MAJOR PROJECT REPORT ON
PLACEZEN

Submitted in Partial fulfilment of the requirements for the degree of
BACHELOR OF TECHNOLOGY in **Computer Science and Engineering**

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Declaration

I, Saloni, hereby declared that the project reported title "PlaceZen" submitted in partial fulfilment of the requirement for the Bachelor of technology in computer science and engineering for the award of marks of major project in 7th semester, has not been previously submitted in this institute or some other institute for academic purpose.

Saloni

SALONI
(Candidate's Signature)

Acknowledgement

The success and final outcome of learning of PLACEZEN required a lot of guidance and assistance from many people and I am extremely privileged to have got this all along the completion of my course and the projects. All that I have done is only due to such supervision and assistance and I would not forget to thank them.

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A heartfelt nod to our comrades in arms, the team member and my best friend Sonu Kumar whose dedication and passion infused every task with energy and purpose. Together, we transformed obstacles into opportunities, turning dreams into reality.

And to our beloved families and friends, the silent pillars of strength, we owe a debt of gratitude for their unwavering support and understanding, allowing us to pursue our passions with fervour. To everyone who played a part, big or small, in the tapestry of this project's success, we offer our deepest thanks. Your contributions have left an indelible mark on this endeavour, enriching it beyond measure.

This acknowledgement will remain incomplete if I fail to express our deep sense of obligation to God for their consistent blessings and encouragement.

Saloni

SALONI
(Candidate's Signature)

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Skills and Technology used

Spring Boot

Spring Boot is an open-source Java-based framework used to create standalone, production-grade Spring-based applications easily. It's built on top of the Spring framework and follows the "convention over configuration" principle, which means it provides defaults for configuration and allows developers to get started with minimal setup.

Spring Boot simplifies the process of setting up and configuring Spring-based applications by providing a set of pre-configured components, such as embedded servers (like Tomcat, Jetty, or Undertow), default configurations for various Spring projects, and dependency management through its starter dependencies.

With Spring Boot, developers can focus more on writing business logic and less on configuring the infrastructure, which significantly improves productivity. It also promotes best practices for building robust and maintainable applications.

Key Features of Spring Boot:

1. **Auto-configuration**: Spring Boot uses sensible defaults to configure the Spring application context automatically. It analyses the class path and the environment to determine which libraries are present and how to configure them.
2. **Starter Dependencies**: Spring Boot offers a wide range of starter dependencies, which are pre-configured dependencies that simplify the setup of various Spring-related technologies, such as Spring MVC, Spring Data, Spring Security, etc. These starters include all the necessary dependencies and configuration needed to get started with a particular functionality.
3. **Embedded Servers**: Spring Boot provides support for embedded servers like Tomcat, Jetty, and Undertow. This means that you can package your application as an executable JAR or WAR file, including the server, and run it without the need for external server installations.
4. **Spring Boot Actuator**: Actuator is a sub-project of Spring Boot that provides production-ready features to help you monitor and manage your application. It includes endpoints for health checks, metrics, environment information, and more. Actuator endpoints can be easily customized and secured as needed.
5. **Spring Boot DevTools**: DevTools is another helpful feature that improves the developer experience. It provides fast application restarts, Live Reload support for browser applications, and enhanced development-time error reporting. DevTools are automatically disabled in production.
6. **Spring Boot CLI (Command Line Interface)**: Spring Boot CLI allows you to quickly develop Spring applications using Groovy scripts. It provides a fast way to prototype and develop Spring applications without the need to write lengthy XML configurations or Java code.

Java

Java, the programming language. Java is a widely used, high-level, object-oriented programming language developed by Sun Microsystems (now owned by Oracle Corporation). Here's a brief overview:

Key Features of Java:

1. **Platform Independence**: Java programs are compiled into bytecode, which can run on any device or platform with a Java Virtual Machine (JVM). This "write once, run anywhere" capability makes Java highly portable.
2. **Object-Oriented**: Java is object-oriented, meaning it supports concepts such as encapsulation, inheritance, and polymorphism. This allows for modular and reusable code.
3. **Robust and Secure**: Java's strong memory management, exception handling, and security features make it robust and reliable for building large-scale applications. It also includes built-in security mechanisms to protect against various threats.
4. **Multi-threaded**: Java supports multithreading, allowing programs to perform multiple tasks simultaneously. This concurrency feature is essential for developing scalable and responsive applications.
5. **Rich Standard Library**: Java comes with a vast standard library (Java API) that provides ready-to-use classes and methods for common tasks like I/O operations, networking, data structures, and more. This extensive library reduces the need for developers to write code from scratch.
6. **Automatic Memory Management**: Java uses a garbage collector to automatically manage memory allocation and deallocation, relieving developers from manual memory management tasks and reducing the risk of memory leaks.
7. **Community and Ecosystem**: Java has a large and active community of developers, which means there's abundant documentation, tutorials, and support available. Additionally, there are numerous third-party libraries and frameworks that extend Java's functionality for various purposes.

Common Use Cases of Java:

1. **Enterprise Applications**: Java is widely used for developing enterprise-level applications such as web applications, backend services, enterprise resource planning (ERP) systems, customer relationship management (CRM) systems, etc.
2. **Desktop Applications**: Java's rich GUI toolkit, JavaFX, enables developers to create cross-platform desktop applications with modern user interfaces.
3. **Mobile Applications**: Although not as popular as other languages for mobile development, Java is used for Android app development using the Android SDK.
4. **Web Development**: Java is used in combination with frameworks like Spring, Hibernate, and Apache Struts for building robust and scalable web applications.
5. **Big Data and Analytics**: Java is commonly used in big data processing frameworks like Apache Hadoop and Apache Spark for data analysis and processing.

Java's versatility, reliability, and extensive ecosystem make it one of the most popular programming languages in the world, used across a wide range of industries and application domains.

