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ABSTRACT

The Research Tracker application is a comprehensive solution that caters to the needs of researchers, both students and faculty members, providing them with a powerful set of tools for managing their research papers. With features like adding, editing, and deleting papers, researchers can easily keep their work up to date. The application's intuitive dashboard allows users to navigate through different departments, giving them quick access to a categorized list of approved research papers. This categorization enables researchers to explore relevant papers within their field of interest. Moreover, the system facilitates efficient management of user profiles, enabling researchers to make changes to their personal information as needed. Uploading and submitting research papers is a seamless process, and researchers can even apply for patents related to their work. The system tracks the approval status of research papers, providing transparency and ensuring that researchers are informed about the progress of their submissions.

Administrators play a vital role in the system, reviewing and approving pending research papers, funding applications, and patent requests. The application relies on MySQL as the underlying database management system, ensuring secure and reliable storage of research data. JSP serves as the server-side technology, enabling dynamic content generation and seamless interaction with the database. Overall, the Research Tracker application simplifies research management, enhances collaboration, and supports the scholarly endeavours of researchers.

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Research Tracker

1. Introduction :

The Research Tracker application provides a set of functions for researchers, including adding, editing, and deleting research papers, as well as checking the status of their papers. The dashboard allows users to navigate through different departments and access a comprehensive list of approved research papers categorized by department. Users can manage their profiles and research papers, including making changes to personal information, uploading and submitting research papers, and editing or deleting existing papers. The system also includes features for attaching files, applying for patents, and tracking the approval status of research papers. Admins have additional capabilities to review and approve pending research papers, funding applications, and patent requests.

1.1. Problem Statement :

1. Lack of Centralized Paper Management: Researchers lack a centralized system to efficiently manage their research papers.
2. Manual and Time-Consuming Submission Process: The current paper submission process is manual and time-consuming, leading to delays.
3. Limited Visibility of Research Papers: Research papers have limited visibility, making it difficult for researchers to showcase their work.
4. Inadequate Collaboration and Feedback Mechanisms: Researchers lack effective platforms for collaboration and receiving feedback on their work.
5. Inefficient Tracking of Funding and Patent Applications: Tracking the status of funding and patent applications is inefficient for researchers.
6. Administrative Burden in Paper Review and Approval: Administrators face challenges in efficiently reviewing and approving research papers.

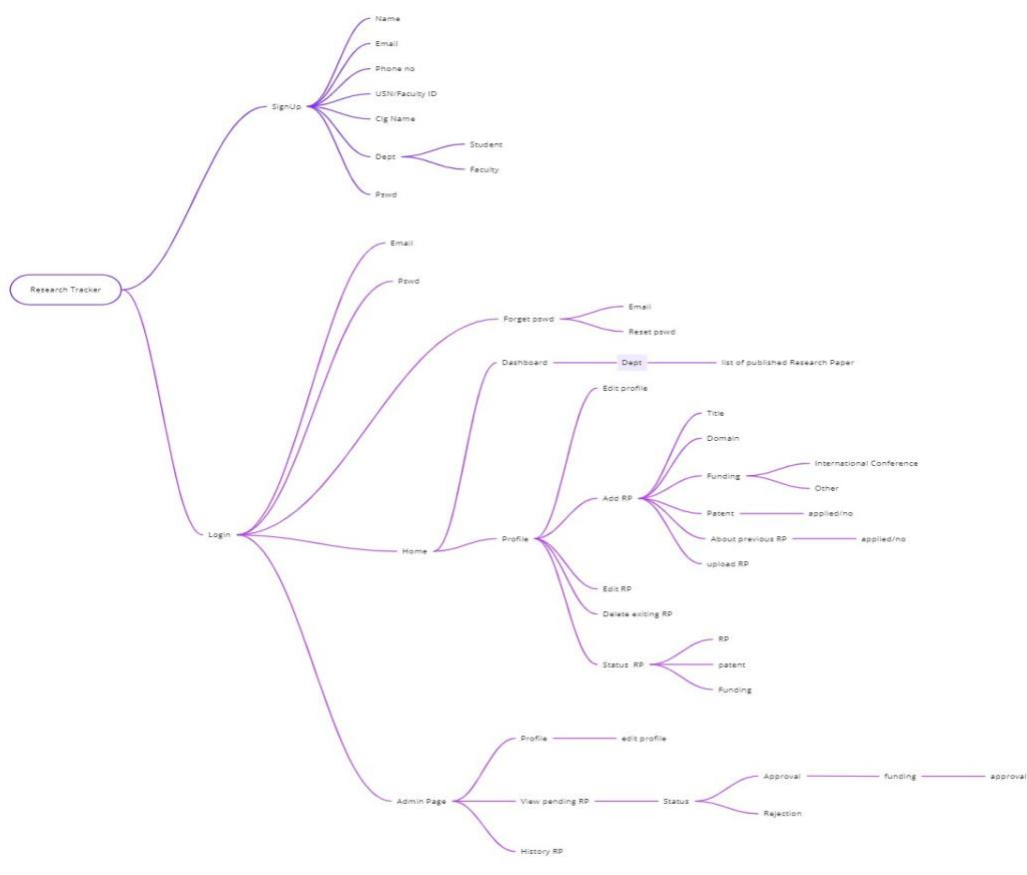
1.2. Solution:

