesses on credit. When a buyer business orders goods from the seller business, the seller business issues an invoice for the same. This invoice for the goods contains various information like the details of the goods purchased and when it should be paid. This is known in accounting terminology as “Accounts Receivable”.

Seller business interacts with various businesses and sells goods to all of them at various times. Hence, the seller business needs to keep track of the total amount it owes from all the buyers. This involves keeping track of all invoices from all the buyers. Each invoice will have various important fields like a payment due date, invoice date, invoice amount, baseline date etc.

The buyer business needs to clear its amount due before the due date. However, in real-world scenarios, the invoices are not always cleared i.e. paid in full amount by the due date. The date on which a customer clears the payment for an invoice is called the payment date.

TASKS GIVEN

The objective of the Web Application Development internship project is:

- To build a Full-stack Invoice Management Application using ReactJs, JDBC, Java, Servlets.
- Build a responsive Receivables Dashboard.
- Visualize Data in the form of grids.
- Visualize Data in the form of graphs.
- Perform Searching operations on the invoices.
- Add & Edit data in the editable fields of the grid.
- Delete data of selected rows in predefined templates.

1. JAVA DATABASE CONNECTIVITY

JDBC stands for Java Database Connectivity. JDBC is a Java API to connect and execute the query with the database. It is a part of JavaSE (Java Standard Edition). JDBC API uses JDBC drivers to connect with the database. There are four types of JDBC drivers:

- JDBC-ODBC Bridge Driver,
- Native Driver,
- Network Protocol Driver, and
- Thin Driver

The **java.sql** package contains classes and interfaces for JDBC API. A list of popular *interfaces* of JDBC API are given below:

- Driver interface
- Connection interface
- Statement interface
- PreparedStatement interface
- CallableStatement interface
- ResultSet interface
- ResultSetMetaData interface
- DatabaseMetaData interface
- RowSet interface

A list of popular *classes* of JDBC API are given below:

- DriverManager class
- Blob class
- Clob class
- Types class

2. Why Should we use JDBC?

Before JDBC, ODBC API was the database API to connect and execute the query with the database. But ODBC API uses ODBC driver which is written in C language (i.e. platform dependent and unsecured). That is why Java has defined its own API (JDBC API) that uses JDBC drivers (written in Java language).

We can use JDBC API to handle database using Java program and can perform the following activities:

1. Connect to the database
2. Execute queries and update statements to the database

3. JDBC DRIVER

JDBC Driver is a software component that enables java application to interact with the database. There are 4 types of JDBC drivers:

1. JDBC-ODBC bridge driver
2. Native-API driver (partially java driver)
3. Network Protocol driver (fully java driver)
4. Thin driver (fully java driver)

Advantages:

- easy to use.
- can be easily connected to any database.

Disadvantages:

- Performance degraded because JDBC method call is converted into the ODBC function calls.
- The ODBC driver needs to be installed on the client machine.

5. SERVLETS

Servlet can be described in many ways, depending on the context.

- Servlet is a technology which is used to create a web application.
- Servlet is an API that provides many interfaces and classes including documentation.
- Servlet is an interface that must be implemented for creating any Servlet.
- Servlet is a class that extends the capabilities of the servers and responds to the incoming requests. It can respond to any requests.
- Servlet is a web component that is deployed on the server to create a dynamic web page.

- **Servlet** technology is used to create a web application (resides at server side and generates a dynamic web page).
- **Servlet** technology is robust and scalable because of java language. Before Servlet, CGI (Common Gateway Interface) scripting language was common as a server-side programming language. However, there were many disadvantages to this technology. We have discussed these disadvantages below.
- There are many interfaces and classes in the Servlet API such as Servlet, GenericServlet, HttpServlet, ServletRequest, ServletResponse, etc.

- **Java Servlet API** – It is essentially an API (Application Programming Interface) and one of the main approaches in developing a Java web application. It gives developers control over their ideas in creating Java web applications. However, it does not have its application to run as HTML, so it runs on the server-side. The primary use of it is to expand the capabilities of a server. Many applications are created using this technology.

- **JSP (JavaServer Pages):** This technology is used by developers to create content fast and hassle-free, and platform-independent. This serves the same purpose as CGI (Common Gateway Interface). It is widely used to create dynamic server-side content with access to the whole group of Java APIs.

- **JavaServer Faces Technology:** It is created to be used by developers for creating server-side user interfaces. The establishment of JavaServer API was done to gather all the tools in one and make application development easier. The primary goal of this API is to be flexible and easily leverage the standard UI and web-tier concepts. This was also formed so developers don't get restricted by any markup language or client device.