React Js

React.js, commonly referred to as React, is an open-source JavaScript library developed by Facebook for building user interfaces, particularly for single-page applications (SPAs) and dynamic web applications. Here's an overview of React.js:

Key Features of React.js:

1. **Component-Based Architecture**: React.js follows a component-based approach where the UI is broken down into reusable and independent components. Each component manages its own state, which simplifies the development and maintenance of complex user interfaces.
2. **Virtual DOM (Document Object Model)**: React.js uses a virtual DOM to optimize the performance of UI updates. Instead of directly manipulating the browser's DOM, react creates a lightweight virtual representation of the DOM in memory and updates only the necessary parts when the application state changes. This results in faster rendering and improved performance.
3. **Declarative Syntax**: React uses a declarative syntax, allowing developers to describe the desired UI state and react takes care of updating the DOM to match that state. This makes the code more predictable and easier to understand.
4. **JSX (JavaScript XML)**: React introduces JSX, which is a syntax extension for JavaScript that allows developers to write HTML-like code within JavaScript. JSX enhances readability and enables the composition of UI components directly within the code.
5. **Unidirectional Data Flow**: React follows a unidirectional data flow architecture, also known as Flux or Redux architecture. Data flows in a single direction from parent components to child components, which makes it easier to understand and debug the application's state changes.
6. **React Native**: React.js can be used in conjunction with React Native, a framework for building native mobile applications using JavaScript and React. React Native allows developers to write code once and deploy it on multiple platforms, such as iOS and Android, while still providing a native user experience.

Benefits of React.js:

1. **Performance**: Reacts virtual DOM and efficient rendering algorithms contribute to better performance by minimizing DOM manipulation and re-renders.
2. **Reusable Components**: Reacts component-based architecture promotes reusability and modularity, allowing developers to build UI components once and reuse them across different parts of the application.
3. **Developer Experience**: Reacts declarative syntax, JSX, and strong ecosystem of tools and libraries enhance developer productivity and make the codebase easier to maintain.

My SQL

MySQL is an open-source relational database management system (RDBMS) that is widely used for storing and managing structured data. Here's an overview of MySQL:

Key Features of MySQL:

1. **Relational Database**: MySQL is a relational database system, which means it organizes data into tables with rows and columns, and establishes relationships between tables using keys.
2. **SQL (Structured Query Language) Support**: MySQL supports SQL, a standard language for managing relational databases. SQL is used for tasks such as querying data, inserting, updating, and deleting records, creating and modifying database schemas, and managing user permissions.
3. **ACID Compliance**: MySQL follows the principles of ACID (Atomicity, Consistency, Isolation, Durability), ensuring data integrity and reliability even in the event of system failures or crashes.
4. **Scalability**: MySQL supports scalability both vertically (by adding more resources to a single server) and horizontally (by distributing data across multiple servers using techniques like sharding or replication).
5. **High Performance**: MySQL is known for its high performance and can handle large volumes of data and concurrent connections efficiently. It includes features like indexing, query optimization, and caching mechanisms to improve performance.
6. **Storage Engines**: MySQL supports multiple storage engines, each optimized for different use cases. The most commonly used storage engine is InnoDB, which provides features like transactions, foreign key constraints, and row-level locking.
7. **Cross-Platform Compatibility**: MySQL is available for various operating systems, including Linux, Windows, macOS, and various Unix-like systems. This cross-platform compatibility makes it easy to deploy MySQL in diverse environments.
8. **Community and Enterprise Editions**: MySQL is available in two editions: Community Edition (free and open-source) and Enterprise Edition (commercially licensed with additional features and support). The Community Edition is widely used by developers and small to medium-sized businesses, while the Enterprise Edition is tailored for larger enterprises with specific requirements.

Common Use Cases of MySQL:

1. **Web Applications**: MySQL is commonly used as the backend database for web applications, powering content management systems (CMS), e-commerce platforms, social media sites, and more.
2. **Data Warehousing**: MySQL can be used for storing and analysing large volumes of data in data warehousing and business intelligence (BI) applications.
3. **Online Transaction Processing (OLTP)**: MySQL is suitable for OLTP applications that require fast and reliable transaction processing, such as banking systems, e-commerce transactions, and order processing systems.

HTML

HTML, or Hypertext Markup Language, is the standard markup language used to create and structure content on the World Wide Web. Here's an overview of HTML:

Common HTML Elements:

1. **Text Elements**: <p> (paragraph), <h1> to <h6> (heading levels), (inline text container), (strong emphasis), (emphasis), <a> (anchor/link), <blockquote> (block quotation), <pre> (preformatted text), etc.
2. **List Elements**: <ul> (unordered list), <ol> (ordered list), <li> (list item).
3. **Form Elements**: <form> (form container), <input> (input fields), <button> (button), <select> (dropdown list), <text area> (text input area), <label> (form label), etc.
4. **Media Elements**: <img> (image), <audio> (audio content), <video> (video content).
5. **Table Elements**: <table> (table container), <tr> (table row), <th> (table header), <td> (table data/cell).

HTML Attributes:

1. **src**: Specifies the URL of the resource, such as an image or audio file.
2. **href**: Specifies the URL of the hyperlink destination.
3. **alt**: Provides alternate text for images, useful for accessibility and SEO.
4. **id**: Specifies a unique identifier for an element.
5. **class**: Specifies one or more classes for styling and JavaScript manipulation.

HTML5 Features:

1. **New Semantic Elements**: Introduced elements like <header>, <footer>, <nav>, <article>, <section>, etc., for better document structure.
2. **Canvas and SVG**: Added support for drawing graphics and animations using the <canvas> and <svg> elements.
3. **Video and Audio**: Native support for embedding video and audio content using the <video> and <audio> elements.
4. **Form Enhancements**: New input types (<input type="date">, <input type="email">, etc.) and attributes for better form handling.
5. **Local Storage**: Introduced the local Storage API for storing data locally in the browser.