1. **Centralized Paper Management:** The application offers a centralized platform for researchers to manage their papers efficiently.
2. **Streamlined Submission Process:** Researchers can electronically submit papers, eliminating manual steps and reducing delays.
3. **Enhanced Visibility of Research Papers:** The application categorizes papers by department, providing a comprehensive list for increased visibility.
4. **Collaboration and Feedback Mechanisms:** Researchers can collaborate, share papers, and receive feedback from peers within the application.
5. **Efficient Tracking of Funding and Patent Applications:** The application allows researchers to track the status of funding and patent applications.
6. **Streamlined Paper Review and Approval:** Administrators have an interface to efficiently review and approve papers, reducing administrative burden.
7. **By implementing these solutions,** the Research Tracker application aims to improve paper management, streamline submissions, enhance visibility and collaboration, facilitate tracking of funding and patent applications, and optimize the paper review and approval process.

2. System Design :

2.1. Mindmap :

A mind map is a graphical tool used to visualize and organize information. It starts with a central idea or concept, and related ideas branch out in a hierarchical and interconnected manner. It promotes creativity, brainstorming, and structured thinking by capturing ideas, concepts, and relationships in a visually appealing and intuitive format. Mind maps can be created on paper or using digital tools, allowing for easy modification and expansion of ideas. They are commonly used for planning, problem-solving, note-taking, and knowledge organization.

