PROJECT REPORT

of

Task Management System

Submitted in partial fulfilment of the requirement for six months Industrial Training

at

Wipro

(From 18th February 2022 to 30th June 2022 & From 10th March 2022 to 18th May 2022)

Submitted by

Naaz Bhagat

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1803678

&

Sidharth Sharma

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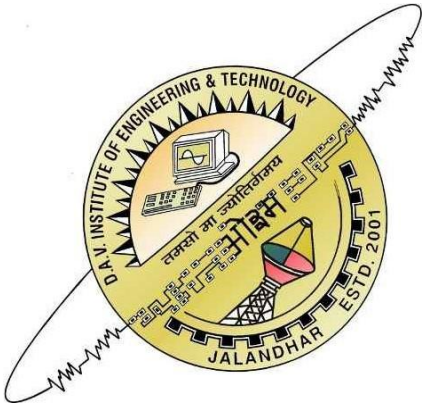


Department of Computer Science & Engineering

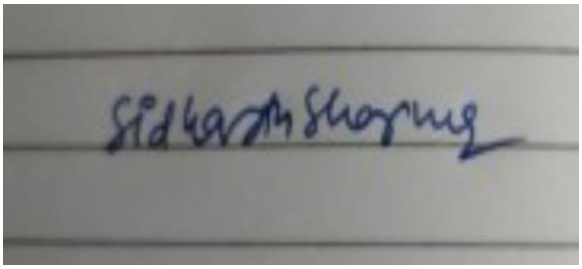
DAV Institute of Engineering & Technology, Kabir Nagar,

Jalandhar

(2018-2022)

CANDIDATE'S DECLARATION

I hereby declare that the project entitled "Task Management System" submitted by Naaz Bhagat (1803678) in partial fulfilment of the requirement for the award of degree B.Tech (Computer Science & Engineering) submitted in I.K Gujral Punjab Technical University, Kapurthala at DAV Institute of Engineering & Technology, Jalandhar is an authentic record of my own work carried out during a period from February, 2022 to June, 2022 at Wipro under the guidance of Mr. Muzammil Mangat, Ms Surekha Rajeshwari and Mr. Annu Sharma. The matter presented in this report has not formed the basis for the award of any other degree, diploma, fellowship, or any other similar titles. Whenever we have used materials (data, theoretical analysis, and text) from other sources, we have given due credit to them in the text of the report and giving their details in the references.



Jalandhar

5th June 2022

OFFER LETTER OF INTERNSHIP

Gmail

Naaz Bhagat <naazbhagat1712@gmail.com>

Velocity – Wipro's Exclusive Upgrade Program - Batch Allotment Details
1 message

Learner Support <Learner.Support@stackroute.in> 19 February 2022 at 10:30

Hi,

Greetings from StackRoute!

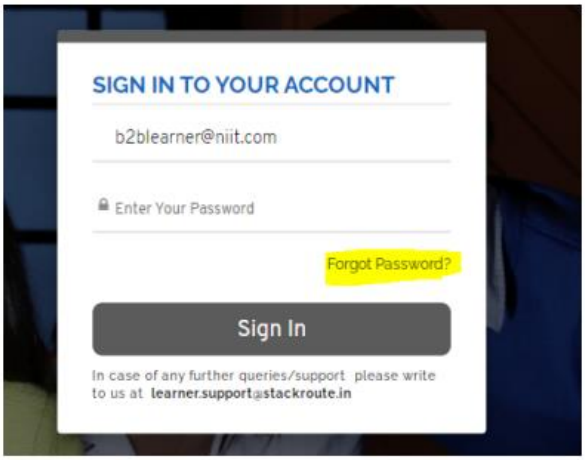
Congratulations on being nominated to attend "**Velocity – Wipro's Exclusive Upgrade Program**".

Below are your batch details:

- Program Name – Certificate Program in Java Full Stack
- Batch Name – Batch 7 Java FSD
- Training Time Slot – Morning 9.00 AM to 1.00 PM
- Program Start Date – 18th Feb - Orientation. 21st Feb - Live training sessions
- Mentor/Trainer – Umesh Badiger
- **Link to join the session** - https://learn-wipro.stackroute.in/ (Login using your mail id and reset your password using the forget password option for the first time)

- **Note** : No other/separate invite will be shared. For the duration of the program, you have to login through the above-mentioned link.

For ease of access, below are the log-in steps:



- Please note the link to join the session will be enabled only 15 mins before the scheduled time.

OFFER LETTER OF INTERNSHIP

PRP Training || Remarks

DH

Desk of PJP Head

To: Sidharth Sharma (iDEAS-Group)

Tue 24/05/2022 09:41

Dear Sidharth Sharma,

We do appreciate all the efforts and hard work put by you. Our objective through the program was to equip you with the necessary skills and knowledge and efficiently handle client projects.

Your marks for PRP training are mentioned in the below table:

EMP ID	Domain/ Category	Candidate Name	PRP Scores	PRP - Status	Stream
20357333	ELITE	Sidharth Sharma	87.200000000000003	Cleared	JAVA-J2EE

- Candidates who have cleared PRP with overall score of >60%

  Please connect with your project manager on your allocations.

ABSTRACT

The “Task Management System” has been developed to override the problems prevailing in practicing manual system. This software is supported to eliminate and, in some cases, reduce the hardships faced by this existing system. Moreover, this system is designed for the need of the company to carry out operations in a smooth and effective manner.

Every organization, whether big or small, has challenges to overcome and managing the information of events, employee files, etc. This project has various small parts like editing existing and creating new project, task, user etc. It is an automation system, which is used to store the Work tasks information of an organization.

The aim is to automate its existing manual system by the help of computerized equipment and full-fledged computer software, fulfilling their requirements, so that their valuable data/information can be stored for a longer period with easy accessing and manipulation of the same. Basically, the project describes how to manage for good performance and better services for the clients.

Along with the manipulation of the data stored this webapp allows the user to create their authorized account and login using their own credentials. This will help to maintain the privacy of each user over their task manuals. Moreover, they can change their password if their previous is lost using the forgot password feature. Each user will have their unique id to access their manual.

Student Task Management System is, as defined above, can lead to error free, secure, reliable, and fast management system. It can assist the user to concentrate on their other activities rather to concentrate on the record keeping. Thus, it will help the organization in better utilization of resources.

ACKNOWLEDGEMENT

I am highly grateful to Dr. Manoj Kumar, Principal, DAV Institute of Engineering & Technology, Jalandhar, for providing this opportunity to carry out the six-month industrial training at Wipro. The constant guidance and encouragement received from Dr. Harpreet Kaur Bajaj, Head of Department of Computer Science & Engineering, DAVIET Jalandhar has been of great help in carrying out the project work and is acknowledged with reverential thanks. I would like to express my gratitude to Ms. Shaveta Kalsi, Assistant Professor, Department of Computer Science & Engineering DAVIET Jalandhar for her stimulating guidance, continuous encouragement, and supervision throughout the course of present work. I would like to express a deep sense of gratitude and thanks profusely to Mr. Thierry Delaporte, Director/CEO of Company. Without the wise counsel and able guidance, it would have been impossible to complete the report in this manner. The help rendered by Mr. Muzammil Mangat, Ms Surekha Rajeshwari and Mr. Annu Sharma at Wipro for experimentation is greatly acknowledged. I express gratitude to other faculty members of the Computer Science & Engineering department of DAVIET for their intellectual support throughout the course of this work.

