# Internship Project Report

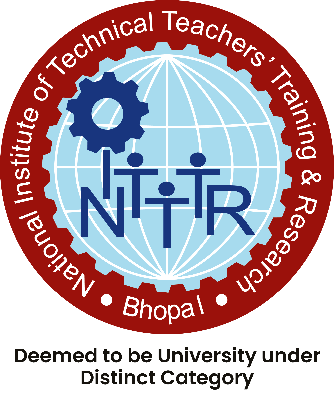
Submitted in partial fulfillment of the requirement for the award of a certificate of internship programme

## in

**National Institute of Technical Teachers' Training and Research, Bhopal**

**Deemed to be University(under Distinct category)**

**Submitted to**



**Submitted by**

**Yukta Tiwari**

**Under the Supervision of**

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**National Institute of Technical Teachers' Training and Research, Bhopal**

**Deemed to be University (under distinct category)**

**INTERNSHIP PROJECT REPORT**

**CERTIFICATE**

This is to certify that the work embodies in this dissertation entitled **“Full Stack Web Development using Java”** being submitted by **Yukta Tiwari** for partial fulfillment of the requirement for the award of **“Certificate”** during the short term internship programme is a record of a bonafide piece of work, which was carried out by him under my supervision and guidance in the Department of Computer Science of **National Institute of Technical Teachers' Training and Research, Bhopal**

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**CANDIDATE’S DECLARATION**

.

I, Yukta Tiwari here by declare that the report entitled “**Full Stack Web Development using Java**” which is being submitted to Computer Science in **National Institute of Technical Teachers' Training and Research, Bhopal**, is our authentic work carried out during internship.

### I declare that my work has not been submitted in part or in full to any other university or institution for the award of any certificate.

Yukta Tiwari

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## ACKNOWLEDGEMENT

I am deeply grateful to all those who have supported and guided me throughout my internship experience in Full Stack Web Development using Java at NITTTR Bhopal.

First and foremost, I would like to extend my sincere gratitude to my mentor, Dr. Prakash N. Hardaha Sir, for their invaluable guidance, expertise, and encouragement. Their support and insightful feedback have been instrumental in my learning journey and in the successful completion of this internship.

I also wish to thank the entire team at NITTTR Bhopal for their warm welcome and collaborative environment. Their willingness to share their knowledge and provide assistance has greatly contributed to my professional growth.

Special thanks to Dr. Prakash N. Hardaha Sir for their supervision and for providing the opportunity to work on such a challenging and rewarding project. The exposure to various aspects of full stack development has significantly enhanced my skills and understanding of the field.

Thank you all for your contributions to my learning and development.

**Yukta Tiwari**

**Computer Science Department**

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**INTERNSHIP PROJECT REPORT**

**Executive Summary**

During my internship at NITTTR Bhopal, I undertook an extensive full-stack web development training program centered around Java. The experience began with foundational Java programming and progressed to advanced concepts, enabling me to grasp the complexities of modern web development. Throughout the internship, I applied my learning by developing a comprehensive User Management System project.

User Management System project integrated various technologies including Core Java- Gained proficiency in Java programming, starting from basic syntax and data structures to advanced object-oriented principles. Developed a solid understanding of Java's role in web development, including its integration with various web technologies.

JSP, and Servlets to handle backend functionalities, while CRUD operations and JDBC facilitated data management and interaction with a MySQL database.

Additionally, I utilized HTML and Bootstrap to create a responsive and user-friendly interface. This hands-on experience not only solidified my understanding of full-stack development but also provided practical skills in building robust web applications.

The internship at NITTTR Bhopal provided a valuable opportunity to build a strong foundation in full-stack web development using Java. The skills and knowledge acquired have significantly contributed to my capability as a developer, preparing me for future challenges and opportunities in the field.