CSS

CSS, or Cascading Style Sheets, is a style sheet language used to describe the presentation of HTML (or XML) documents. It defines how HTML elements are displayed on screen, in print, or spoken aloud. Here's an overview of CSS:

Key Concepts in CSS:

1. **Selectors**: CSS selectors are patterns used to select the elements you want to style. They can target elements based on their tag name, class, ID, attributes, and relationship with other elements in the document.
2. **Properties and Values**: CSS properties define the visual aspects of selected elements, such as colour, font size, margin, padding, etc. Each property has a corresponding value that determines its specific appearance.
3. **Declaration Block**: CSS rules consist of one or more declarations, which are made up of a property-value pair, enclosed in curly braces {}. Multiple declarations within a rule are separated by semi colons.
4. **Cascading**: CSS stands for Cascading Style Sheets, which means that styles can cascade from one rule to another based on specificity and inheritance. Styles can be defined inline, in an external stylesheet, or in a <style> block within the HTML document, and they cascade according to a set of rules.
5. **Box Model**: The CSS box model describes the layout and design of elements on a web page. It consists of content, padding, border, and margin. Understanding the box model is crucial for creating layouts and spacing elements properly.
6. **Media Queries**: Media queries allow you to apply different styles based on the characteristics of the device or viewport, such as screen size, orientation, or resolution. They are commonly used for creating responsive designs that adapt to different devices and screen sizes.

Common CSS Properties:

1. **Color**: colour, background-colour, border-colour, etc.
2. **Typography**: font-family, font-size, font-weight, line-height, etc.
3. **Layout**: width, height, margin, padding, display, position, etc.
4. **Flexbox**: Properties like flex-direction, justify-content, align-items, etc., for flexible layout designs.
5. **Grid**: Properties like grid-template-columns, grid-template-rows, grid-gap, etc., for grid-based layout designs.
6. **Transitions and Animations**: transition, animation, transform, etc., for adding motion and interactivity to elements.
7. **Responsive Design**: Media query-related properties like @media, min-width, max-width, etc., for creating responsive layouts.

AWS (database) RDS

RDS stands for Relational Database Service, which is a managed database service provided by Amazon Web Services (AWS). RDS makes it easy to set up, operate, and scale relational databases in the cloud. Here's an overview of RDS:

Key Features of RDS:

1. **Managed Service**: AWS RDS is a fully managed service, which means AWS handles database management tasks such as provisioning, patching, backups, monitoring, and scaling, allowing developers to focus on building applications rather than managing infrastructure.
2. **Multiple Database Engines**: RDS supports several popular relational database engines, including MySQL, PostgreSQL, MariaDB, Oracle, SQL Server, and Amazon Aurora. This allows developers to choose the database engine that best fits their application requirements.
3. **Automated Backups**: RDS automatically creates and maintains backups of the database instance, enabling point-in-time recovery to any second within the retention period. Backups are stored securely in Amazon S3.
4. **High Availability and Fault Tolerance**: RDS provides features such as Multi-AZ (Availability Zone) deployments and Read Replicas to enhance availability and fault tolerance. Multi-AZ deployments maintain a standby replica of the database in a different availability zone for failover purposes, while Read Replicas allow for read scaling by creating multiple copies of the database for read-heavy workloads.
5. **Scalability**: RDS allows for vertical scaling (increasing the instance size) and horizontal scaling (using Read Replicas) to handle increasing workloads and traffic demands. Amazon Aurora, a MySQL and PostgreSQL-compatible database engine built for the cloud, offers even greater scalability and performance compared to traditional database engines.
6. **Security**: RDS provides several security features, including network isolation using Amazon VPC (Virtual Private Cloud), encryption at rest using AWS Key Management Service (KMS), encryption in transit using SSL/TLS, IAM (Identity and Access Management) integration for fine-grained access control, and database activity monitoring through Amazon CloudWatch Logs.
7. **Monitoring and Logging**: RDS integrates with Amazon CloudWatch for monitoring database performance metrics such as CPU utilization, storage usage, and I/O activity. It also supports enhanced monitoring and logging features for deeper insights into database operations.
8. **Cost-Effective Pricing**: RDS offers a pay-as-you-go pricing model, where you only pay for the resources, you consume. It also provides cost-saving options such as Reserved Instances, which offer significant discounts for committing to a specific instance type and duration.

Tools used

IntelliJ

IntelliJ IDEA is an integrated development environment (IDE) developed by JetBrains for Java, Kotlin, Groovy, Scala, and other programming languages. It is widely regarded as one of the most powerful and feature-rich IDEs available for Java development. Here's an overview of IntelliJ IDEA:

Key Features of IntelliJ IDEA:

1. **Intelligent Code Assistance**: IntelliJ IDEA provides intelligent code completion, code analysis, and quick-fix suggestions to help developers write code faster and with fewer errors. It offers context-aware code completion, code refactoring, and code navigation features that streamline the development process.
2. **Advanced Refactoring**: IntelliJ IDEA includes a wide range of refactoring tools for improving code maintainability and readability. Developers can easily rename symbols, extract methods and variables, inline code, and perform other refactoring's with confidence, thanks to the IDE's robust refactoring capabilities.
3. **Built-in Version Control Integration**: IntelliJ IDEA seamlessly integrates with version control systems such as Git, Subversion, Mercurial, and Perforce, providing features like commit management, branch operations, conflict resolution, and history exploration directly within the IDE.
4. **Rich Plugin Ecosystem**: IntelliJ IDEA supports a vast ecosystem of plugins and extensions that extend its functionality to support additional languages, frameworks, tools, and workflows. Developers can customize and enhance their development environment by installing plugins from the IntelliJ IDEA Plugin Repository or creating their own custom plugins.
5. **Built-in Tools and Framework Support**: IntelliJ IDEA comes with built-in support for popular Java frameworks and technologies such as Spring, Hibernate, Java EE, Maven, Gradle, and Android development. It also provides integrated tools for database management, web development, and application deployment.
6. **Code Quality Tools**: IntelliJ IDEA includes built-in code quality tools that help developers maintain high-quality code standards. It performs static code analysis, detects code smells, highlights potential issues, and offers suggestions for improving code quality and performance.
7. **Testing Support**: IntelliJ IDEA supports various testing frameworks and provides tools for writing, running, and debugging unit tests, integration tests, and code coverage analysis. It integrates seamlessly with testing frameworks like JUnit, TestNG, and Spock.
8. **User Interface Designer**: IntelliJ IDEA includes a visual GUI designer for building user interfaces for Java and Kotlin applications. The GUI designer allows developers to create and preview Swing, JavaFX, and Android layouts visually, with support for drag-and-drop components and property editing.