Naaz Bhagat & Sidharth Sharma

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INTRODUCTION

1 INTRODUCTION TO ORGANISATION:

Wipro Limited is a leading global information technology, consulting, and business process services company. Wipro utilizes the power of cognitive computing, hyper-automation, robotics, cloud, analytics, and emerging technologies to help their clients adapt to the digital world and make them successful. A company recognized globally for its comprehensive portfolio of services, strong commitment to sustainability and good corporate citizenship, they have over 220,000 dedicated employees serving clients across six continents for building a bold and new future.

Wipro's Vision

"To earn our clients' trust and maximize the value of their business by providing solutions that integrate deep industry insights, leading technologies and best in class delivery process."

Wipro Tagline

Wipro previously had a tagline **" Applying thought" from** (1998-2017) but now it has been retired.

In 2017 Wipro Launched New Logo for new brand identity and rearticulated "Spirit of Wipro" to underscore Wipro's commitment to transformation & evolving client expectation.

Wipro follow below principles

1. Be passionate about client's success
2. Be global and responsible
3. Treat each person with respect
4. Unyielding integrity in everything we do

2 INTRODUCTION TO PROJECT:

Task Management System (TMS) deals with the organization that manage tasks among its employees. The task management system is a support tool to be used by employees of various departments. Currently all work tasks requests from faculty are handled manually over the telephone. The task management system automates the process by streamlining the handling of the work tasks requests thereby reducing the manual intervention. When a faculty member places a work task, administrative staff receives the work tasks. The work order will include all necessary information including the availability schedule of the faculty member. The employees will have an organized structure of tasks that are pending/completed to view or edit according to their requirement which will in turn reduce the average processing time of the work tasks. This report is followed with Methodology part which explains Scope of the project, software system description, functional requirements along with user case screenshots, Data management covers the database relationships, Non-functional requirements and conclusion are outlined.

Chapter-2

SOFTWARE REQUIREMENT SPECIFICATION DOCUMENT

1. FUNCTIONAL REQUIREMENTS

The Software Requirement Specification is produced at the culmination of the analysis task. The function and performance allocated to software as part of system engineering are refined by establishing a complete information description, a detailed functional and behavioral description, an indication of performance requirements and design constraints, appropriate validation criteria, and other data pertinent to requirements.

The proposed system has the following requirements:

- System needs to store information about new user.
- System needs to maintain quantity record.
- System needs to keep a record of personal notes.
- System needs to update and delete the record.
- System needs to update and delete user information.
- It also needs a security system to prevent data.

2. EXTERNAL INTERFACE REQUIREMENTS

Hardware requirements:

Number	Description
1	PC with 56 GB hard-disk and 4GB RAM
2	Network Interface (For communication)

Software requirements:

- Server

Number	Description
1	Programming Language: Java

2	Database: MySQL
3	Front-end: HTML, CSS, Bootstrap
4	Server: Tomcat Server
5	Framework: Spring MVC, Hibernate

- Client

Number	Description
1	Windows 8/10/11/ or Higher with MS office
2	SQL server 2012
3	MS-Internet Explorer

3. OTHER NON-FUNCTIONAL REQUIREMENTS

a. Performance and Scalability
   i. Each page takes a very less amount of time to load so that the work done should be fast and more accurate
   ii. The internet connectivity plays a major role in this so at least 1MBps of bandwidth is required.

b. Portability and Compatibility
   i. Every browser that can run Bootstrap as well as HTML5 is compatible with the Task Management System and can work on any operating system.
   ii. Running this application won't affect the performance of any other running applications on the system.
   iii. Running this application won't affect the performance of any other running applications on the system.

c. Reliability, Maintainability and Availability
   i. The system has a 90 percent reliability which means that there is a 90 percent chance the system won't experience any critical failure.

d. Security
   i. All the accounts and passwords are saved in the encrypted form.
   ii. The application will run on a secure server that protects the information of the user while filling the details in a form.
   iii. Access to different pages without login will not be allowed.

e. Usability
   i. The interface is smooth and attractive for all the users.
   ii. Only basic knowledge of computers is required to use this application.
   iii. Once a user starts using the application, he/she will get a proper hold of it.

CHAPTER-3

SYSTEM DESIGN

1. DESIGN APPROACH

System Design is the solution to the creation of a new system. This is the important aspect made up of several steps. The complete, efficient, and successful system should provide the following in succession:

- From where we should start
- Where we must go
- Where should we stop

If the project is to be successful, we will need to answer this question. The answer to these questions is schema manner and is known as system design.

A systematic manner will be followed to achieve beneficial results at the end. It involves starting with a vague idea and ultimately developing it up into a useful system. The design phase is transition from a user oriented to a document oriented to the programmers.

The steps for the successful project are as follows:

We should define the problem completely and the goals should be known before our destination. In the next step, we should specify inputs and outputs of our interest.

Then the structure of various databases should be designed which will be used during the programming. Next, we should design our programs of user-friendly nature and always provide a way for the user to read back the origin if he/she finds any complex problem at any stage. We should know the function of each program which will lead us to or helps us to read at the specified goal.

Then we write these individual programs which later joining solve our problem. Next step involves the testing of these programs and correction – if necessary.

The design approach used in this project is Object Oriented. In the object-oriented design approach, the system is viewed as a collection of objects (i.e., entities). The state is decentralized among the objects and each object manages its own state information. For example, in a Library 15 Automation Software, each library member may be a separate object with its own data and functions to operate on these data. In fact, the functions defined for one object cannot refer to or change data of other objects. Objects have their own internal data which define their state. Similar objects constitute a class. In other words, each object is a member of some class. Classes may inherit features from super classes. Conceptually, objects communicate by message passing.

2. FLOWCHART

A flowchart is a type of diagram that represents a workflow or process. A flowchart can also be defined as a diagrammatic representation of an algorithm, a step-by-step approach to solving a task.

The flowchart shows the steps as boxes of various kinds, and their order by connecting the boxes with arrows. This diagrammatic representation illustrates a solution model to a given problem. Flowcharts are used in analyzing, designing, documenting, or managing a process or program in various fields.

Flowcharts are used in designing and documenting simple processes or programs. Like other types of diagrams, they help visualize what is going on and thereby help understand a process, and perhaps also find less-obvious features within the process, like flaws and bottlenecks. There are different types of flowcharts: each type has its own set of boxes and notations. The two most common types of boxes in a flowchart are:

- A processing step, usually called activity, and denoted as a rectangular box.
- A decision, usually denoted as a diamond.

A flowchart is described as "cross-functional" when the chart is divided into different vertical or horizontal parts, to describe the control of different organizational units. A symbol appearing in a particular part is within the control of that organizational unit. A cross-functional flowchart allows the author to correctly locate the responsibility for performing an action or making a decision, and to show the responsibility of each organizational unit for different parts of a single process.