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**INTERNSHIP PROJECT REPORT**

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1. **INTRODUCTION**
   1. NITTTR ,Bhopal

National Institute of Technical Teachers' Training and Research, Bhopal is a unique premier institution, established in 1965 by Ministry of Education, Government of India for teacher training and improving quality of entire gamut of Technical Education System. The Institute holds expertise through continuous R&D in the areas like development of. specific competencies related to new technologies, subject matter development, classroom and laboratory based learning, industry institute internship, management of technical institutions, personality development, entrepreneurship development, examination reforms and student assessment, learning & instructional resources development, video production and multimedia development, educational projects planning & management, community development, evaluation of programmes & projects.

In 2003, the GoI upgraded the Institute and there has been a substantial change in the mandate enabling it to cross the regional boundaries and function as a national level resource institution. It has geared itself with the updated resources and infrastructure to support the overgrowing demand of bringing quality in technical education through strategic support and networking with the other centers of excellence.

NITTTR, Bhopal has an excellent track record of introducing several new innovations in the technical education and has successfully implemented several time-bound and professionally challenging projects for varied clientele. In nineties, the Institute has successfully served the client states in implementing the highly acclaimed and successful World Bank Assisted Projects viz. Tech. Ed. I, II and III on ‘Strengthening the Technician Education System.’ The Institute has also been providing need-based customised support by conducting training programme for TEQIP institutes under phase I, II and III.

NITTTR Bhopal has been in the involved in the implementation of many national initiatives. In recent past NITTTR, Bhopal is involved in offering MOOCs courses through SWAYAM platform. The Institute has been identified under the Pandit Madan Mohan Malviya National Mission on Teachers and Teaching as the Teaching Learning Centre (TLC) in Vocational Education Training & Entrepreneurship Development. NITTTR Bhopal has also been selected as National Resource Centre (NRC) for Assessment & Evaluation in ARPIT Scheme.

The institution has taken a lead in design and implementation of AICTE’s National Initiative for Technical Teacher Training (NITTT) and National Mentoring Mission of National Education Policy-2020 by conducting the initial Orientation Training Programmes for Mentors. Looking to the present need, the institute has also been conducting webinar series and online Programmes. In pursuit of excellence, NITTTR Bhopal has transformed itself over the years. NITTTR enjoys the status of a World Class Institute in the area of Human Resource Development. 'Quality' and ‘Need-based’ has become the key word to its functioning, which gets reflected in its services and resources. NITTTR Bhopal exhibits the ethos of client driven and competency-based approach in all its services.

1.2 Objective of the Internship: State the purpose and goals of the internship

The purpose of the full-stack web development internship at NITTTR Bhopal was to equip participants with comprehensive skills in both front-end and back-end technologies using Java. The program aimed to bridge the gap between theoretical knowledge and practical application by providing hands-on experience in developing complete web solutions. The objectives were to:

1. **Develop Proficiency in Java and Web Technologies**: Equip interns with a solid understanding of Java, JSP, Servlets, and related technologies to handle various aspects of web development.
2. **Implement Full-Stack Solutions**: Enable interns to design and build full-stack web applications, integrating front-end technologies like HTML and Bootstrap with back-end frameworks and databases.
3. **Enhance Practical Skills:** Provide real-world experience through the development of a User Management System, which involved creating, reading, updating, and deleting data (CRUD operations) and connecting to a MySQL database using JDBC.
4. **Prepare for Industry Challenges**: Prepare interns to tackle industry challenges by applying best practices in web development and understanding the complete lifecycle of web application development.

Overall, the internship sought to produce well-rounded developers capable of creating robust, scalable web applications using a Java-based technology stack.

1. **Internship Activities**

2.1 Description of Tasks and Responsibilities you were assigned

During my internship focused on full stack web development using Java, JDBC, CRUD operations, Servlets, JSP, and MySQL, I was assigned a variety of tasks and responsibilities that contributed to the development and enhancement of a user management system. Below is a detailed description of my key tasks and responsibilities:

#### 1. **Requirement Analysis and Design**

* **Task**: Understood and analyzed the functional and non-functional requirements for the user management system.
* **Responsibilities**:
  + Created detailed requirement documents
  + Designed a basic system architecture and component diagrams to outline the interaction between different modules.