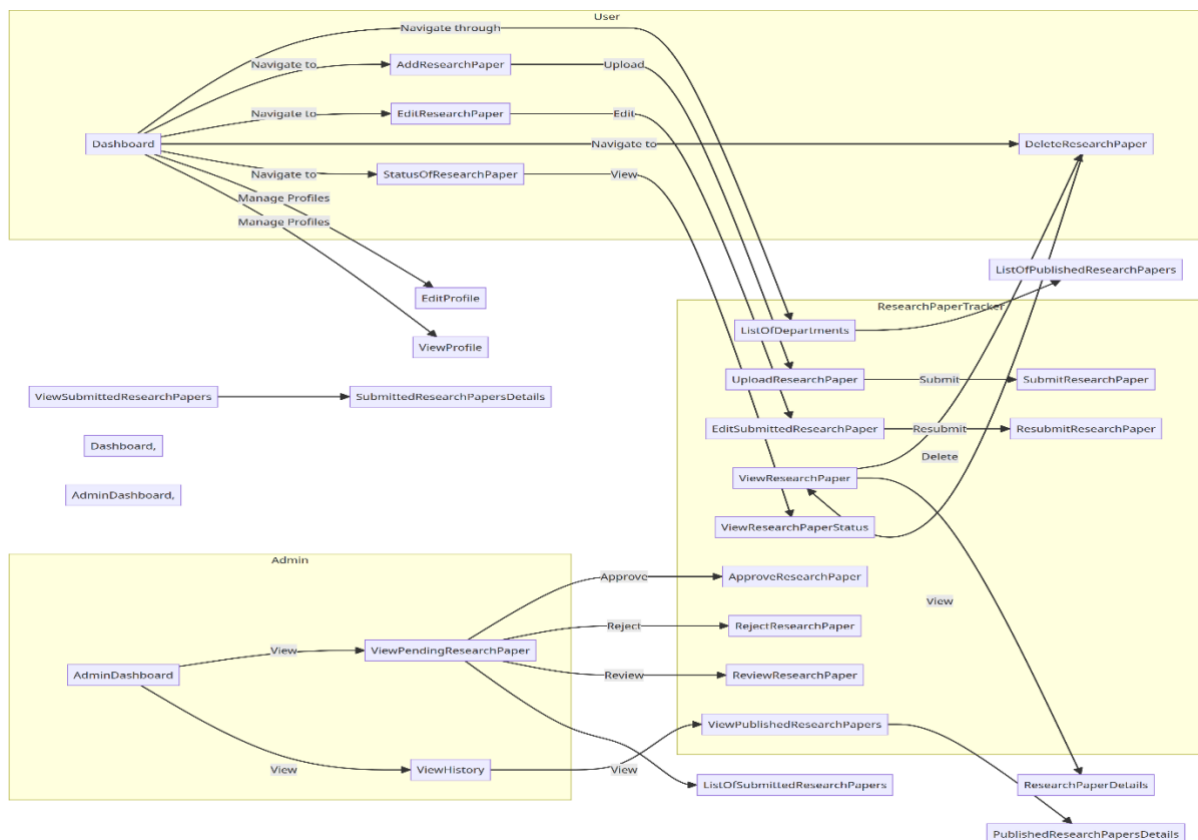


miro

2.1 Mindmap

2.2 System Architecture

System architecture is the high-level design that defines the components, interactions, and structure of an application. It determines how different parts of the system work together, ensuring scalability, reliability, and maintainability, and serving as a blueprint for development, deployment, and performance optimization.

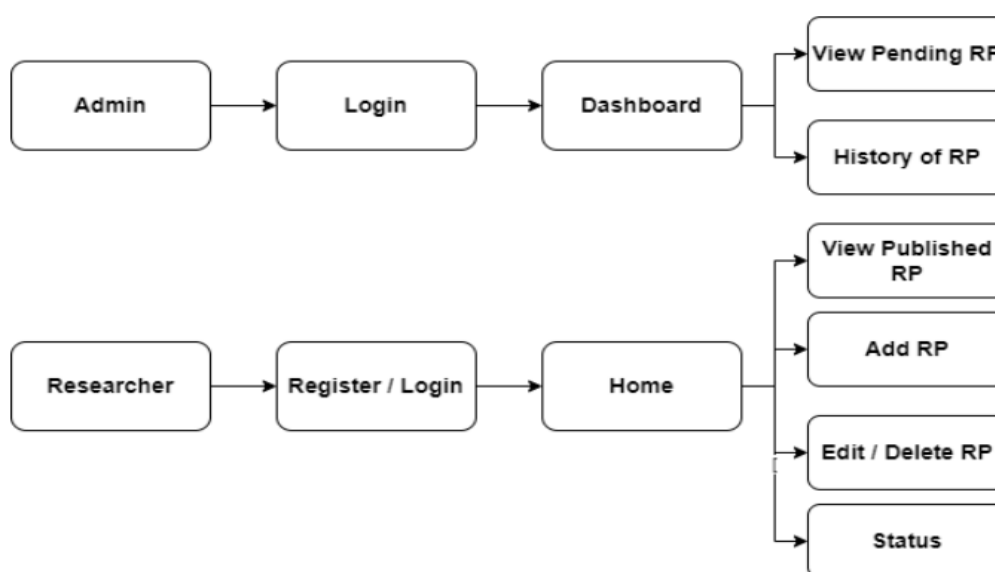


2.2 System architecture

The Research Tracker application utilizes a client-server architecture. It offers researchers features such as paper management, status tracking, department navigation, and profile management. Users can perform actions like adding, editing, and deleting papers, while admins have additional capabilities for review and approval of pending submissions and funding applications.

3. Functional Requirements

The Research Tracker application follows a client-server architecture. HTML, CSS, and JavaScript are used for the front-end, providing a user-friendly interface. The back-end utilizes Core Java, JSP, and AJAX for business logic, database connections, and server-side processing. This architecture enables researchers to interact with the application, ensuring data security, scalability, and reliable performance.



3.1 Dashboard Workflow

Researchers can edit their profile information, add research papers by providing necessary details. They can upload the research paper file and submit it for review. Researchers can also edit or delete their previously uploaded research papers. The status feature allows them to view the approval or rejection status of their submitted papers, including funding and patent applications.