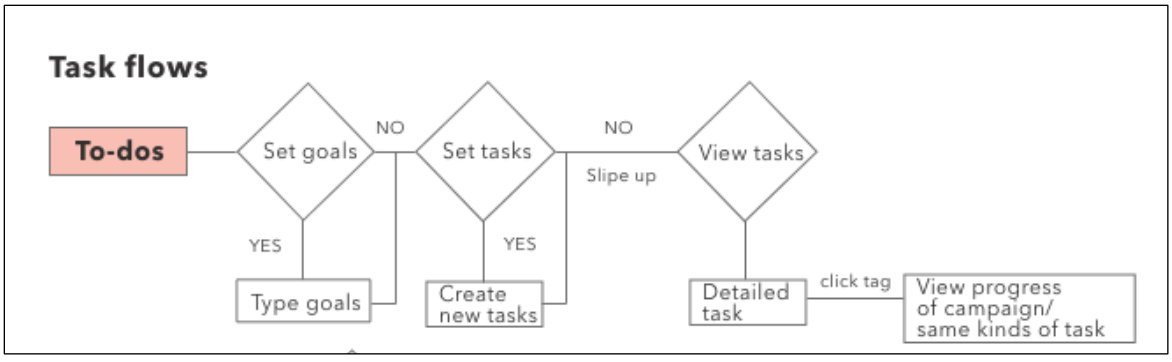

Fig. 3.1 Task flow of System

3. DATA FLOW DIAGRAM

A Data Flow Diagram (DFD) is a traditional way to visualize the information flows within a system. DFD describes the processes that are involved in a system to transfer data from the input to the file storage and reports generation. It shows how information enters and leaves the system, what changes the information and where information is stored. The purpose of a DFD is to show the scope and boundaries of a system. It usually begins with a context diagram as level 0 of the DFD diagram, a simple representation of the whole system. To elaborate further from that, we drill down to a level 1 diagram with lower-level functions decomposed from the major functions of the system. This could continue to evolve to become a level 2 diagram when further analysis is required. A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination. They can be used to analyze an existing system or model a new one.

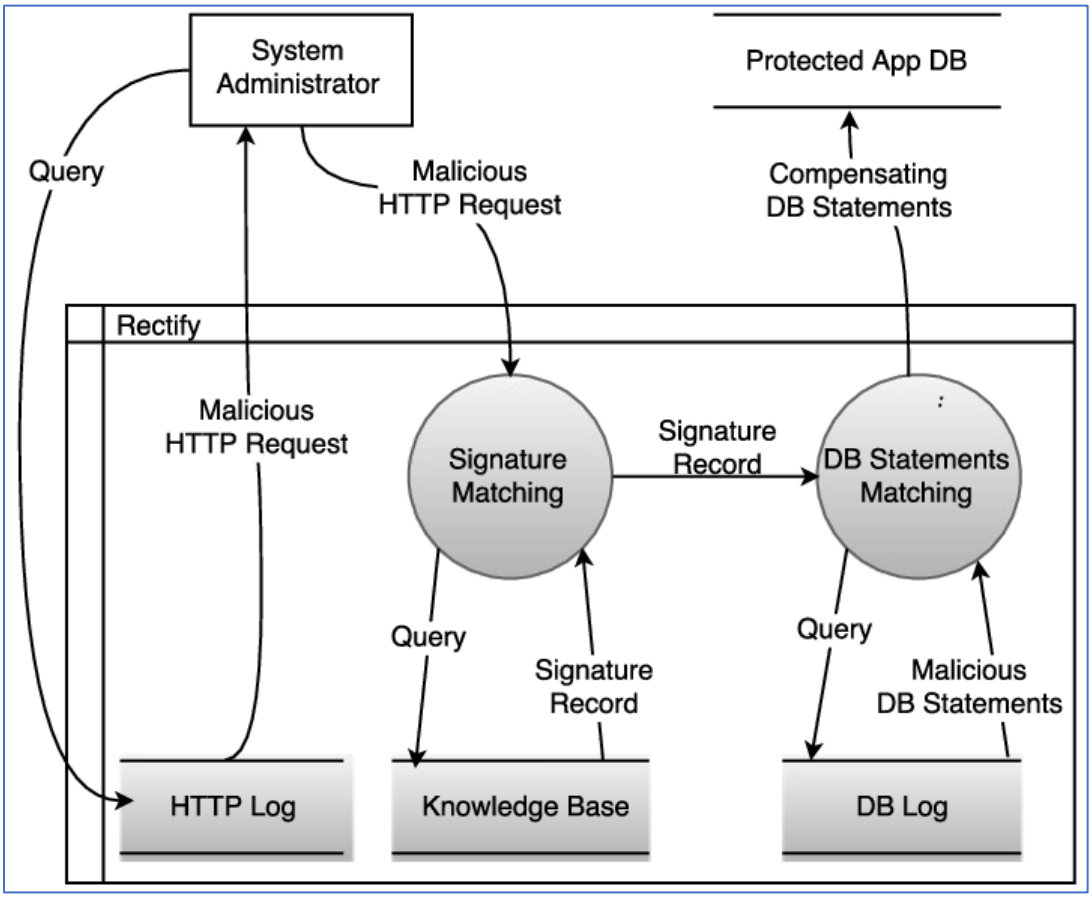

Fig. 3.2 Data Flow Diagram

4. METHODOLOGY OF THE SYSTEM

The model used in the process of making Task Management System is the Agile Model. The Agile model is a combination of an incremental and iterative approach and is focused on fitting in well with flexible requirements. The project requirements and the solutions in Agile projects keep evolving during the development process making it one of the best SDLC methodology.

In an agile method of software development, the project is divided into small subparts and is delivered in iterations. The subtasks are divided into time frames to serve working functionality with each build. As a result, the final product has all the required features.

Why an Agile Model?

Modern software development must facilitate making changes immediately. The Adaptive agile model doesn't require detailed planning like other predictive methodologies. If one needs to make a change, it can be done in the same sprint.

A feature-driven development team can adapt to changes in requirements dynamically. Also, the frequency of tests in Agile helps to minimize the risk of major failures. Of course, Agile means a lot of client and user interaction to work properly. The needs of the user, not the client, define the final project requirements.

Benefits:

- Quick development
- Quality and measurable results
- Business value can be delivered – demonstrated fast
- Requires minimum resources
- Highly adaptive to changing requirements

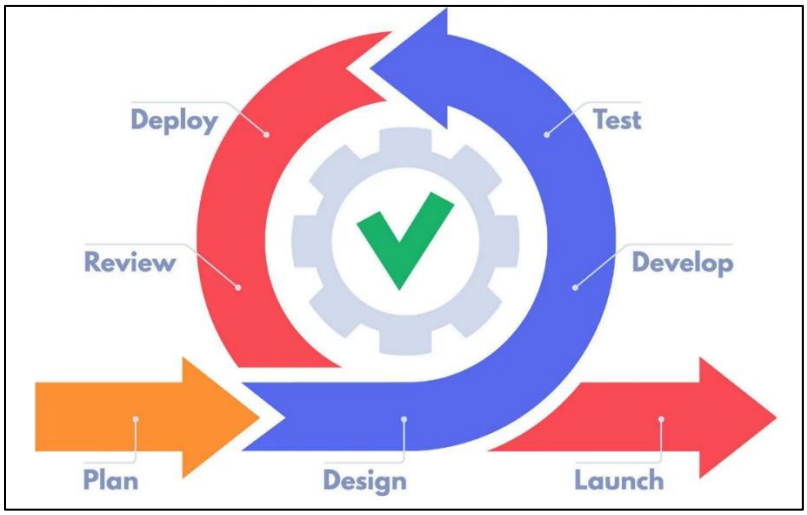

Fig. 3.3 Agile Model

CHAPTER-4

IMPLEMENTATION, TESTING AND MAINTENANCE

1. INTRODUCTION TO TOOLS & TECHNOLOGIES USED

1. Back-end Technologies

JAVA

Java is a **programming language** and a **platform**. Java is a high level, robust, object-oriented, and secure programming language.

Java was developed by *Sun Microsystems* (which is now the subsidiary of Oracle) in the year 1995. *James Gosling* is known as the father of Java.

It is used for:

- Mobile applications (especially Android apps)
- Desktop applications
- Web applications
- Web servers and application servers
- Games
- Database connection
- And much, much more!

Why Use Java?