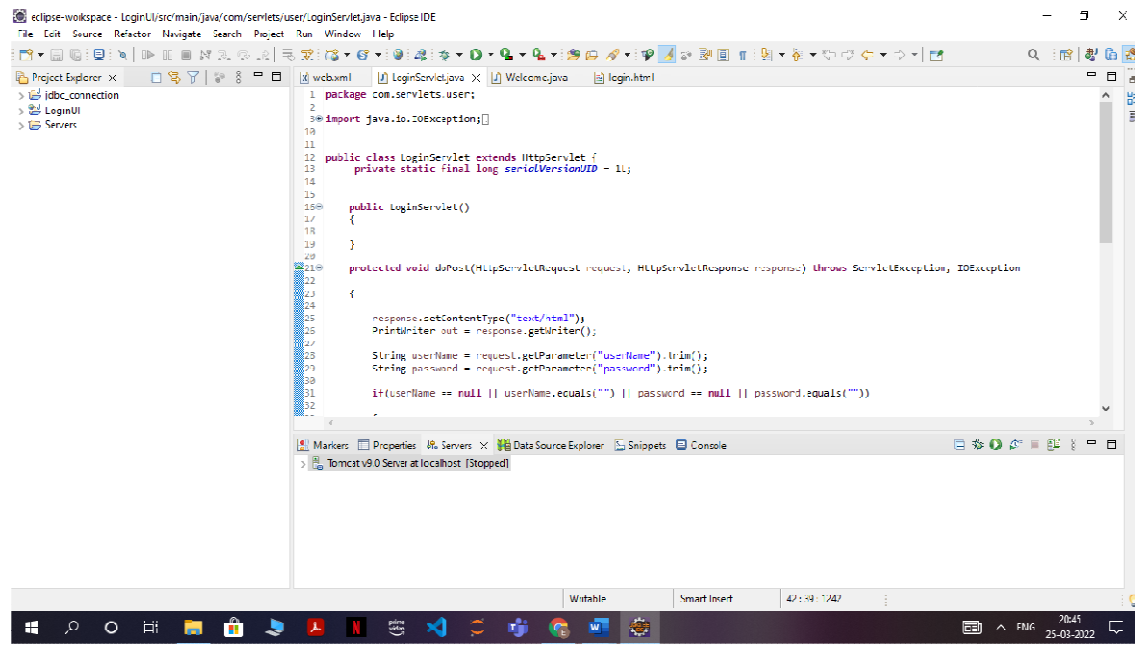
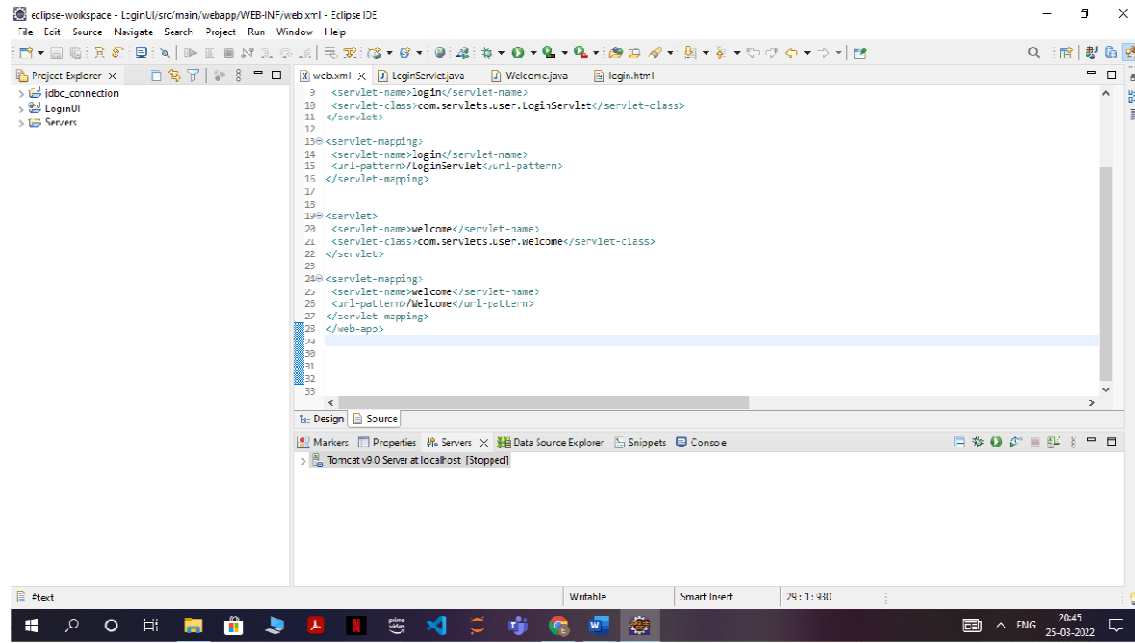
- **Java Message Service API:** Java Message Service API is a programming interface created so that application units established on the Java Platform Enterprise Edition can send, create, receive and read messages. In other terms, it is a messaging medium for software systems.
 - - **Java Persistence API:** It is a medium for the application to continue and retrieve information from a stable storage system. Company applications must access the necessary database. These are a set of specifications that tell you which of the Java applications should be persisted and which one should not.