Administrators can review pending research papers, funding applications, and patent requests. They can access a department-wise list of submitted research papers awaiting review. Admins have the authority to approve or reject the requested research papers, funding applications, and patent requests. Additionally, admins can view the history of published research papers, providing insight into the previously approved papers categorized by department.

3.1 Features :

Researcher (Student/Faculty) Interactions:

Researchers can manage their profiles and papers efficiently. They can edit their profile details, add research papers with title, domain, funding, and patent information. They can upload papers, view their status, and edit or delete submitted papers.

Admin Interactions:

Admins review pending research papers, funding applications, and patent requests. They can approve or reject papers and view the history of published research papers. Admins have authority over the approval process and manage the application workflow effectively.

Features for student/faculty :

Dashboard >> List of department >> List of published research papers

Dashboard >> Add research paper >> Upload research paper >> submit

Dashboard >> Edit research paper >> resubmit

Dashboard >> Delete research paper >> view research paper >> delete

Features for Admin :

Admin Dashboard >> View pending research paper >> approve

Admin Dashboard >> history >> view research paper (approved / rejected / pending)

Field Name	Description
Add research paper	Allows the user to add new research paper
Edit/Delete research paper	Allows the user to edit/delete the research paper
Status of research paper	Displays the current status of research paper
View pending research paper	Allows the admin to view research paper
History	Allows admin to view all research papers

1. Add Research Paper :

Add research paper >> upload research paper >> submit

Click the **title** field to enter the title of the research paper.

Click the **domain** field to specify the respective domain.

Click the **funding field** to indicate international funding or other sources.

Click the **patent field** to apply for a patent.

Click on **upload** to attach the research paper.

Click on **submit** to submit the research paper.

2. Edit/Delete Research Paper:

Edit research paper >> resubmit

Delete research paper >> view research paper >> delete

Click on **edit** to modify the submitted research paper.

After editing the research paper, click on **update** to save and update the changes made to the research paper.

Click on **delete** to permanently remove the selected research paper.

3. Status of Research Paper:

Status >> view research paper >> view status (funding / patent)

Click on **status**, it displays the status of the research paper, primarily indicating the approval or rejection status of your published paper, funding, and patent applications.

Click **Back to Home** to navigate back to the Home.

Click **Logout** to logout.

4. TECHNICAL DETAILS

4.1 JSP :

JSP (JavaServer Pages) is a technology that allows the creation of dynamic web pages by combining HTML or XML with Java code. It provides a way to separate the presentation logic from the business logic in web applications. Here are some key points about JSP:

Dynamic Content Generation:

- JSP allows the inclusion of Java code within HTML or XML markup.
- The Java code can be used to generate dynamic content, retrieve data from databases, perform calculations, or interact with other components of the web application.

Server-Side Processing:

- JSP files are processed on the server side and converted into servlets before being executed.
- The servlet container compiles the JSP files into Java servlets, which are then handled by the servlet engine to generate the final HTML output.

Tag-Based Syntax:

- JSP uses both standard HTML/XML tags and JSP-specific tags.
- Standard tags are used for creating HTML structure, while JSP tags provide additional functionality and control over dynamic content generation.

Directives:

- JSP includes directives that provide instructions to the container for processing the JSP files.
- Common directives include the `page` directive for setting page-level attributes, the `include` directive for including other files, and the `taglib` directive for importing custom tag libraries.

4.2 HTML :

HTML (Hypertext Markup Language) is the standard markup language for creating web pages and applications. It defines the structure and content of a webpage, allowing browsers to interpret and display the information to users. Here are some key points about HTML:

Document Structure:

HTML documents have a hierarchical structure defined by tags. The basic structure consists of an opening `<html>` tag and a closing `</html>` tag, with the content contained within the `<body>` tags.

Tags and Elements:

HTML uses tags to define elements and their characteristics. Tags are enclosed in angle brackets, such as `<tagname>content</tagname>`. Examples of common tags include `<p>` for paragraphs, `<h1>` to `<h6>` for headings, `<a>` for links, and `` for images.

Attributes:

Tags can have attributes that provide additional information or modify their behavior. Attributes are specified within the opening tag, using the format `attributeName="value"`.

For example, the `<a>` tag has an `href` attribute that specifies the URL of the link.

Semantic Elements:

HTML5 introduced semantic elements that convey the meaning of the content. Semantic elements, such as `<header>`, `<nav>`, `<main>`, `<section>`, and `<footer>`, provide a clearer structure and improve accessibility.