- Java works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc.)
- It is one of the most popular programming languages in the world
- It is easy to learn and simple to use
- It is open-source and free
- It is secure, fast, and powerful
- It has a huge community support (tens of millions of developers)
- Java is an object-oriented language which gives a clear structure to programs and allows code to be reused, lowering development costs
- As Java is close to C++ and C#, it makes it easy for programmers to switch to Java or vice versa.

RDBMS

What is a Database?

A database is a separate application that stores a collection of data. Each database has one or more distinct APIs for creating, accessing, managing, searching, and replicating the data it holds.

Other kinds of data stores can also be used, such as files on the file system or large hash tables in memory but data fetching and writing would not be so fast and easy with those type of systems.

Nowadays, we use relational database management systems (RDBMS) to store and manage huge volume of data. This is called relational database because all the data is stored into different tables and relations are established using primary keys or other keys known as **Foreign Keys**.

A **Relational Data Base Management System (RDBMS)** is a software that –

- Enables you to implement a database with tables, columns, and indexes.
- Guarantees the Referential Integrity between rows of various tables.
- Updates the indexes automatically.
- Interprets an SQL query and combines information from various tables.

RDBMS Terminology

Before we proceed to explain the MySQL database system, let us revise a few definitions related to the database.

- **Database** − A database is a collection of tables, with related data.
- **Table** − A table is a matrix with data. A table in a database looks like a simple spreadsheet.
- **Column** − One column (data element) contains data of one and the same kind, for example the column postcode.
- **Row** − A row (= tuple, entry, or record) is a group of related data, for example the data of one subscription.
- **Redundancy** − Storing data twice, redundantly to make the system faster.
- **Primary Key** − A primary key is unique. A key value cannot occur twice in one table. With a key, you can only find one row.
- **Foreign Key** − A foreign key is the linking pin between two tables.
- **Compound Key** − A compound key (composite key) is a key that consists of multiple columns, because one column is not sufficiently unique.
- **Index** − An index in a database resembles an index at the back of a book.

- **Referential Integrity** − Referential Integrity makes sure that a foreign key value always points to an existing row.

MySQL

MySQL is an open-source, fast reliable, and flexible relational database management system, typically used with PHP. This chapter is an introductory chapter about MySQL, what is MySQL, and the main features of MySQL are described here.

What is MySQL?

- MySQL is a database system used for developing web-based software applications.
- MySQL used for both small and large applications.
- MySQL is a relational database management system (RDBMS).
- MySQL is fast, reliable, and flexible and easy to use.
- MySQL supports standard SQL (Structured Query Language).
- MySQL is free to download and use.
- MySQL was developed by Michael Widenius and David Axmark in 1994.
- MySQL is presently developed, distributed, and supported by Oracle Corporation.
- MySQL Written in C, C++.

Main Features of MySQL

- MySQL server design is multi-layered with independent modules.
- MySQL is fully multithreaded by using kernel threads. It can handle multiple CPUs if they are available.
- MySQL provides transactional and non-transactional storage engines.
- MySQL has a high-speed thread-based memory allocation system.
- MySQL supports in-memory heap table.
- MySQL Handles large databases.
- MySQL Server works in client/server or embedded systems.
- MySQL Works on many different platforms

2. Front-end Technologies

HTML

HTML stands for Hyper Text Markup Language. It is used to design web pages using a markup language. HTML is the combination of Hypertext and Markup language. Hypertext defines the link between the web pages. A markup language is used to define the text document within tag which defines the structure of web pages. This language is used to annotate (make notes for the

computer) text so that a machine can understand it and manipulate text accordingly. Most markup languages (e.g., HTML) are human-readable. The language uses tags to define what manipulation must be done on the text.

Features of HTML:

- It is easy to learn and easy to use.
- It is platform independent.
- Images, videos, and audio can be added to a web page.
- Hypertext can be added to the text.
- It is a markup language.

Fig. 4.1.1

CSS

CSS is used to control the style of a web document in a simple and easy way.

CSS is the acronym for **"Cascading Style Sheet"**. This tutorial covers both the versions CSS1, CSS2 and CSS3, and gives a complete understanding of CSS, starting from its basics to advanced concepts.

Why CSS?

Cascading Style Sheets, fondly referred to as **CSS**, is a simple design language intended to simplify the process of making web pages presentable.

CSS is a MUST for students and working professionals to become a great Software Engineer specially when they are working in Web Development Domain. I will list down some of the key advantages of learning CSS:

- **Create Stunning Web site -** CSS handles the look and feel part of a web page. Using CSS, you can control the color of the text, the style of fonts, the spacing between paragraphs, how columns are sized and laid out, what

background images or colors are used, layout designs, variations in display for different devices and screen sizes as well as a variety of other effects.

- **Become a web designer** - If you want to start a career as a professional web designer, HTML and CSS designing is a must skill.
- **Control web** - CSS is easy to learn and understand but it provides powerful control over the presentation of an HTML document. Most commonly, CSS is combined with the markup languages HTML or XHTML.
- **Learn other languages** - Once you understands the basic of HTML and CSS then other related technologies like JavaScript, php, or angular are become easier to understand.

Applications of CSS

As mentioned before, CSS is one of the most widely used style language over the web. I'm going to list few of them here:

- **CSS saves time** - You can write CSS once and then reuse same sheet in multiple HTML pages. You can define a style for each HTML element and apply it to as many Web pages as you want.
- **Pages load faster** - If you are using CSS, you do not need to write HTML tag attributes every time. Just write one CSS rule of a tag and apply it to all the occurrences of that tag. So less code means faster download times.
- **Easy maintenance** - To make a global change, simply change the style, and all elements in all the web pages will be updated automatically.
- **Superior styles to HTML** - CSS has a much wider array of attributes than HTML, so you can give a far better look to your HTML page in comparison to HTML attributes.
- **Multiple Device Compatibility** - Style sheets allow content to be optimized for more than one type of device. By using the same HTML document, different versions of a website can be presented for handheld devices such as PDAs and cell phones or for printing.
- **Global web standards** - Now HTML attributes are being deprecated and it is being recommended to use CSS. So its a good idea to start using CSS in all the HTML pages to make them compatible to future browsers.

Fig. 4.1.2

BOOTSTRAP

Bootstrap is a free and open-source tool collection for creating responsive websites and web applications. It is the most popular HTML, CSS, and JavaScript framework for developing responsive, mobile-first websites. Nowadays, the websites are perfect for all the browsers (IE, Firefox, and Chrome) and for all sizes of screens (Desktop, Tablets, Phablets, and Phones). All thanks to Bootstrap developers – Mark Otto and Jacob Thornton of Twitter, though it was later declared to be an open-source project.

Why Bootstrap?

- **Mobile first approach** − Bootstrap 3, framework consists of Mobile first styles throughout the entire library instead them of in separate files.
- **Browser Support** − It is supported by all popular browsers.
- **Easy to get started** − With just the knowledge of HTML and CSS anyone can get started with Bootstrap. Also, the Bootstrap official site has a good documentation.
- **Responsive design** − Bootstrap's responsive CSS adjusts to Desktops, Tablets and Mobiles. More about the responsive design is in the chapter Bootstrap Responsive Design.
- Provides a clean and uniform solution for building an interface for developers.
- It contains beautiful and functional built-in components which are easy to customize.
- It also provides web-based customization.
- And best of all it is an open source.