#### 2. **Database Design and Implementation**

* **Task**: Designed and implemented the database schema for storing user data and managing relationships between different entities.
* **Responsibilities**:
  + Developed the MySQL database schema, including tables for users, roles, and permissions.
  + Wrote SQL scripts for database creation and initial data insertion.
  + Created stored procedures and triggers to handle complex operations and maintain data integrity.

#### 3. **CRUD Operations Implementation**

* **Task**: Implemented Create, Read, Update, and Delete (CRUD) operations for managing user data.
* **Responsibilities**:
  + Developed Java classes for interacting with the MySQL database using JDBC.
  + Wrote SQL queries and prepared statements to perform CRUD operations.
  + Ensured data validation and error handling to maintain application stability and security.

#### 4. **Servlet Development**

* **Task**: Created and configured Java Servlets to handle HTTP requests and responses.
* **Responsibilities**:
  + Developed Servlets for user registration, login, profile management, and admin functionalities.
  + Implemented session management and authentication mechanisms.
  + Integrated Servlets with JSP pages to render dynamic content based on user interactions.

#### 5. **JSP Page Development**

* **Task**: Developed JavaServer Pages (JSP) for the user interface.
* **Responsibilities**:
  + Designed and coded JSP pages for user login, registration, profile views, and administrative tasks.
  + Used JSP tags and Expression Language (EL) to display dynamic content and handle user input.
  + Ensured JSP pages were responsive and user-friendly.

#### 6. **Testing and Debugging**

* **Task**: Conducted testing to ensure the functionality and performance of the application.
* **Responsibilities**:
  + Performed unit testing for individual components and CRUD operations.
  + Conducted integration testing to verify the interaction between the front-end and back-end.
  + Identified and resolved bugs, performance issues, and security vulnerabilities.

#### 7. **Documentation and Reporting**

* **Task**: Documented the development process.
* **Responsibilities**:
  + Compiled progress reports and presented updates to supervisors .

#### 8. **Performance Optimization**

* **Task**: Optimized the performance of the application and database.
* **Responsibilities**:
  + Analyzed query performance and implemented indexing strategies to improve database efficiency.
  + Refactored code to enhance execution speed and reduce resource consumption.
  + Monitored application performance and made recommendations for improvements.

2.2 Projects/Modules Undertaken: Describe any specific projects you worked on.

#### **1.User Registration and Authentication Module**

**Objective**: Develop a system for user registration and authentication to manage user access and security.

* **Tasks**:
  + **Database Design**: Created tables for user information, including users with fields for username, password, email, and role.
  + **Backend Development**: Implemented JDBC-based CRUD operations for user registration, including hashing passwords for secure storage.
  + **Servlet Implementation**: Developed RegisterServlet for handling user registration requests, validating input data, and interacting with the database.
  + **JSP Integration**: Designed register.jsp for user registration, providing a form for users to enter their details.
  + **Authentication**: Implemented LoginServlet to authenticate users based on credentials, manage sessions, and redirect users accordingly.
* **Key Features**:
  + Secure password storage with hashing.
  + Validation of user input to prevent SQL injection and other vulnerabilities.
  + User-friendly registration and login forms.

#### 2. **Profile Management Module**

**Objective**: Enable users to view and update their profile information.

* **Tasks**:
  + **Database Schema**: Enhanced the users table to include additional fields for user profiles such as phone\_number, address, and profile\_picture.
  + **Servlet Development**: Developed ProfileServlet for handling requests related to viewing and updating user profiles.
  + **JSP Pages**: Created profile.jsp to display user information and provide forms for updating profile details.
  + **CRUD Operations**: Implemented methods to update user information in the database and handle file uploads for profile pictures.
* **Key Features**:
  + Ability to update user details, including sensitive information.
  + File upload functionality for profile pictures.
  + Dynamic profile page with real-time updates.