VS Code

Visual Studio Code (VS Code) is a free, open-source code editor developed by Microsoft. It is widely used by developers for various programming languages and platforms due to its lightweight design, powerful features, and extensive customization options. Here's an overview of VS Code:

Key Features of Visual Studio Code:

1. **Cross-Platform Support**: Visual Studio Code is available for Windows, macOS, and Linux, making it accessible to developers across different operating systems.
2. **Intelligent Code Editing**: VS Code provides intelligent code completion, syntax highlighting, and code navigation features that help developers write code faster and with fewer errors. It supports a wide range of programming languages out-of-the-box and can be extended with language-specific extensions.
3. **Built-in Git Integration**: VS Code includes built-in Git version control integration, allowing developers to manage source code repositories, perform common Git operations, and visualize changes directly within the editor.
4. **Extensions Marketplace**: Visual Studio Code has a rich ecosystem of extensions available through the Visual Studio Code Marketplace. These extensions add additional functionality, language support, themes, and tools to enhance the development experience.

Common Use Cases of Visual Studio Code:

1. **Web Development**: VS Code is commonly used for web development, including HTML, CSS, JavaScript, and popular frameworks like React, Angular, and Vue.js.
2. **Backend Development**: Visual Studio Code supports a wide range of programming languages and frameworks for backend development, including Node.js, Python, Java, PHP, and Ruby on Rails.
3. **Mobile App Development**: VS Code is used for mobile app development, with extensions available for platforms like Flutter, React Native, Xamarin, and Ionic.
4. **Cloud Development**: Visual Studio Code has extensions for cloud development platforms such as Azure, AWS, Google Cloud Platform, and Docker, enabling developers to build, deploy, and manage cloud-native applications.
5. **Data Science and Machine Learning**: VS Code supports data science and machine learning workflows with extensions for languages like Python, R, and Julia, as well as frameworks like TensorFlow and Py-Torch.

AWS Cloud

The AWS Cloud, or Amazon Web Services Cloud, is a comprehensive and widely adopted cloud computing platform provided by Amazon.com. It offers a broad set of global cloud-based services, including computing power, storage, databases, analytics, machine learning, networking, security, and more. Here's an overview of AWS Cloud:

Key Components and Services of AWS Cloud:

1. **Compute Services**:
    - **Amazon EC2 (Elastic Compute Cloud)**: Provides resizable compute capacity in the cloud, allowing users to launch virtual servers (instances) with various operating systems and configurations.
2. **Storage Services**:
    - **Amazon S3 (Simple Storage Service)**: Provides scalable object storage for storing and retrieving any amount of data. It is designed for durability, availability, and performance.
3. **Database Services**:
    - **Amazon RDS (Relational Database Service)**: Managed relational database service that supports multiple database engines like MySQL, PostgreSQL, Oracle, SQL Server, and Amazon Aurora.
4. **Networking Services**:
    - **Amazon VPC (Virtual Private Cloud)**: Allows users to provision a logically isolated section of the AWS Cloud, including virtual networks, subnets, route tables, and security groups.
    - **Amazon Route 53**: Scalable domain name system (DNS) web service for routing incoming traffic to AWS resources or external endpoints.
5. **Security and Identity Services**:
    - **AWS IAM (Identity and Access Management)**: Enables users to securely control access to AWS services and resources by creating and managing IAM users, groups, roles, and policies.
    - **Amazon Guard Duty**: Managed threat detection service that continuously monitors for malicious activity and unauthorized behaviour within AWS accounts.
6. **Analytics and Big Data Services**:
    - **Amazon Redshift**: Fully managed data warehouse service for analysing large datasets using SQL queries.
    - **Amazon EMR (Elastic MapReduce)**: Managed big data processing service that runs Apache Hadoop, Spark, HBase, Presto, and other big data frameworks.

Postman

Postman is a popular collaboration platform for API development that simplifies the process of designing, testing, and documenting APIs. It offers a user-friendly interface and a wide range of features that streamline API development workflows. Here's an overview of Postman:

Key Features of Postman:

1. **API Testing**: Postman allows users to create and execute API requests, both manually and automatically, to test API endpoints and verify their functionality. It supports various request types, including GET, POST, PUT, PATCH, DELETE, and more.
2. **Collections and Environments**: Postman organizes API requests into collections, which are groups of related requests. Users can create collections to organize and manage API endpoints, and define environments to store variables and configuration settings for different deployment environments (e.g., development, staging, production).
3. **Request Builder**: Postman provides a powerful request builder that allows users to construct API requests using an intuitive interface. Users can specify request parameters, headers, body content (e.g., JSON, form data), authentication methods, and other options easily.
4. **Automated Testing**: Postman supports the creation of automated test scripts using JavaScript. Users can write tests to validate API responses, perform assertions on response data, check status codes, and more. These tests can be executed as part of a collection run or independently.
5. **Mock Servers**: Postman allows users to create mock servers based on API specifications, enabling frontend and backend teams to work independently during development. Mock servers simulate API responses based on predefined examples or schemas, helping teams to iterate and collaborate more effectively.
6. **API Documentation**: Postman generates interactive API documentation from collections, making it easy for developers to explore API endpoints, view request examples, and understand usage instructions. Documentation can be shared with team members or external stakeholders for reference.
7. **Integration with Third-Party Services**: Postman integrates with various third-party services and tools, such as version control systems (e.g., GitHub, GitLab), continuous integration (CI) platforms (e.g., Jenkins, Travis CI), and collaboration platforms (e.g., Slack), to streamline the API development workflow.
8. **Team Collaboration**: Postman offers collaboration features that enable team members to share collections, environments, and documentation, collaborate on API development tasks, and track changes using version control.