3. Tools

TOMCAT SERVER

It is an open-source Java servlet container that implements many Java Enterprise Specs such as the Websites API, Java-Server Pages and last but not least, the Java Servlet. The complete name of Tomcat is "Apache Tomcat" it was developed in an open, participatory environment and released in 1998 for the very first time. It began as the reference implementation for the very first Java-Server Pages and the Java Servlet API. However, it no longer works as the reference implementation for both of these technologies, but it is considered as the first choice among the users even after that. It is still one of the most widely used java-sever due to several capabilities such as good extensibility, proven core engine, and well-test and durable. Here we used the term "servlet" many times, so what is java servlet; it is a kind of software that enables the webserver to handle the dynamic(java-based) content using the Http protocols.

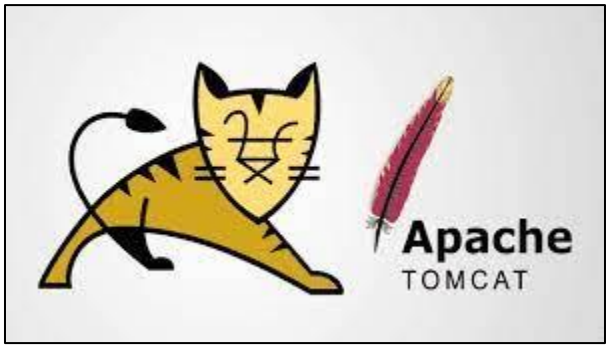

Fig.4.1.3

SPRING MVC

A Spring MVC is a Java framework which is used to build web applications. It follows the Model-View-Controller design pattern. It implements all the basic features of a core spring framework like Inversion of Control, Dependency Injection.

A Spring MVC provides an elegant solution to use MVC in spring framework by the help of **Dispatcher Servlet**. Here, **Dispatcher Servlet** is a class that receives the incoming request and maps it to the right resource such as controllers, models, and views.

Advantages of Spring MVC Framework

Let's see some of the advantages of Spring MVC Framework: -

- **Separate roles** - The Spring MVC separates each role, where the model object, controller, command object, view resolver, Dispatcher Servlet, validator, etc. can be fulfilled by a specialized object.
- **Light-weight** - It uses light-weight servlet container to develop and deploy your application.
- **Powerful Configuration** - It provides a robust configuration for both framework and application classes that includes easy referencing across contexts, such as from web controllers to business objects and validators.
- **Rapid development** - The Spring MVC facilitates fast and parallel development.
- **Reusable business code** - Instead of creating new objects, it allows us to use the existing business objects.
- **Easy to test** - In Spring, generally we create JavaBeans classes that enable you to inject test data using the setter methods.
- **Flexible Mapping** - It provides the specific annotations that easily redirect the page.

HIBERNATE

Hibernate is a Java framework that simplifies the development of Java application to interact with the database. It is an open source, lightweight, ORM (Object Relational Mapping) tool. Hibernate implements the specifications of JPA (Java Persistence API) for data persistence.

Advantages of Hibernate Framework

Following are the advantages of hibernate framework:

1) Open Source and Lightweight

Hibernate framework is open source under the LGPL license and lightweight.

2) Fast Performance

The performance of hibernate framework is fast because cache is internally used in hibernate framework. There are two types of cache in hibernate framework first level cache and second level cache. First level cache is enabled by default.

3) Database Independent Query

HQL (Hibernate Query Language) is the object-oriented version of SQL. It generates the database independent queries. So, you don't need to write database specific queries. Before Hibernate, if database is changed for the project, we need to change the SQL query as well that leads to the maintenance problem.

4) Automatic Table Creation

Hibernate framework provides the facility to create the tables of the database automatically. So, there is no need to create tables in the database manually.

5) Simplifies Complex Join

Fetching data from multiple tables is easy in hibernate framework.

6) Provides Query Statistics and Database Status

Hibernate supports Query cache and provide statistics about query and database status.

Fig.4.1.4

2. TESTING TECHNIQUIES & TEST PLANS

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the

functionality of components, assemblies and/or a finished product. It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of tests. Each test type addresses a specific testing requirement.

1. **Unit Testing**

   Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program inputs produce valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application. It is done after the completion of an individual unit before integration. This is a structural testing that relies on knowledge of its construction and is invasive.
2. **Integration Testing**

   Integration tests are designed to test integrated software components to determine if they run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfactory, as shown by successfully unit testing, consistent. Integration testing is specifically aimed at ensuring the combination of components is correct and exposing the problems.
3. **Functional Test**

   Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals. Functional testing is centered on the following items:
   Valid Input: identified classes of valid input must be accepted.
   Invalid Input: identified classes of invalid input must be rejected.
   Functions: identified functions must be exercised.
   Output: identified classes of application outputs must be exercised.
   Systems/Procedures: interfacing systems or procedures must be invoked.

4. **System Test**

   System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration-oriented system integration test.
5. **White Box Testing**

   White Box Testing is a testing in which the software tester has knowledge of the inner workings, structure, and language of the software, or at least its purpose. It

has a purpose. It is used to test areas that cannot be reached from a black box level.

6. **Black Box Testing**

   Black Box Testing is testing the software without any knowledge of the inner workings, structure or language of the module being tested. It is a test in which the software under test is treated as a black box. You cannot "see" into it. The test provides inputs and responds to outputs without considering how the software works.

7. **Acceptance Testing**

   User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements.

   Test Results: All the test cases mentioned above passed successfully. No defects encountered.

Client Needs	Acceptance Testing
Requirements	System Testing
Design	Integration Testing
Code	Unit Testing

3. **MAINTENANCE**

Once the code runs properly, it enters the maintenance phase. All systems need maintenance. Maintenance is required because there are often some residual errors remaining in the system that must be removed as they are discovered. Maintenance involves understanding the effects of the change, making the changes to both the code and the documents, testing the new parts, and retesting the old parts that were not changed. Maintenance is mainly of two types:

- **Corrective Maintenance:** Almost all software that is developed has residual errors or bugs in them. Many of these surfaces only after the system has been in operation, sometimes for a long time. These errors once discovered need to be removed, leading to the software to be changed. This is called Corrective Maintenance.
- **Adaptive Maintenance:** Even without bugs, software frequently undergoes change. The software often must be upgraded and enhanced to include more features and provide more services. This requires modification of the software. This type of maintenance is known as Adaptive Maintenance.