#### 3. **Admin Management Module**

**Objective**: Provide administrative functionalities to manage user accounts and roles.

* **Tasks**:
  + **Admin Dashboard**: Created an admin dashboard to view, update, and delete user accounts.
  + **Servlets**: Developed AdminServlet for managing user-related administrative tasks such as role assignments and account deactivation.
  + **JSP Pages**: Designed admin\_dashboard.jsp and user\_management.jsp for administrative operations.
  + **Role Management**: Implemented role-based access control, allowing admins to assign and modify user roles.
* **Key Features**:
  + Admin interface for managing user accounts.
  + Role-based permissions for different user levels.
  + Functionality for deactivating and deleting user accounts.

#### 4. **User Activity Tracking Module**

**Objective**: Track and log user activities for auditing and analytics purposes.

* **Tasks**:
  + **Database Design**: Created an activity\_log table to record user activities such as login times, profile updates, and other significant actions.
  + **Servlet Integration**: Modified existing Servlets to log user actions to the database.
  + **Reporting**: Developed a reporting mechanism for administrators to view and analyze user activities.
* **Key Features**:
  + Logging of critical user actions for security and auditing.
  + Admin reports on user activity trends and patterns.

#### 5. **Performance Optimization and Security Enhancements**

**Objective**: Improve the performance and security of the application.

* **Tasks**:
  + **Database Optimization**: Analyzed and optimized SQL queries for better performance, including indexing frequently queried columns.
  + **Code Refactoring**: Refactored Java code to improve efficiency and reduce resource consumption.
  + **Security Measures**: Implemented additional security measures such as input validation, prepared statements to prevent SQL injection, and secure session management.
* **Key Features**:
  + Enhanced performance of database operations and application responsiveness.
  + Improved security practices to safeguard user data.

2.3 Tools and Technologies Used: List any software, tools, or technologies you used during the internship.

#### **1. Development Tools**

* **Integrated Development Environment (IDE)**
  + **Eclipse IDE**: Popular Java IDE used for writing, debugging, and testing Java code.

#### **2. Programming Languages and Frameworks**

* **Java**: Core programming language used for backend development, including Servlets and JDBC.
* **JavaServer Pages (JSP)**: Used for creating dynamic web pages and integrating Java code with HTML.
* **Servlets**: Java classes used for handling HTTP requests and responses, implementing server-side logic.

#### **3. Database Technologies**

* **MySQL**: Relational database management system used for storing and managing user data.
  + **MySQL Workbench**: A graphical tool used for database design, querying, and management.
* **JDBC (Java Database Connectivity)**: API used for connecting Java applications to the MySQL database and executing SQL queries.

#### **4. Web Servers and Application Servers**

* **Apache Tomcat**: A servlet container used to deploy and run Java Servlets and JSPs.

#### **5. Frontend Technologies**

* **HTML**: Markup language used for structuring web pages.
* **CSS/Bootstrap**: Used for styling and layout of web pages.

2.4 Skills Acquired: Mention any new skills you learned.

2.4.1 Professional Skills\*\*: What professional skills did you develop?

#### **1. Technical Skills**

* **Java Programming**
  + **Advanced Java Concepts**: Deepened understanding of Java fundamentals and advanced topics such as multi-threading and concurrency.
  + **Servlets and JSP**: Gained hands-on experience in developing and deploying Java Servlets and JSPs for dynamic web applications.
* **Database Management**
  + **JDBC (Java Database Connectivity)**: Learned to use JDBC for connecting Java applications to relational databases and performing CRUD operations.
  + **SQL**: Improved skills in writing and optimizing SQL queries, managing transactions, and designing relational databases.
  + **Database Design**: Developed expertise in designing and implementing database schemas, including normalization and indexing.
* **Web Development**
  + **Frontend Technologies**: Enhanced skills in HTML, CSS, and basic JavaScript for creating responsive and interactive web pages.
  + **Web Servers**: Gained experience with Apache Tomcat and other servlet containers for deploying Java web applications.