4.3 Cascading Style Sheets (CSS):

CSS (Cascading Style Sheets) is a styling language used to describe the presentation and appearance of HTML (or XML) documents. It provides a way to define the visual aspects of web pages, including layout, colors, fonts, and other stylistic elements. Here are some key points about CSS:

Selectors and Declarations:

- CSS uses selectors to target HTML elements that need to be styled. Selectors can be based on element types, class names, IDs, attributes, or their relationships within the document structure.
- Declarations are used to define the styles applied to selected elements, such as colors, fonts, margins, and padding.

Styling Techniques:

- CSS offers various styling techniques, including:
- Box Model: Controlling the dimensions and spacing of elements using properties like width, height, margin, padding, and border.
- Typography: Modifying font properties such as size, family, weight, style, and text alignment.
- Colors and Backgrounds: Setting background colors, images, gradients, and text colors.
- Layout: Positioning and arranging elements with properties like display, float, positioning, and flexbox/grid layouts.
- Transitions and Animations: Applying smooth transitions and animations to elements using CSS properties.

CSS Selectors:

CSS provides a wide range of selectors for targeting specific elements or groups of elements. Selectors include element selectors, class selectors, ID selectors, attribute selectors, pseudo-classes, and pseudo-elements.

4.4 JAVA :

Java is a popular, general-purpose programming language that was first released by Sun Microsystems in 1995. It was designed to be platform-independent, meaning that Java programs can run on any device or operating system that has a Java Virtual Machine (JVM) installed. This characteristic, along with its object-oriented nature, has contributed to Java's widespread adoption and versatility.

Key Features of Java:

Object-Oriented: Java follows the principles of object-oriented programming (OOP), which organizes code into reusable objects that interact with each other. This approach promotes modularity, code reusability, and easier maintenance.

Platform-Independent: Java programs are compiled into bytecode, which can be executed on any system that has a JVM. This "write once, run anywhere" capability allows Java applications to run on different platforms without modification.

Strong Memory Management: Java manages memory automatically through a process called garbage collection. Developers do not have to manually allocate or deallocate memory, reducing the risk of memory leaks and improving overall program stability.

Robust Standard Library: Java comes with a comprehensive standard library, known as the Java Development Kit (JDK), which provides a wide range of classes and methods for various purposes. This extensive library simplifies common programming tasks, such as input/output operations, networking, and multithreading.

Exception Handling: Java includes built-in exception handling mechanisms, which allow developers to catch and handle errors or exceptional events during program execution. This feature enhances the robustness and reliability of Java applications.

5. SNAPSHOTS :



Figure 4.1 : Snapshot of Home Page

The image shows the 'Create new Account' sign-up page. It features a light blue background with a central white form box. The form contains the following fields: 'Name' (with a person icon), 'Email ID' (with an envelope icon), 'Phone No.' (with a phone icon), 'USN / Fac. ID' (with a person icon), 'College Name' (with a person icon), and 'Password' (with a key icon). Below these fields is a 'User' section with radio buttons for 'Student' and 'Faculty'. A 'SIGN UP' button is located at the bottom of the form. Above the form, there is a link that says 'Already Registered? [Log in here!](#)'.