CHAPTER-5
RESULTS AND DISCUSSIONS

1. SNAPSHOTS OF THE PROJECT

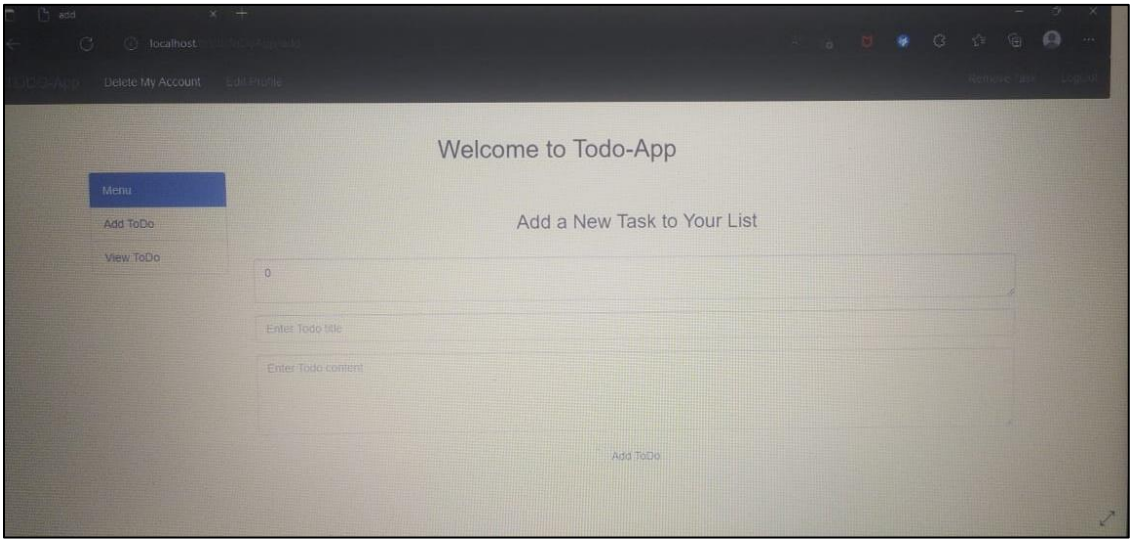

Fig. 5.1.1 Adding the task

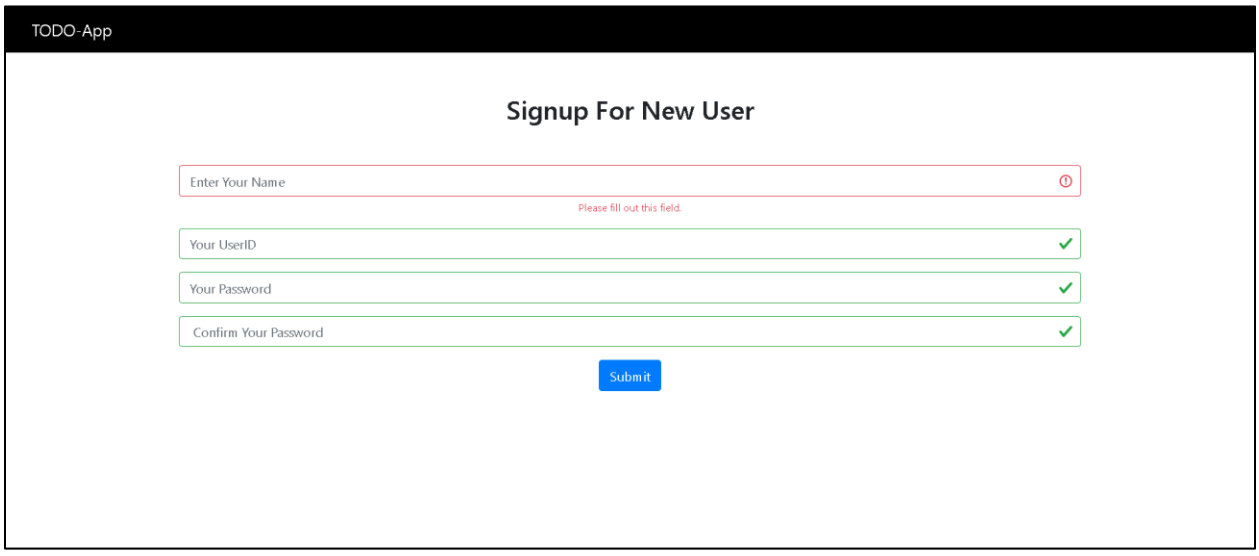

Fig.5.1.2 Signup Page

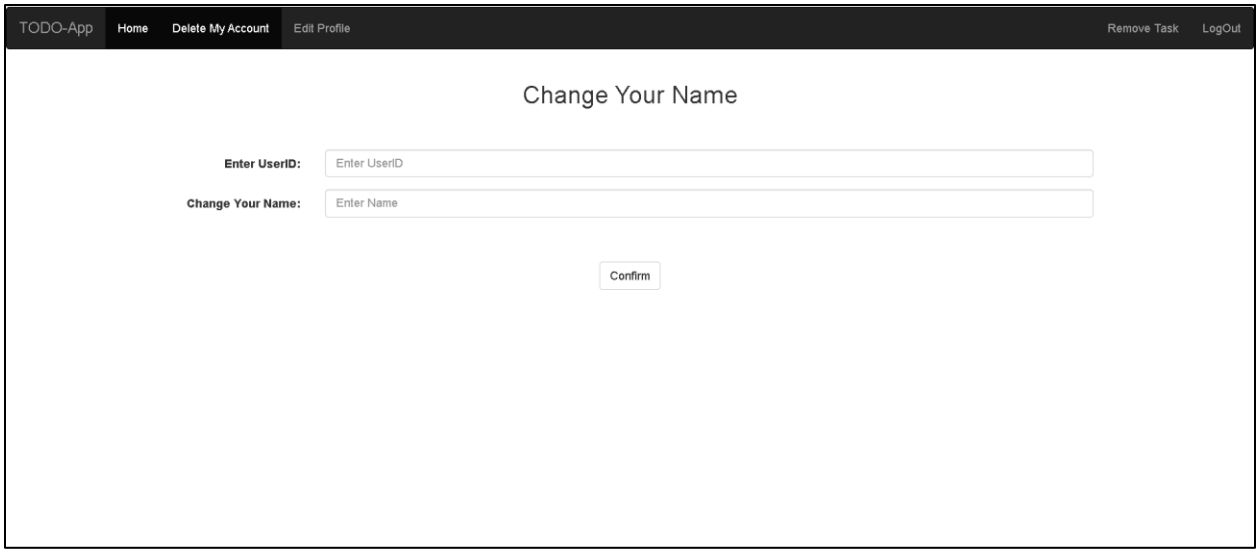

Fig.5.1.3 Reset Name

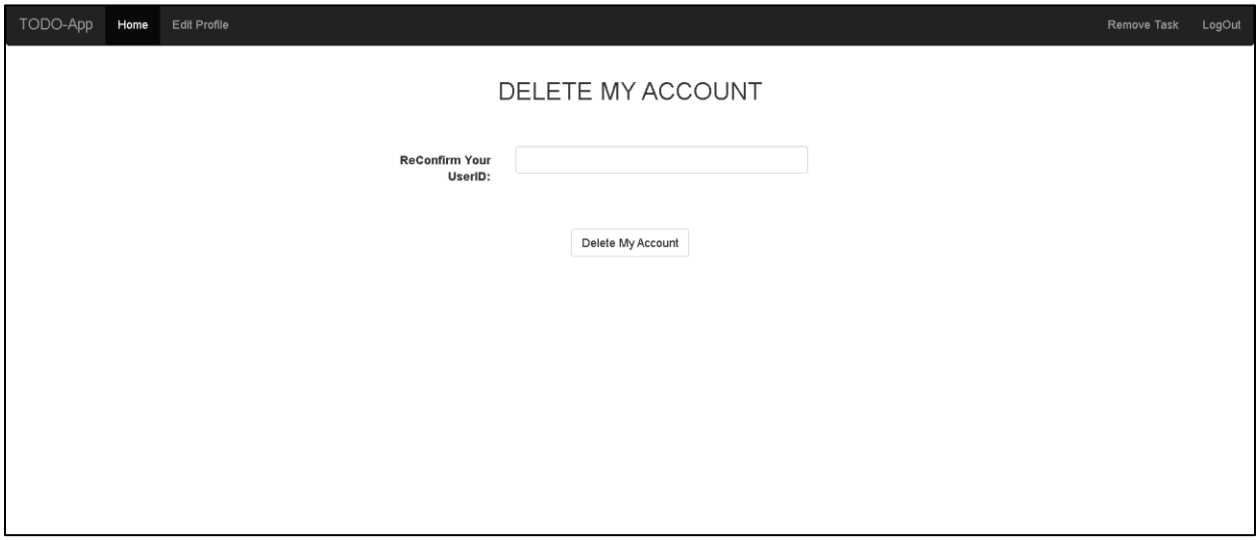

Fig.5.1.4 Delete User Account

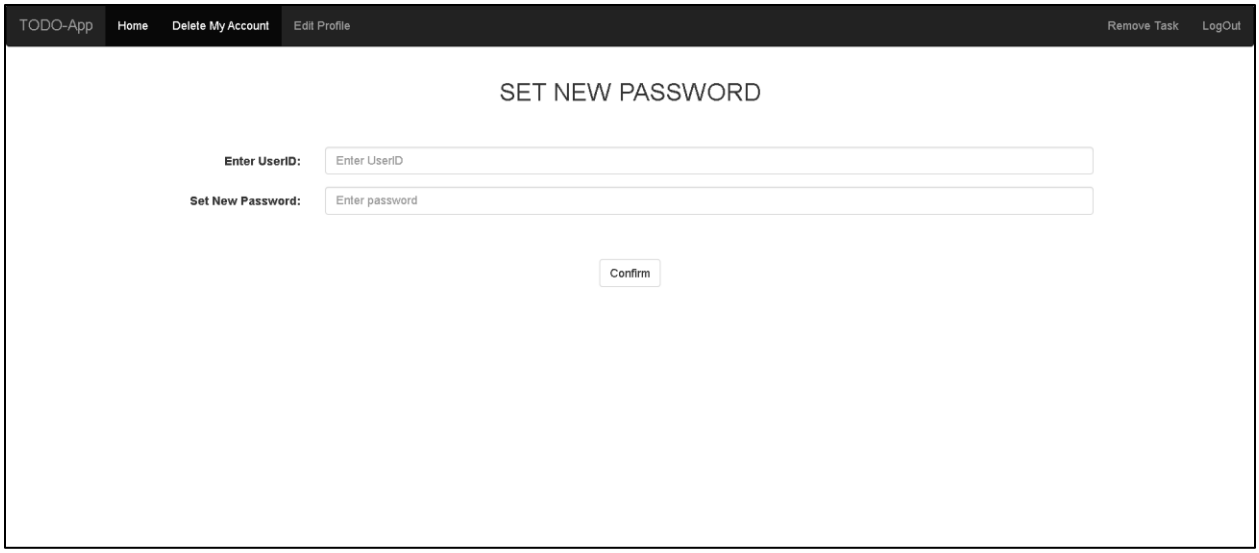

Fig.5.1.5 Set New Password

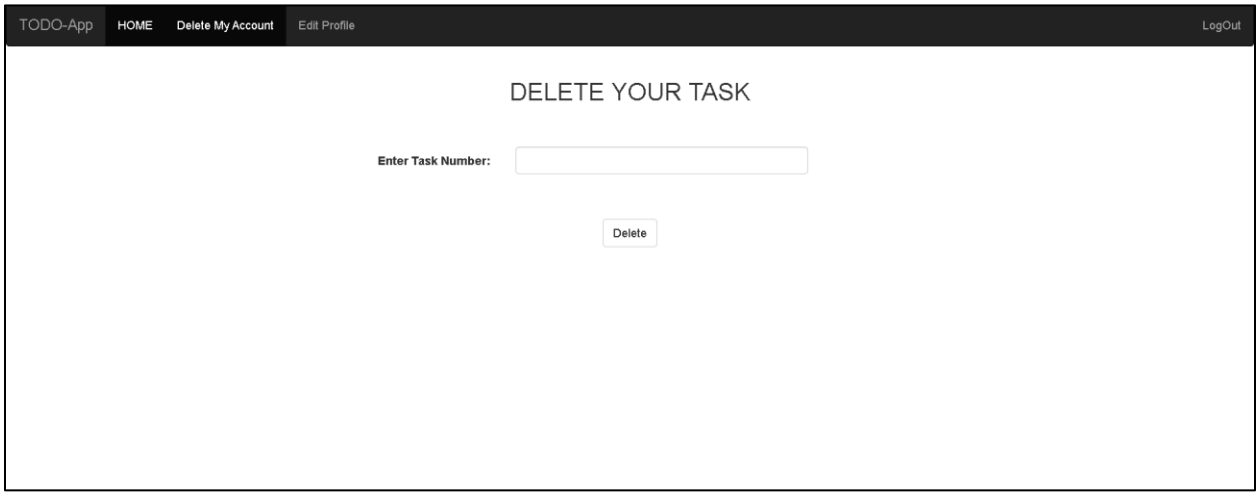

Fig.5.1.6 Delete Task

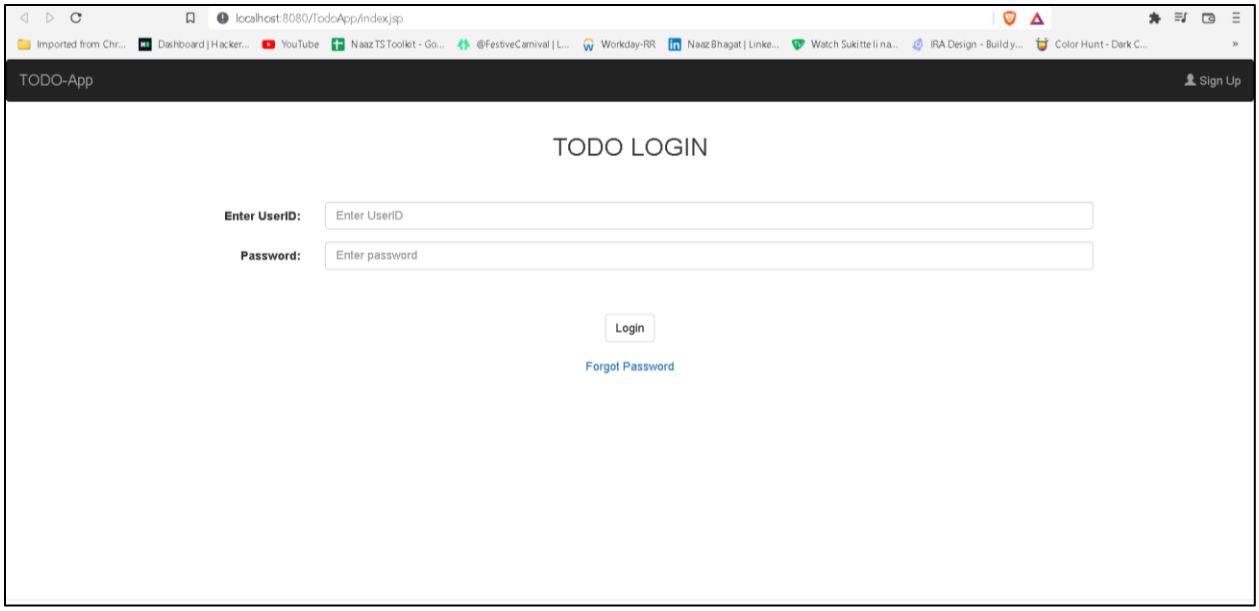

Fig.5.1.7 Login Page

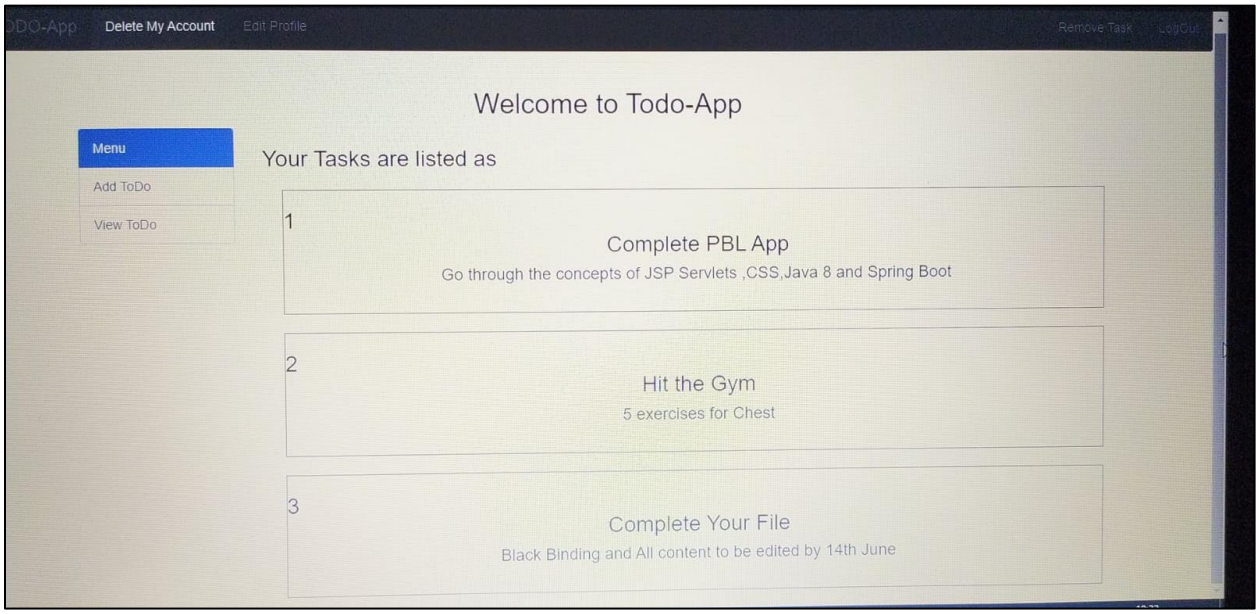

Fig.5.1.8 View all the tasks

1. DATABASE COLLECTIONS

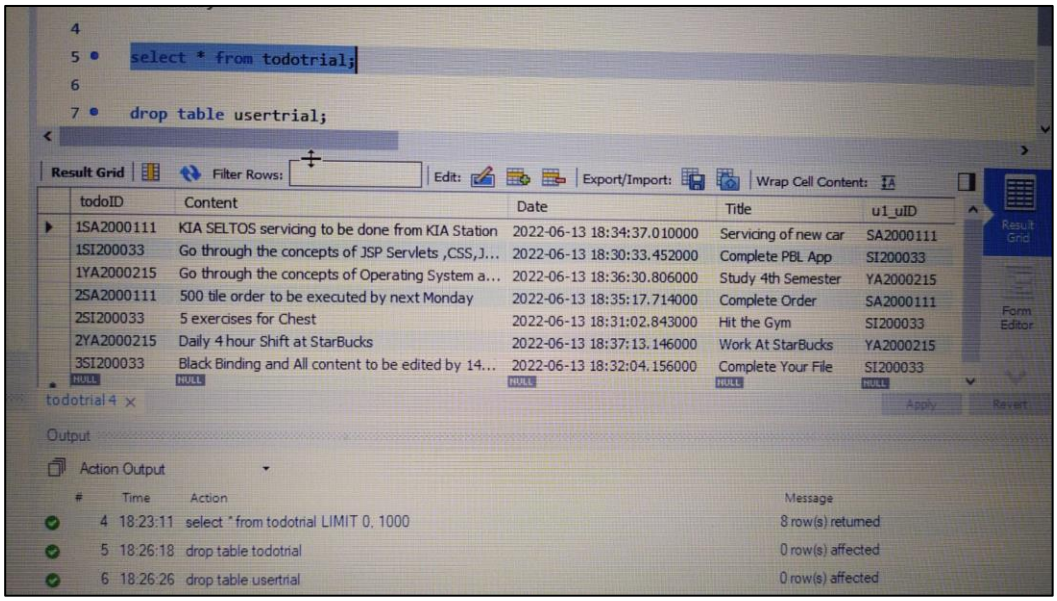

Fig.5.2.1 List of Tasks

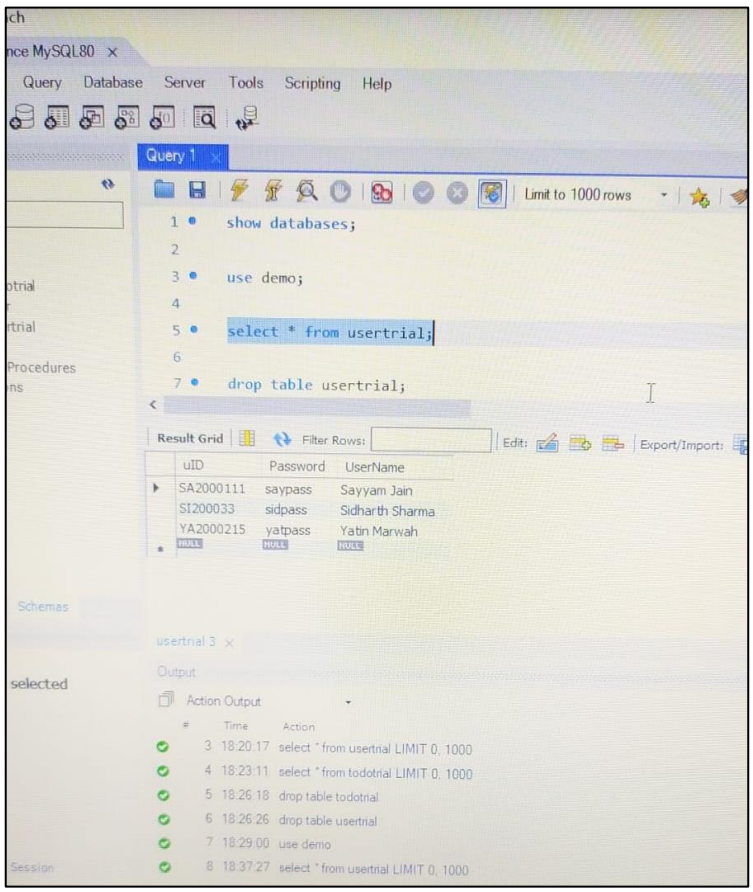

Fig.5.2.2 List of Users

CHAPTER-6

CONCLUSION AND FUTURE SCOPE

1. CONCLUSION