#### **2. Professional Skills**

* **Project Management**
  + **Requirement Analysis**: Developed skills in gathering and analyzing project requirements, translating them into functional specifications.
  + **Task Management**: Gained experience in managing tasks, setting priorities, and meeting deadlines.
* **Problem Solving**
  + **Debugging and Troubleshooting**: Improved problem-solving skills through debugging complex issues and finding effective solutions.
  + **Performance Optimization**: Gained experience in optimizing application performance, including database query optimization and code refactoring.
* **Documentation**
  + **Technical Documentation**: Developed skills in creating clear and comprehensive technical documentation
  + **Reporting**: Improved ability to prepare and present project reports, summarizing progress, achievements, and areas for improvement.
* **Adaptability**
  + **Learning New Technologies**: Enhanced ability to quickly learn and adapt to new tools, technologies, and methodologies as needed for the project.
  + **Handling Feedback**: Improved skills in accepting and incorporating feedback to continuously improve both technical and professional performance.

2.4.2 Technical Skills: Any technical skills or knowledge gained.

#### **1. Java Programming**

* **Advanced Java Concepts**:
  + Gained a deeper understanding of Java fundamentals, including object-oriented programming principles, exception handling, and Java Collections Framework.
  + Improved knowledge of Java's concurrency utilities for multi-threading and parallel processing.
* **Servlets and JSP**:
  + Developed proficiency in creating Java Servlets for handling HTTP requests and responses.
  + Mastered JSP (JavaServer Pages) for generating dynamic web content and integrating server-side logic with HTML.
  + Learned to use JSP tags, expression language (EL), and custom tag libraries.

#### **2. Database Management**

* **JDBC (Java Database Connectivity)**:
  + Acquired skills in using JDBC for connecting Java applications to relational databases.
  + Implemented database operations such as CRUD (Create, Read, Update, Delete) and transaction management.
* **SQL**:
  + Improved ability to write complex SQL queries, including JOINs, subqueries, and aggregate functions.
  + Gained experience in designing and managing relational databases, including table creation, indexing, and schema normalization.
* **Database Design**:
  + Learned best practices for designing relational database schemas, including defining primary and foreign keys, normalization, and optimizing schema for performance.

#### **3. Web Development**

* **Frontend Technologies**:
  + Enhanced skills in HTML for structuring web content and CSS for styling and layout.
* **Web Servers**:
  + Acquired hands-on experience with Apache Tomcat for deploying and managing Java web applications.
  + Learned to configure server settings and manage application deployment.

#### **4. Build Tools**

* **Maven**:
  + Developed proficiency in using Maven for managing project dependencies and build processes.
  + Gained experience with Maven’s lifecycle phases, plugins, and repository management.
* **Gradle** (if applicable):
  + Learned the basics of Gradle for build automation and dependency management (if used).

#### **5. Testing**

* **JUnit**:
  + Improved ability to write and execute unit tests using JUnit for ensuring the correctness of Java code.
  + Learned to create test cases, use assertions, and manage test suites.
* **Integration Testing** (if applicable):
  + Gained experience in testing the integration of different system components to ensure end-to-end functionality.

#### **6. Security Practices**

* **Secure Coding**:
  + Learned to apply secure coding practices to prevent common vulnerabilities such as SQL injection, cross-site scripting (XSS), and session management issues.
  + Implemented measures to ensure data validation and protection.

#### **7. Tools and Technologies**

* **Version Control**:
  + Acquired proficiency in Git for version control, including branching, merging, and conflict resolution.
  + Used platforms like GitHub or GitLab for repository hosting and collaboration.
* **Database Management Tools**:
  + **MySQL Workbench**: Used for designing, querying, and managing MySQL databases.
  + **phpMyAdmin**: (if applicable) Used for managing MySQL databases through a web interface.
* **Deployment Tools**:
  + **Heroku / AWS / Azure**: (if applicable) Gained experience with cloud platforms for deploying and hosting web applications.