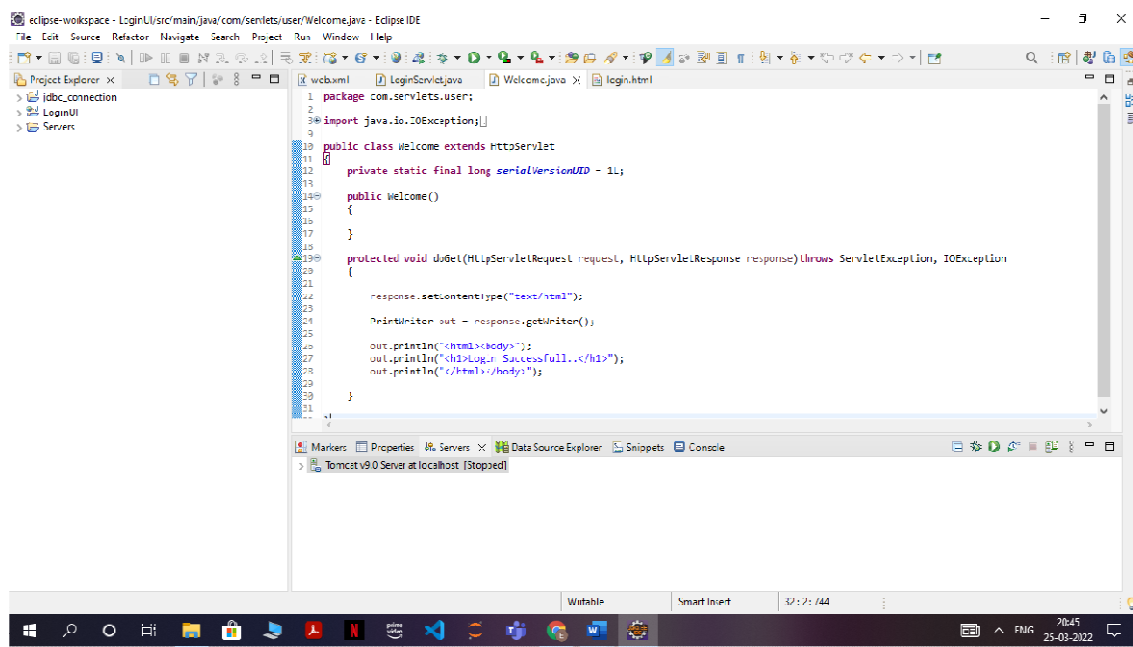
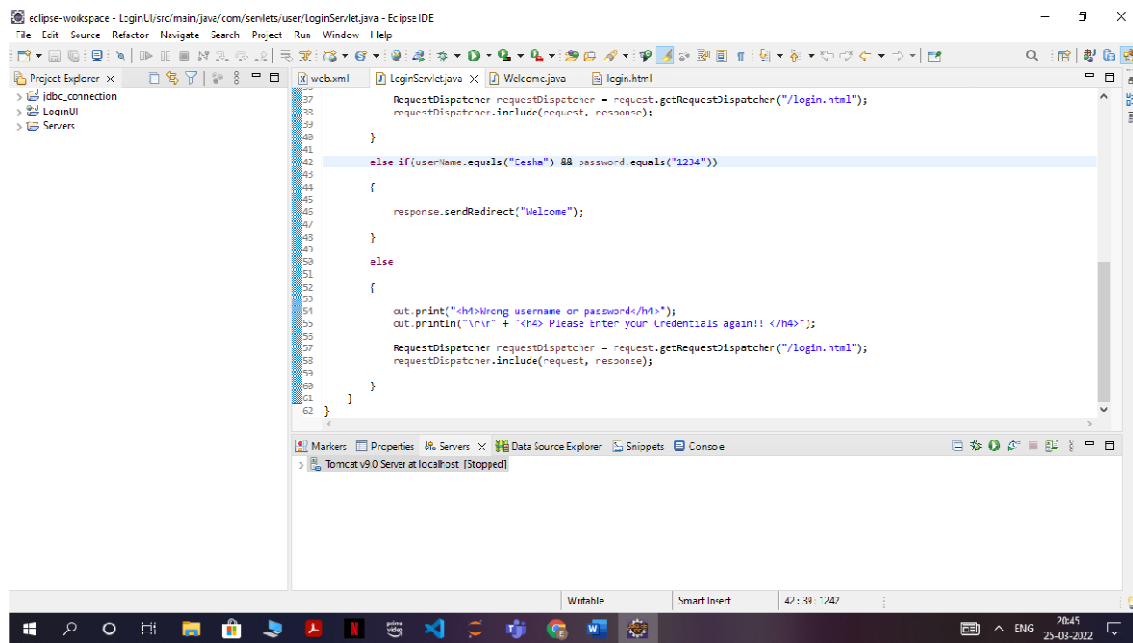
- **XML Processing by Java API:** It is an application interface that can access, examine and analyze XML documents. Later, the documents can also be modified.
- **JavaServer Pages Standard Tag Library:** A tag library is necessary to provide the basic functionalities and actions behind every page. It encloses as simple tags the core purpose common to various applications.