It has been a great pleasure for us to work on this exciting and challenging project. This project proved good for us as it provided practical knowledge of not only programming in Java, Spring MVC, hibernate, but also about all handling procedure related with "Task management system". It also provides knowledge about the latest technology used in developing web enabled application and client server technology that will be great demand in future. This will provide better opportunities and guidance in future in developing projects independently.

BENEFITS:

The merits of this project are as follows: -

- This project offers user to enter the data through simple and interactive forms. This is very helpful for the client to enter the desired information through so much simplicity.
- From every part of the project the user is provided with the links through framing so that he can go from one option of the project to other as per the requirement. This is bound to be simple and very friendly as per the user is concerned. That is, we can say that the project is user friendly which is one of the primary concerns of any good project.
- Data storage and retrieval will become faster and easier to maintain because data is stored in a systematic manner and in a single database.
- Decision making process would be greatly enhanced because of faster processing of information since data collection from information available on computer takes much less time than manual system.
- Through these features it will increase the efficiency, accuracy, and transparency.
- The authorization process provides security to the user.

2. FUTURE SCOPE

- We can give more advance software for Student Task Management System including more facilities.
- We will host the platform on online servers to make it accessible worldwide.
- Implement the backup mechanism for taking backup of codebase and database on regular basis on different servers.

3. REFERENCE/BIBLIOGRAPHY

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