Project Report

Project Overview

What is a project?

A project is constituent of seven words and I have tried my best to give its definition analysing each word in the following manner.

P = Perfect Planning
R = Resources
O = Organisation
J = Joint Efforts
E = Engineering Skills
C = Communication
T = Techniques

Introduction to PlaceZen

Our project is our university placement website that helps students, teachers and admins to manage the placement records efficiently. I and my team member are the T & P Co-ordinators of our university and we often face these problems of managing the placement information where we don't have an interactive platform to communicate with students regarding the upcoming companies and also to be in touch with our talented alumni's

Project Purpose & Objective

The objective of PlaceZen encompasses various goals and aims to provide placement management services and resources through digital platforms. Some of the key objective of PlaceZen includes:

- **Accessibility**: It can be easily accessible by students, faculty staff and admins regardless of their geographic locations and time constraints.
- **Convenience**: PlaceZen provides a convenient way to everyone to manage everything efficiently.
- **Flexibility**: PlaceZen platform offers wide range of features to help student to release their panics and stress.
- **Progress Tracking**: It has features for keeping records of previous years placement and helps faculty to identify where our students are lacking so that we can focus on that skills to improve the performance.
- **Integration with technology**: It can easily integrate with technology advancements as it has various APIs serving different functionalities.

Hardware and Software requirements

The Project doesn't require any special hardware and software specifications.

For **Hardware** we need Computers, tablets, smart phones, CPUs with 16GB RAM and a strong & active internet connectivity.

For **Software** we need an Operating system it can be windows (most preferable) with some installations that are Vs Code, IntillJ these two are used for frontend part (HTML, CSS, JS also for framework ReactJs) and backend part (Spring boot with Java) for management of our website. Other than these we need to install Postman for the APIs management and testing part. Also, we need to store information on database for that we needed AWS cloud services platform which offers RDS for its database to handle and manage storage part.

System Information and Analysis

Computer Requirement CPU: 2 x 64-bit 2.8 GHz 8.00 GT/s CPUs. RAM: 8 GB (or 16 GB) Storage: 300 GB. Active Internet access and connectivity to download the files a USB drive containing all of the files you need with alternate instructions for air gapped installations.

File format: .js, .java to run various Java files.

System Architecture

The system architecture of PlaceZen involves defining the overall structure and components of system to ensure its functionality, scalability and performance. Here is an overview of the key components and their interactions:

- **User Interface:** It is frontend component that users interact with which includes website, mobile application or any other platform through which users can access various services.
- **Authentication:** It handles users' registration, login and account management. Users can create accounts, logins, with credentials and manage their profiles.
- **Content Management System:** It is responsible for managing and organising the placement management on the platforms. It servers the students with preparation materials too so that they can perform well with their internships and jobs.

Feasibility analysis

A feasibility study for a university placement website project would assess various aspects to determine its viability. Here's a breakdown of what such a study might entail:

- **Introduction**: Provide an overview of the proposed university placement website project, its objectives, and the need it aims to fulfil.
- **Market Feasibility**:

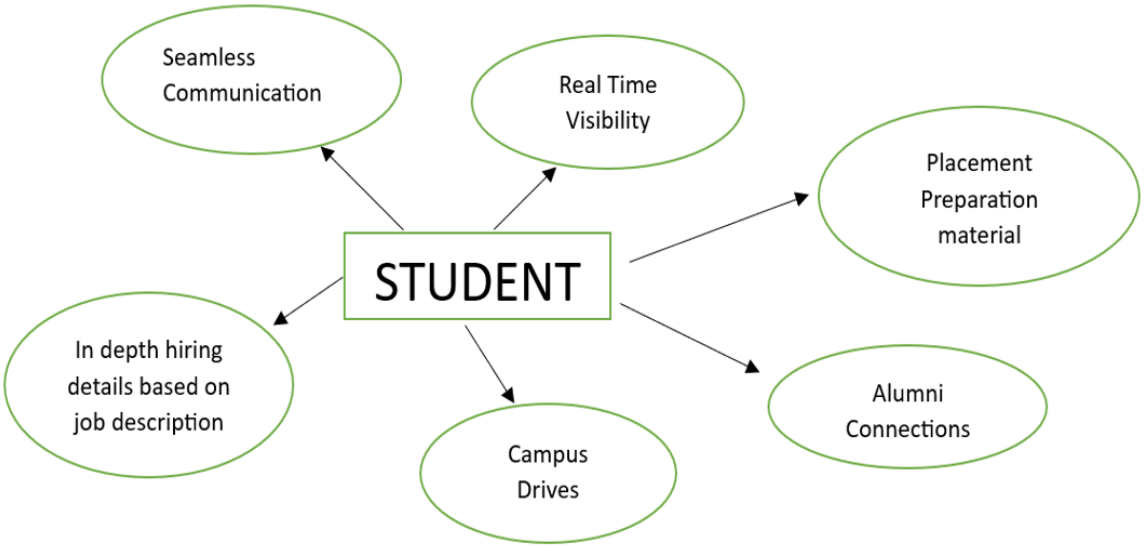
    - Analyse the demand for a university placement website among students, universities, and employers.
    - Identify competitors in the market and assess their strengths, weaknesses, and market share.
    - Conduct surveys or interviews with potential users to understand their preferences, needs, and expectations.
- **Technical Feasibility**:
    - Assess the technical requirements for developing and maintaining the website, including hosting, software development, and database management.
    - Evaluate the availability of necessary technologies and expertise.
    - Consider scalability and compatibility with various devices and browsers.
- **Financial Feasibility**:
    - Estimate the costs involved in developing, launching, and operating the website, including software development, marketing, and ongoing maintenance.
    - Project potential revenue streams, such as subscription fees from universities or employers, advertising revenue, or commission-based earnings.
    - Conduct a cost-benefit analysis to determine the project's financial viability, including ROI and payback period.
- **Legal and Regulatory Feasibility**:
    - Identify any legal or regulatory requirements related to data privacy, intellectual property rights, and online transactions.
    - Ensure compliance with relevant laws and regulations, such as GDPR or COPPA.
    - Consider any licensing or permits required to operate the website legally.
- **Operational Feasibility**:
    - Evaluate the feasibility of implementing and managing the website operationally, including staffing requirements, content management, and customer support.
    - Assess the compatibility of the website with existing university placement processes and systems.
    - Consider potential challenges and risks related to website operation and develop strategies to mitigate them.
- **Risk Analysis**:
    - Identify potential risks and uncertainties associated with the project, such as technological challenges, market competition, or regulatory changes.
    - Assess the impact of these risks on the project's success and develop risk mitigation strategies accordingly.
- **Recommendations and Conclusion**:
    - Based on the findings of the feasibility study, provide recommendations regarding the viability of the university placement website project.
    - Summarize the key findings and conclusions, highlighting the strengths and weaknesses of the project.
    - Make a recommendation on whether to proceed with the project and outline the next steps.
- **Appendices**:
    - Include any additional information, data, or supporting documents used in the feasibility study, such as market research reports, financial projections, technical specifications, and legal documents.