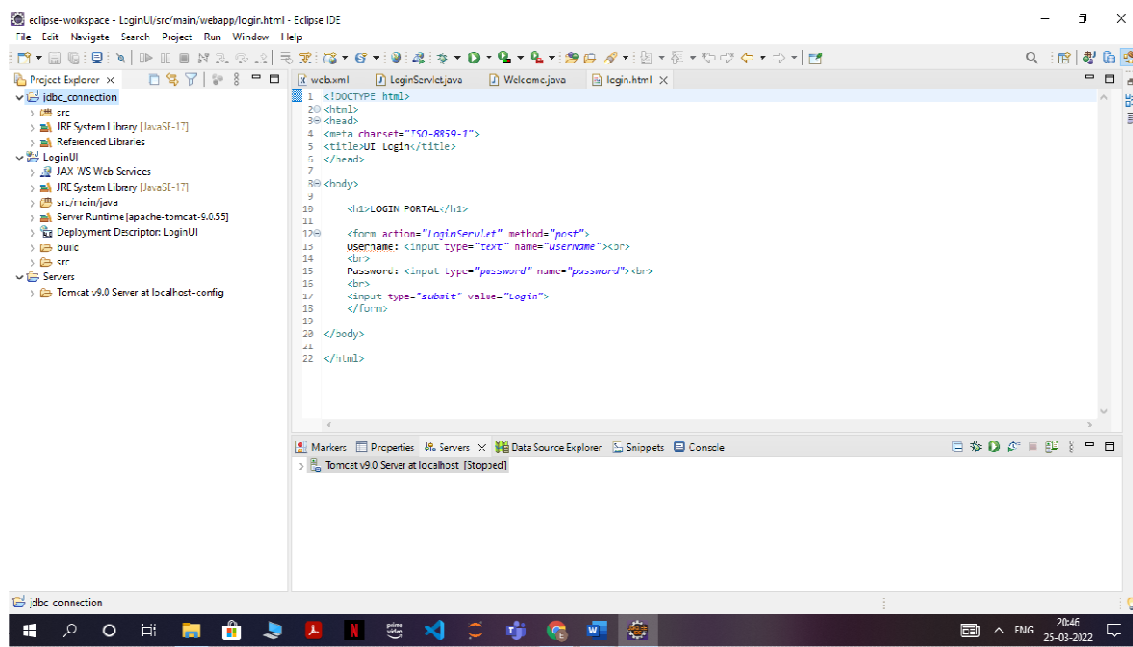
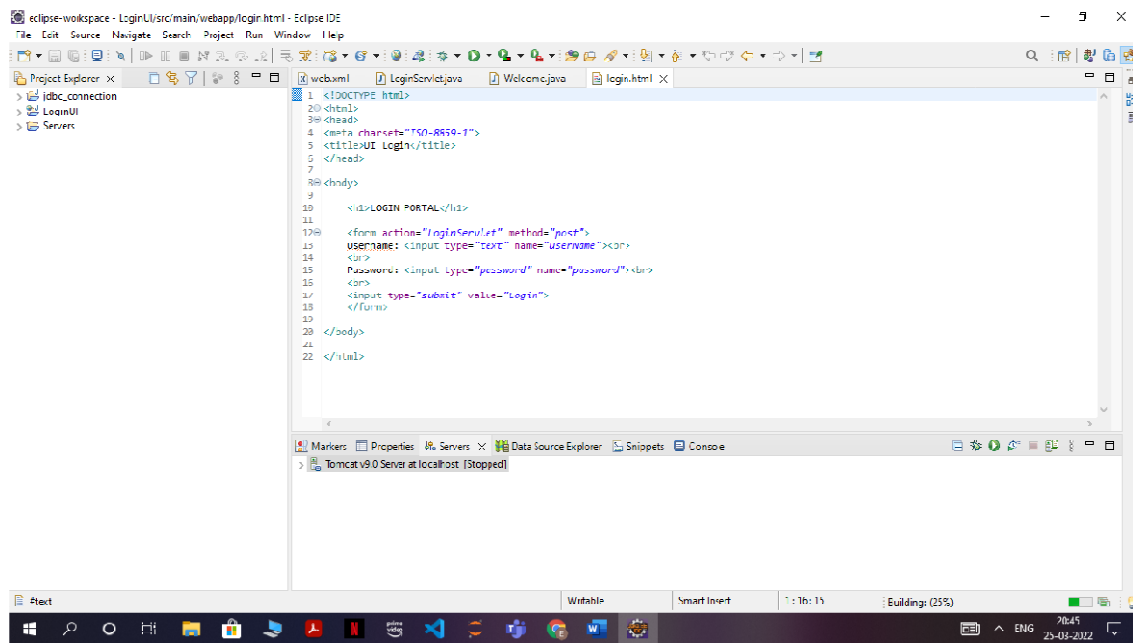
Classification of JavaServer Pages Standard Tag Library Tags:

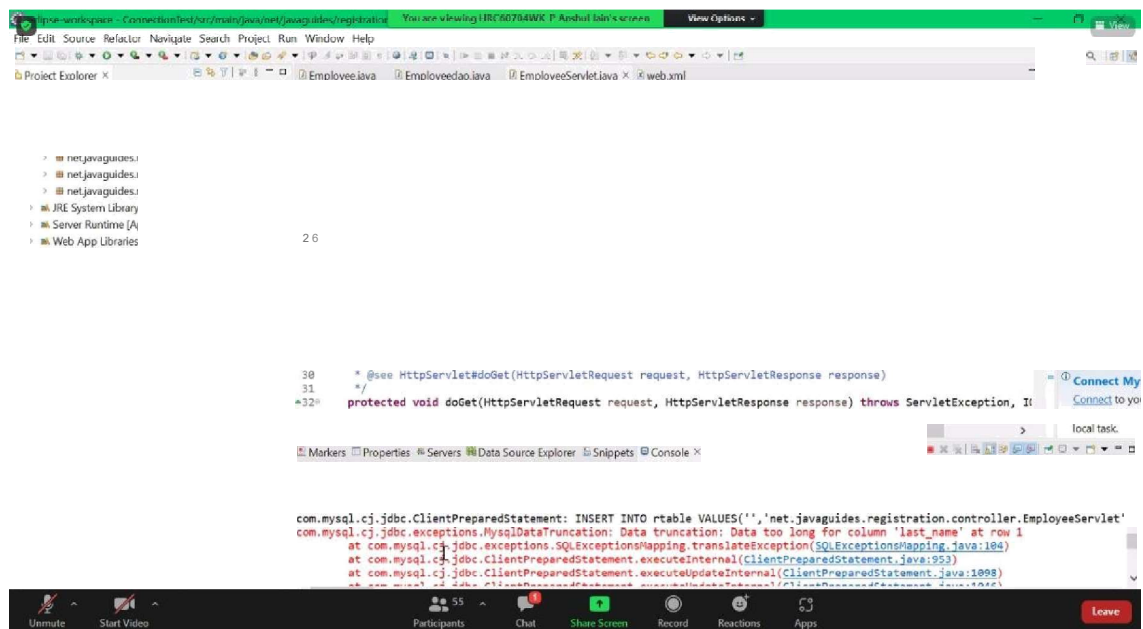
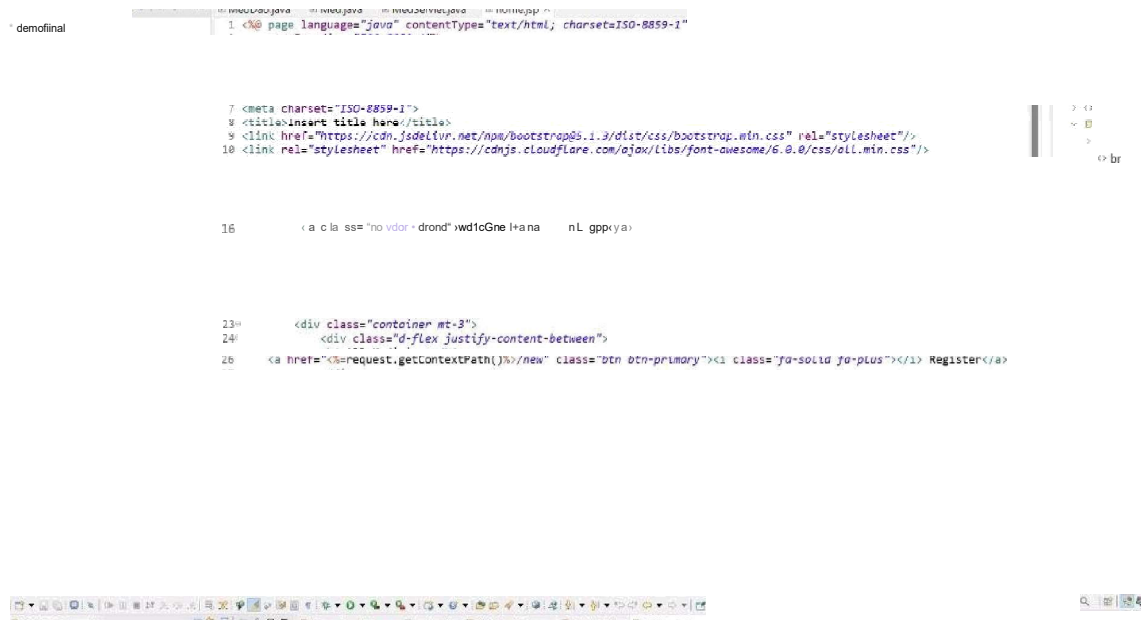
- Core tags
 - Formatting tags
 - SQL tags
 - XML tags
 - JSTL functions
-
- **Java Naming and directory interface:** It is a Java API for the directory service that allows people to look and search through the database with a name. This interface can be used for binding objects, looking up or querying objects, and detecting changes on the same objects.
 - **JavaMail API and the JavaBeans Activation Framework:** It is a must to have JavaMail API and Java Activation Framework installed in your machine to send an email using the Java application.