Figure 4.2 : Snapshot of Sign up Page

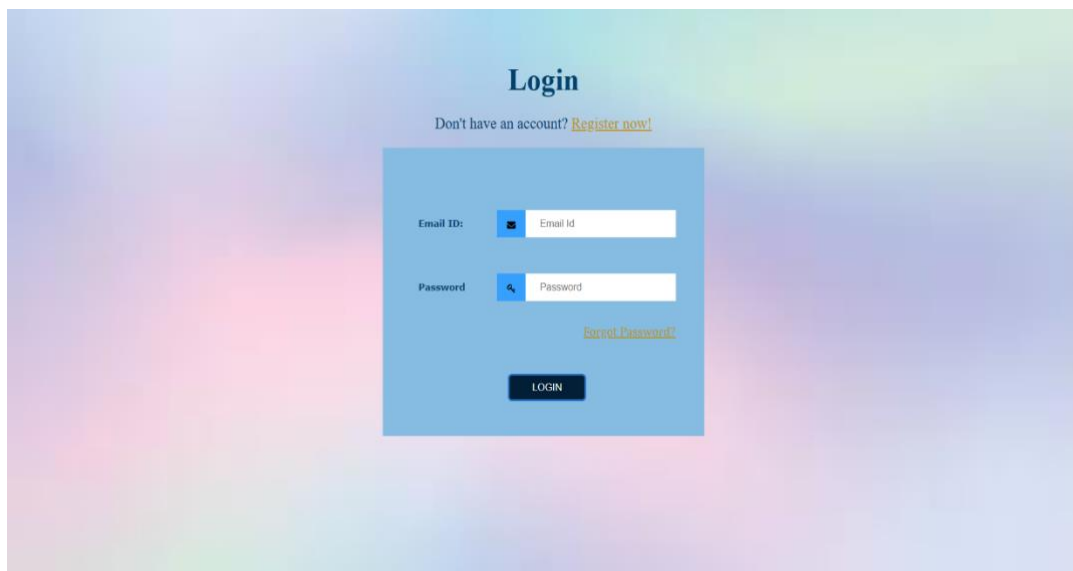


Figure 4.3 : Snapshot of Login Page

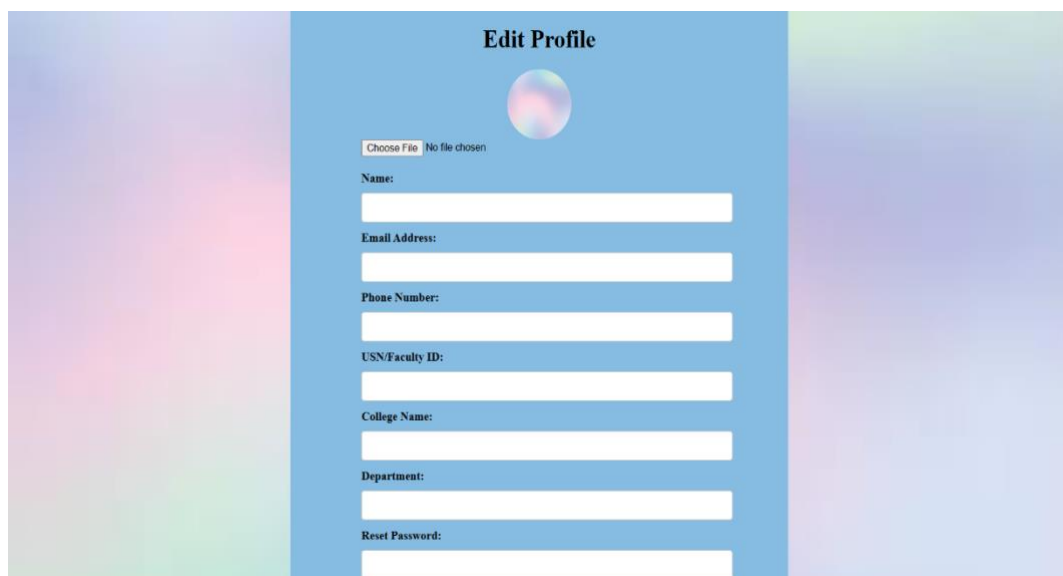
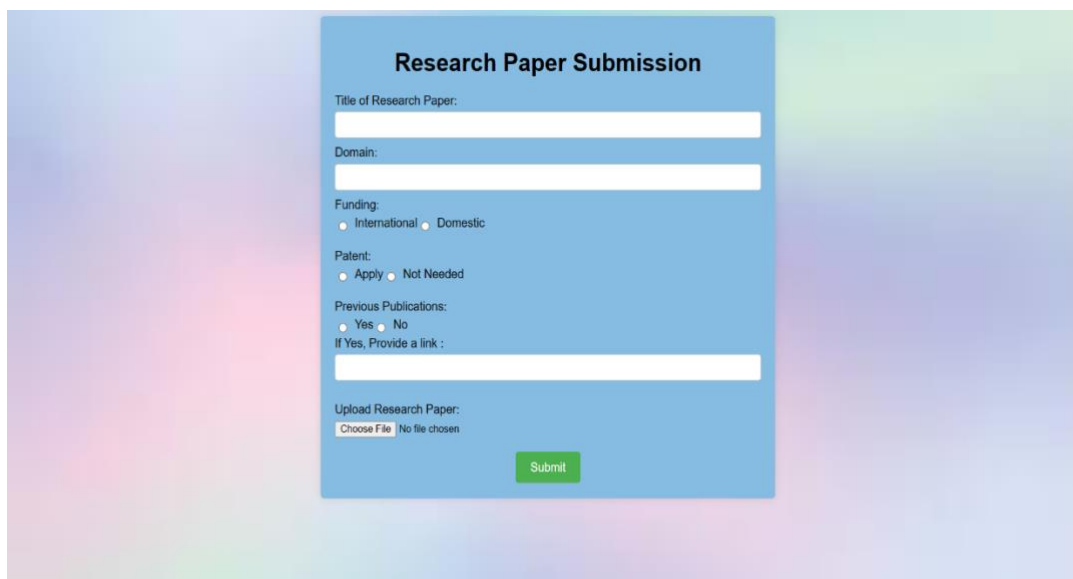