- By conducting a thorough feasibility study, stakeholders can make informed decisions about whether to proceed with the university placement website project and allocate resources effectively.

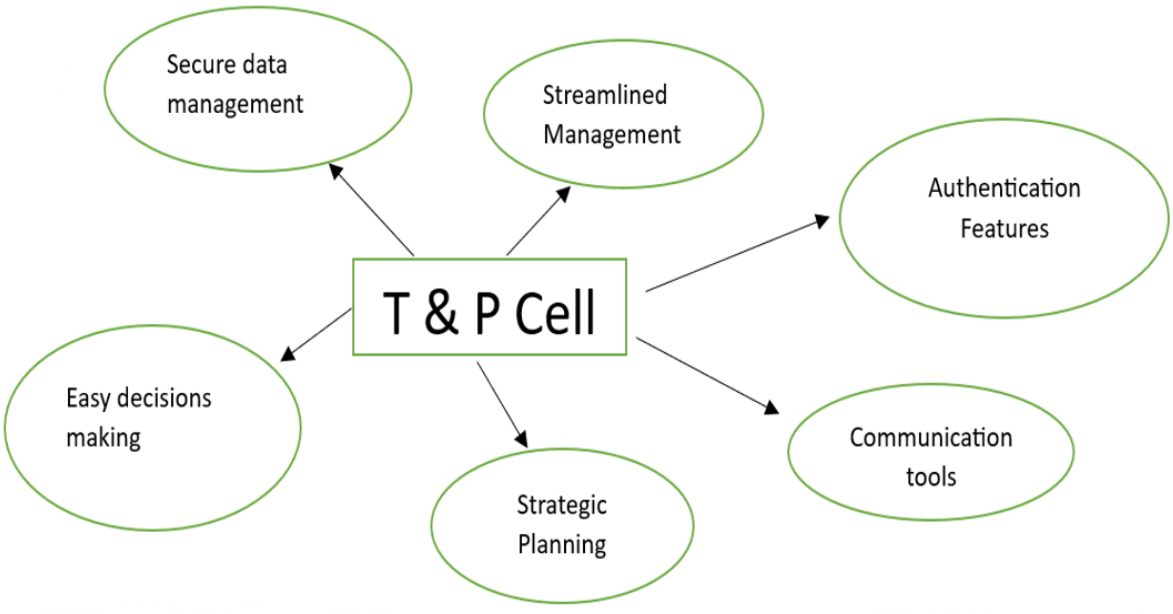
System Design

The project PlaceZen provides benefits, features and facilities to the students as well as admins or T & P Co-ordinators, Moreover Alumni also have some important features, so some of the key features are listed below

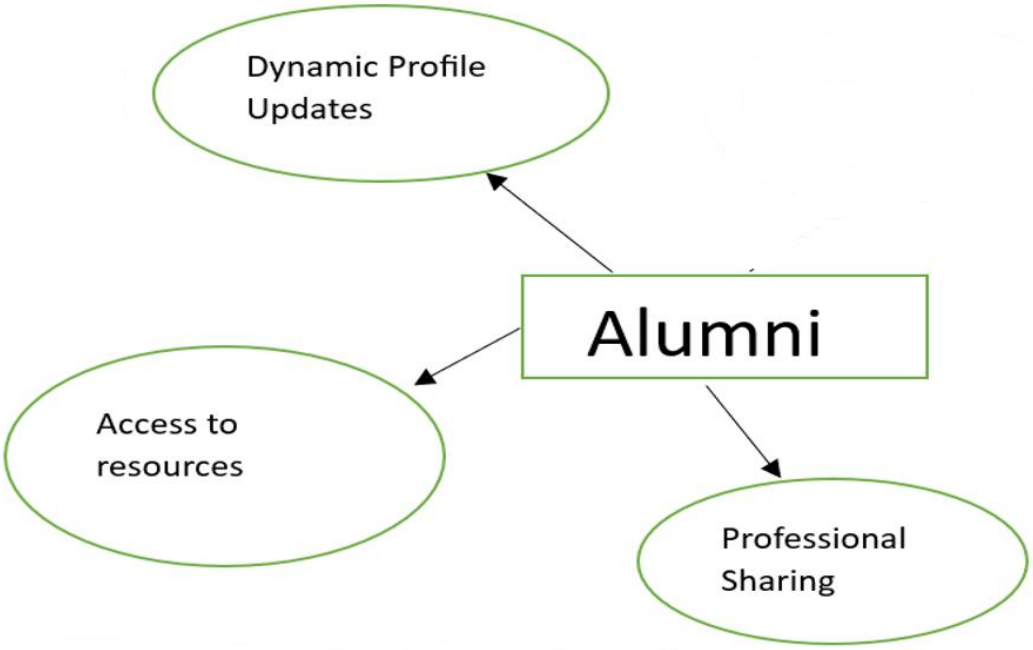
For students:



For T & P Co-ordinators or Admins:



For Alumni's



Project details and design

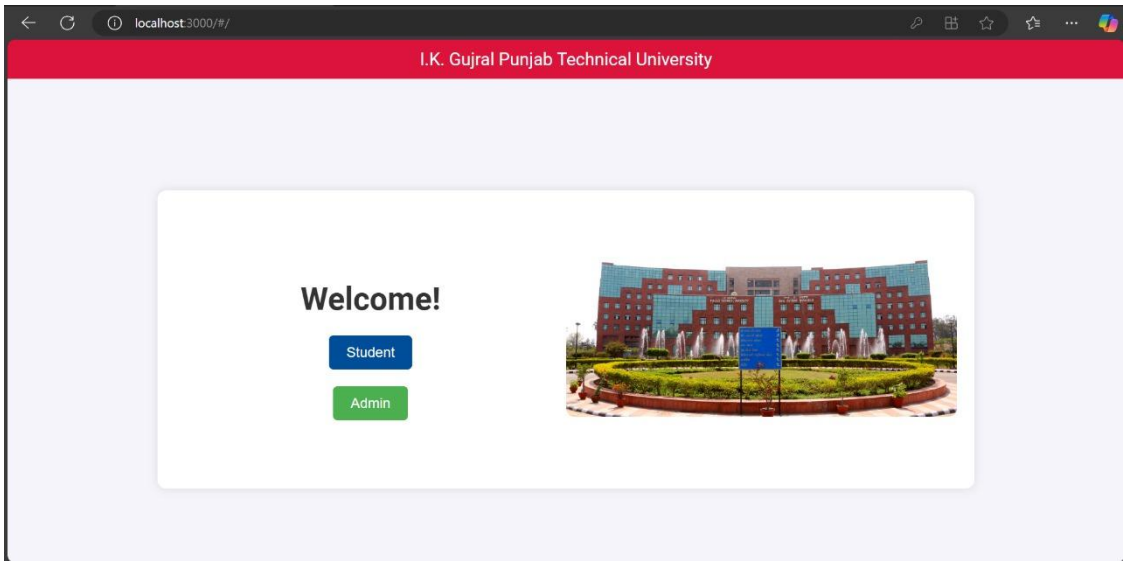
Our project PLACEZEN is very useful for the overall management of placements. Moreover, it is specially designed on for university purposes. We have designed this project to fulfil our needs and problems which we faced as T and P coordinators. Almost every student wants a better internship and job in his life and his internship is dependent somehow on a college too. If any college has good overall management and infrastructure of the placement scenes then the chances and probability of a student getting placed got increased. It has various key features that can help students in overall growth and development.

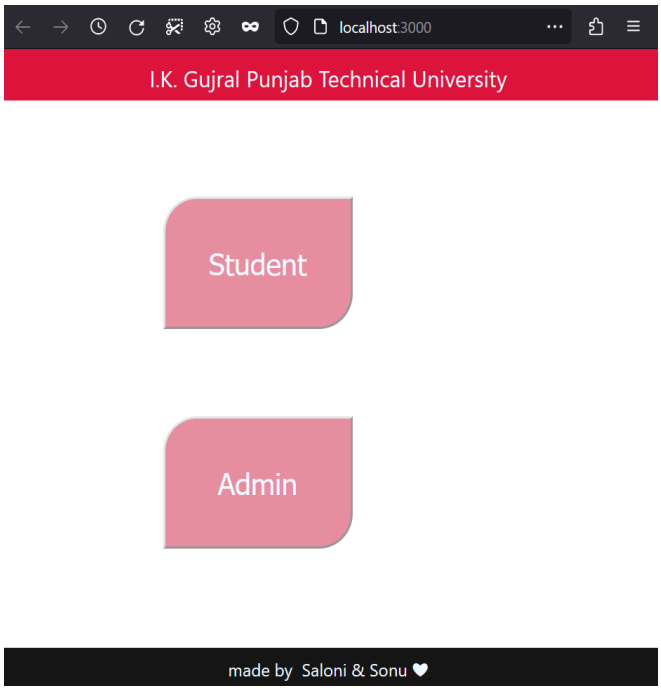
For Students: Students can use various features such as they can apply for on campus as well as off campus through PlaceZen. You can check for preparation material which can be proved useful in conducting interviews moreover if you find any preparation material from any other resources you have options to post it at PlaceZen so that it can provide benefits to others as well. You can check out placement result branch wise as well as year wise. This portal offers you features which shows you details about in which company you have applied and which one are the company you need to focused on i.e., where you have not applied yet! You can contact any alumni at the time you need for their guidance and help.

For Admins: They are the ones who manages everything i.e., posting the jobs, results of placed students, they manage students, call HR for the interviews, sends details to HRs for details about students. PlaceZen offers admins to directly download excel sheets from website in form of spreadsheets about the details of students. They can check for a student's profile, resume etc.

For Alumni's: They can get in touch with students and their friends they can update their details too like their current package their positions etc. Alumni's can share their guidance to juniors for preparations so that they can prepare well with their support and guidance.