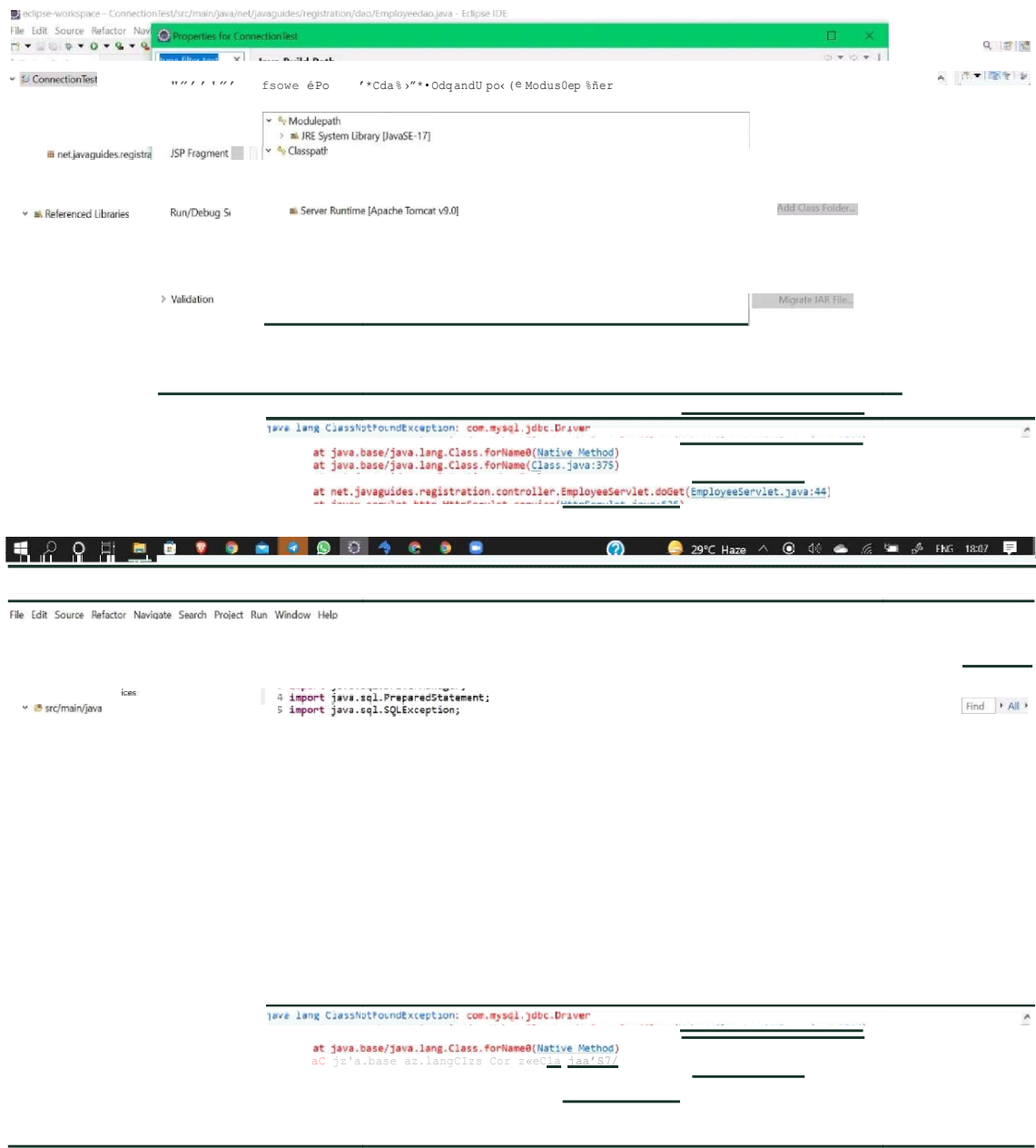
SNAPSHOTS OF WORK DONE

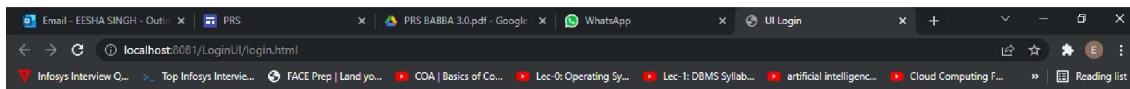






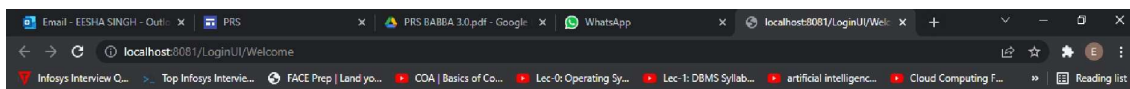






LOGIN PORTAL

Username:



Login Successfull..



SKILLS LEARNED DURING INTERNSHIP

Some skills that I learned during this internship is first how to implement the subject we are taught in colleges to the real-life problems.

I have learned how to make a real time application using web development and ReactJs.

Basically, they taught me brainstorming and how to approach a real-life problem and to implement the things that we already know in that problem. In conclusion, I have learned how to use my theory knowledge in practical life.

MOST DIFFICULT SITUATION ENCOUNTERED

The most difficult situation that I encountered during my internship is that I am not good at java programming and in the project that I have to do has a lot of parts that involves the uses of java. So, at that time I faced some difficulties to learn java and then implement it onto the project.

Then I also faced some difficulties while implementing ReactJs. But eventually with the help of moderators I was able to overcome it.

PLANS AND ESTIMATE TIME REQUIRED FOR THIS: -

★ Short roadmap further required for this project: -

- ✓ Learn SQL concepts and DB basics.
- ✓ JAVA basic JDBC work and Servlet.
- ✓ HTML & CSS work for creating login screen.
- ✓ Creating Dialog Box and Grid UI.
- ✓ Loading data into Grid and implement search functionality.
- ✓ Performing Grid Analytics work.
- ✓ Finally, Web app project.

IT will nearly take 2 months from now.