Figure 4.4 : Snapshot of Edit Profile Page



Research Paper Submission

Title of Research Paper:

Domain:

Funding:
☐ International ☐ Domestic

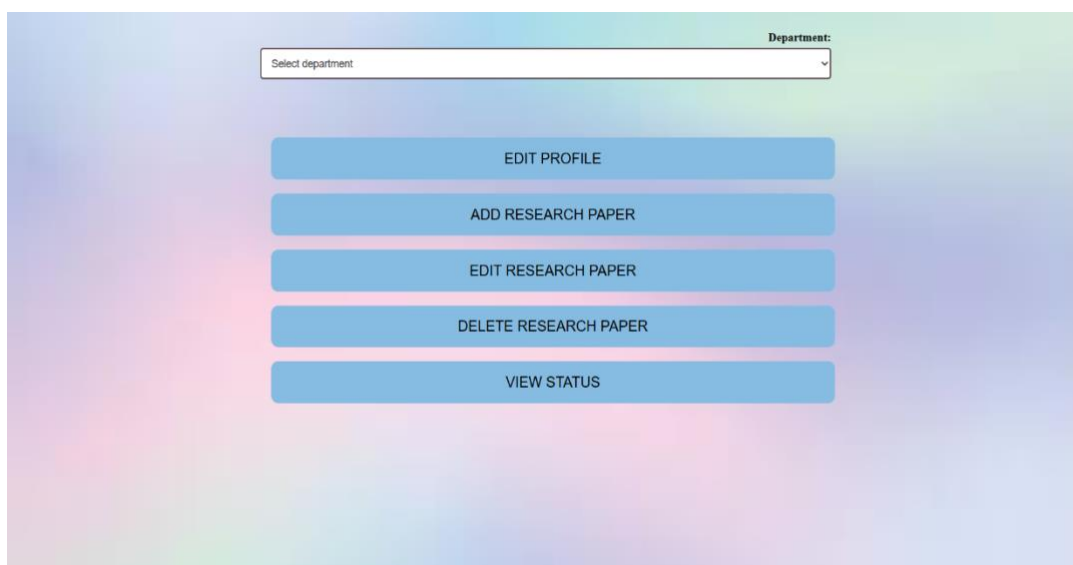
Patent:
☐ Apply ☐ Not Needed

Previous Publications:
☐ Yes ☐ No

If Yes, Provide a link :

Upload Research Paper:
 No file chosen

Figure 4.5 : Snapshot of Add Paper Page



Department:

Figure 4.6 : Snapshot of Functionality Selection Page

6. Conclusion

The Research Tracker application is a powerful tool that empowers researchers by providing efficient management of research papers and streamlining the submission and approval processes. With its user-friendly interface and comprehensive features, it enhances collaboration and facilitates knowledge sharing among researchers. The integration of MySQL and JSP ensures reliable data storage and dynamic content generation. Overall, the Research Tracker application revolutionizes research management, making it more organized, accessible, and efficient.

7. Future Enhancements

1. Integration with external citation databases to automatically fetch citation details and enhance the research paper metadata.
2. Collaboration features such as real-time co-authoring, commenting, and version control to foster collaborative research efforts.
3. Integration with machine learning algorithms for automated plagiarism detection and content recommendation.
4. Advanced analytics and reporting capabilities to provide insights into research trends, citation impact, and funding opportunities.
5. Mobile application development to facilitate on-the-go access and seamless research management.
6. Integration with academic publishing platforms for direct submission and tracking of research papers.
7. Enhanced security features such as two-factor authentication and encryption to protect sensitive research data.

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