2.4.3 Personal Growth: Reflect on how the internship contributed to your

personal development.

#### **1. Increased Self-Confidence**

The internship significantly boosted my self-confidence by providing a platform to apply my theoretical knowledge in a practical setting. Successfully contributing to real-world projects, overcoming technical challenges, and receiving positive feedback from peers and mentors reinforced my belief in my abilities

#### **2. Enhanced Problem-Solving Skills**

The hands-on experience of working on complex projects, such as developing the user management system, honed my problem-solving skills. Tackling real-world issues, debugging code, optimizing performance, and finding creative solutions to unexpected problems taught me to approach challenges systematically and think critically. This skill is invaluable not only in technical tasks but also in daily life and future professional endeavors.

#### **3. Improved Time Management**

Balancing multiple tasks and meeting deadlines in a dynamic work environment helped me develop effective time management skills. Prioritizing tasks, setting realistic goals, and managing time efficiently became crucial as I juggled project responsibilities and learning opportunities. These skills are essential for maintaining productivity and achieving success in both academic and professional settings.

#### **4. Enhanced Adaptability**

The fast-paced nature of the internship required me to quickly adapt to new technologies, tools, and methodologies. I learned to embrace change and remain flexible in the face of evolving project requirements. This adaptability has prepared me to handle future uncertainties and transitions in the tech industry with greater ease.

#### **5 Greater Understanding of Professionalism**

The internship provided insights into workplace dynamics and professional conduct. I learned the importance of punctuality, responsibility, and maintaining a positive attitude. Understanding the expectations of a professional environment and learning to navigate office culture helped me develop a strong work ethic and prepare for future career roles.

3.**Challenges and Solutions**

3.1 Challenges Faced: Describe any difficulties you encountered.

During my internship on full-stack web development using Java at NITTTR Bhopal, I encountered several challenges that were instrumental in shaping my learning experience. One of the primary difficulties was mastering the integration of various technologies within the Java ecosystem. Balancing the interaction between Java, JSP, and Servlets while ensuring seamless communication with the MySQL database through JDBC was complex and required a deep understanding of each component's role in the stack.

Another significant challenge was managing the complexities of CRUD operations within the User Management System project. Ensuring that all data operations—creation, retrieval, updating, and deletion—were executed accurately and efficiently involved meticulous attention to detail and rigorous testing to avoid data inconsistencies or loss.

Additionally, working with front-end technologies like HTML and Bootstrap posed its own set of difficulties. Achieving a responsive design that effectively communicated with the backend required careful planning and adjustment. Coordinating the design and functionality between the front-end and back-end components to ensure a cohesive user experience was challenging.

Lastly, debugging and troubleshooting were ongoing challenges. Identifying and resolving issues across the stack, particularly in scenarios where problems could arise from any part of the technology stack, demanded strong problem-solving skills and patience.

These challenges, while demanding, provided valuable learning opportunities and significantly enhanced my problem-solving abilities and technical expertise in full-stack web development.

3.2 Solutions and Strategies: How did you overcome these challenges?

To overcome the challenges faced during my internship in full-stack web development using Java at NITTTR Bhopal, I employed a range of solutions and strategies:

1. **Deepening Knowledge and Practice:** I dedicated additional time to studying the integration of Java technologies, JSP, and Servlets. I utilized online resources, documentation, and tutorials to better understand how these components interact with each other. Hands-on practice with sample projects and exercises also helped solidify my understanding.
2. **Systematic Debugging**: To address issues with CRUD operations and database interactions, I adopted a systematic approach to debugging. I also engaged in thorough testing at each stage of development to identify and rectify issues early.
3. **Seeking Guidance :** I actively sought guidance from mentors and colleagues when faced with difficulties. Collaborating with peers and discussing problems in study groups or forums provided new perspectives and solutions that I might not have considered on my own.
4. **Leveraging Design Patterns:** To manage the complexities of integrating front-end and back-end technologies, I employed design patterns and best practices. Utilizing MVC architecture helped in separating concerns and making the development process more manageable. This approach facilitated smoother communication between the user interface and the backend logic.
5. **Continuous Learning and Adaptation:** I embraced a mindset of continuous learning and adaptability. When encountering challenges with specific technologies or techniques, I explored alternative methods and tools that could offer more efficient solutions. This iterative process of learning and adapting was crucial in overcoming obstacles.
6. **Detailed Documentation:** Maintaining detailed documentation of the development process and decisions helped in tracking progress and troubleshooting issues. This documentation proved valuable for understanding how different parts of the application were intended to work together and for identifying potential areas of improvement.

By employing these strategies, I was able to navigate the complexities of full-stack development effectively, leading to successful project completion and a deeper understanding of web development using Java.

**Conclusion**

My internship in full-stack web development using Java at NITTTR Bhopal was an immensely valuable experience that significantly influenced my career trajectory. Over the course of the internship, I gained comprehensive insights into both front-end and back-end development, mastering technologies such as Java, JSP, Servlets, MySQL, and various web design tools including HTML and Bootstrap. The hands-on experience of building a User Management System provided practical knowledge of integrating these technologies to create functional and dynamic web applications.

One of the key learnings was the importance of understanding the entire technology stack and how each component interacts within a web application. I developed a strong grasp of CRUD operations, database management with JDBC, and the nuances of responsive design, all of which are crucial skills for a full-stack developer. Additionally, the challenges I faced and overcame taught me valuable problem-solving and debugging skills, reinforcing the need for a methodical approach to development and testing.

The internship also emphasized the significance of continuous learning and adaptation, as I navigated various technical and practical challenges. This experience has not only honed my technical abilities but also enhanced my problem-solving skills and my ability to collaborate effectively with others.

Overall, the internship has solidified my passion for web development and clarified my career goals. I am now more confident in pursuing a career as a full-stack developer, with a clear understanding of the skills and expertise required to excel in this field. The experience has provided me with a strong foundation and the motivation to continue growing professionally in web development, setting a clear path for my future career endeavors.

**References**

List any books, articles, websites, or other resources you referred to during your internship.

Here's a list of resources that really helped me during my internship focused on full stack web development using Java, particularly with JDBC, CRUD operations, Servlets, JSP, and MySQL:

### Articles and Tutorials

1. **Oracle’s Official JDBC Tutorial**
   * [Oracle JDBC Tutorial](https://docs.oracle.com/javase/tutorial/jdbc/)
   * Comprehensive resource for learning JDBC and database connectivity in Java.
2. **TutorialsPoint Servlet Tutorial**
   * Servlet Tutorial
   * Detailed guide on Servlets with examples.
3. **Java Brains**
   * [Java Brains JSP and Servlet Tutorials](https://www.youtube.com/user/koushks)
   * Video tutorials on Java web development topics including Servlets and JSP.
4. **Baeldung’s Guide to Spring JDBC**
   * Baeldung Spring JDBC Guide
   * While focused on Spring, this guide can enhance understanding of JDBC.
5. **W3Schools SQL Tutorial**
   * W3Schools SQL
   * Useful for brushing up on SQL basics and advanced queries.

**Websites**

1. **Greeks of geeks**

* <https://www.geeksforgeeks.org/java/?ref=lbp>
* Useful for foundatation on Java Basics and Advance Java.

1. **Javatpoint**

* <https://www.javatpoint.com/jdbc-tutorial>
* JDBC Connection Guide

1. **Greeks of geeks**
   * + <https://www.geeksforgeeks.org/crud-full-form/>
     + Crud Operations Guide
2. **Greeks of geeks**

* <https://www.geeksforgeeks.org/introduction-java-servlets/>
* Servlet Guide