★ Brief on roadmap: -

- ✓ **Learn SQL concepts and DB basics:** -SQL is used everywhere, as long as there is a database account to manage. If you are considering a career in data science or analytics, then you should learn SQL. Several big tech companies such as Airbnb, Facebook, Amazon, Netflix, Twitter, Google, and lots more use SQL to query data and carry out an analysis.
- ✓ **JAVA basic JDBC work and Servlet:** -Servlets in Java check the communication interface, requirements of client and server, the protocol used, programming language, and the software involved. As a technology, the servlet is used to create web pages; as an API, which provides interfaces, etc. It is used to extend the capabilities of the server which hosts applications on a request-response programming model. Servlets provide component-based and a platform-independent method to build web-based applications without any performance limitations. Servlets in Java have entire access over Java API's and JDBC to access the enterprise database.

- ✓ **HTML & CSS work for creating login screen:** -There's no denying the fact that HTML and CSS both act as a foundation for the app development. Some even refer to them as building blocks in learning about building an application. Mobile app developers are someone who can be referred to technical professionals who can design, develop and maintain mobile as well as web applications
- ✓ **Creating Dialog Box and Grid UI & Loading data into Grid and implement search functionality.**

Balance is one of the most important principle of design, the beauty of the grid system helps keep the design consistent and even. It works both the ways — symmetrical layout and asymmetrical layout. It makes it easier to judge as in which part of your design is overpowering the other. In the world, where we're always wanting to get things done easier and quicker, grids can help greatly to speed up and improve your design layouts. The grid lines act here as a guide to place your elements, position and at the same time scale them, instead of randomly placing your elements, consuming more of our time.

- ✓ **Performing Grid Analytics work:** -Grid Analytics from GE Digital is designed to forecast system inertia, predict the impact of weather events, and reduce operations and maintenance outages. Learn more about the future of the grid and the technologies that will take utilities from a reactive mode, to a proactive system where they can anticipate trouble before it occurs.
- ✓ **Finally, Web app project.**

CONCLUSION: -

Java is one of those programming languages used to develop dynamic web applications. It is not unknown that it holds more than 14% of the market as most of the renowned companies use Java web development services for themselves. It is not the only programming language but one of the most preferred ones. Java is considered one of the best programming languages for web development.

As it is one of the well-established and popular programming languages, its resources are readily available.

One of the unique features of this Java is that its codes can run on any operating system, be it Microsoft Windows or macOS. It is designed to be object-oriented and is a cross-platform programming language. Hire java developers and they will tell you that building a website using this language is the best decision. Java codes work on any device, mobile phone, tablet, or laptop, without causing issues.

It is also highly chosen as no extra work is needed to make it available for different devices. You can create the codes once and then copy and paste them everywhere else.

Java web development services offer an extensive standard library, helping the web developers with minor and major tasks such as input, output, networking, graphic user interfaces, etc.

Best memory management: One of the imperative parts of Java programming is its memory management. It provides this feature with the help of the garbage collector.

- Usage of this feature by the programmers eliminates unnecessary monitoring. When objects in the program are no longer being used, they are automatically deleted from the memory.
- The entire process goes on faster as there is no need to keep track of details inserted in the application

Cross-platform support: This is best for people who want to develop applications for multiple operating systems, such as Microsoft Windows and Linux. It works perfectly on any of them.

- There is no extra work of transferring your code to different platforms; Java does that independently.
- The programmers need to write the code once, copy it, and use it for any other platform. The reason why it is considered to be the best one as it works efficiently for different operating systems.

Use of Multithread yields high performance: You can develop both single-threaded and multi-threaded application using java

- When developers write the program using the single-threaded feature, users are restricted to exercise only one task at a time. This kind of application is plodding and gets the users very impatient. This may result in uninstalling the application.
- This then becomes the reason for programmers to use multi-threaded programs. The tasks are segregated into different threads that work parallelly, increasing the interface's speed.

Web development is creating a set of content digitally. This can be accessed by anyone with an internet connection from any corner of the world. This includes creating simple to complex applications. It allows web developers to use programming language and create customizable and dynamic content and services.

One such programming language is called Java. From Amazon to Netflix, from Spotify to LinkedIn, many top companies have chosen Java development services in their respective niches.

Java is a programming language designed to create content for the world wide web and is an object-oriented language. It uses similar syntax as used by C++.

A web application helps clients to interact with the server and access information. Java is perfect for developing large web applications too because of its ability to communicate with a large number of systems. Services like peer-web services, database connectivity, and back-end services can also be accessed via Java web development.

For all these skills a company is looking for, where a programmer took less time to give effective result in short period of time.