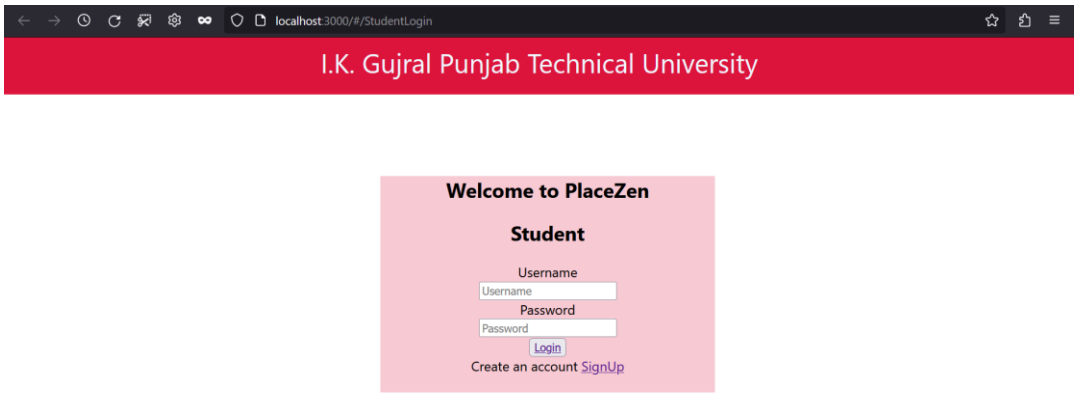
PLACEZEN



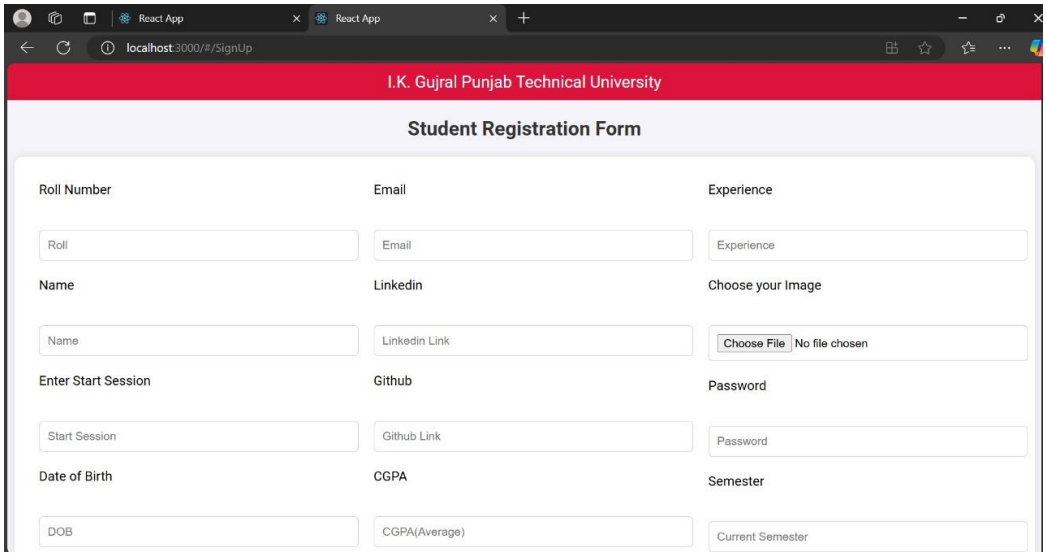


This is the home page of our project PlaceZen web portal. These two images shows that our project is responsive which means it can be used for both laptops as well as smart phones. As both Admins and Students can use it with different features let's move to student section first then we will define the admin side features.

Features For Students



As soon as you click on student option you will move on to this page now since our project is user authorised and authenticated so you will the login panel. If you are old student with user name and password so then you can directly login to the home page but if you are a new student you can go with signup option. Where you need to fill up your details and after submitting admin will add you then you can use your own details.

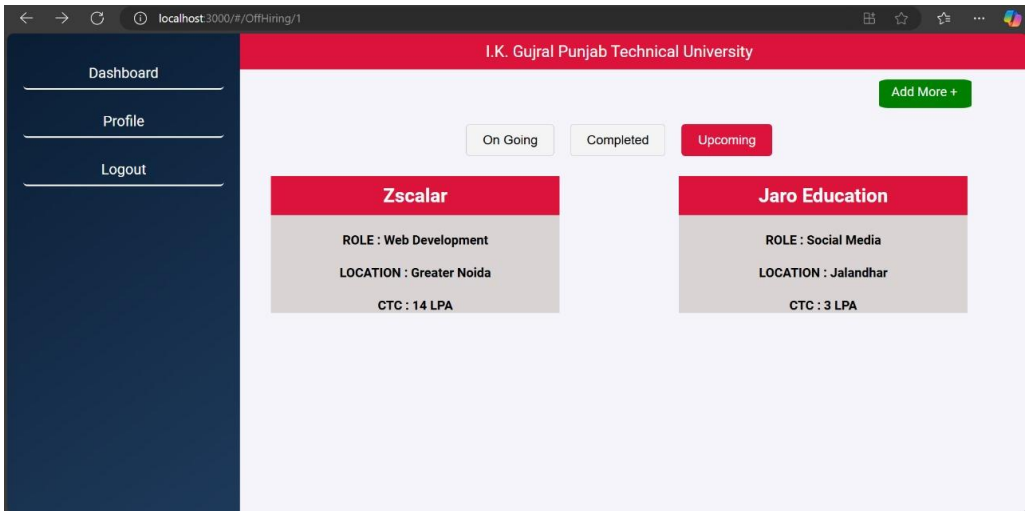


This is the signup registration form which you needed to fill up if you are new student. After registration you will get a message of confirmation that your details have been sent to the admin. Admin will confirm your details then you can login it. Now we will move on to the next page.

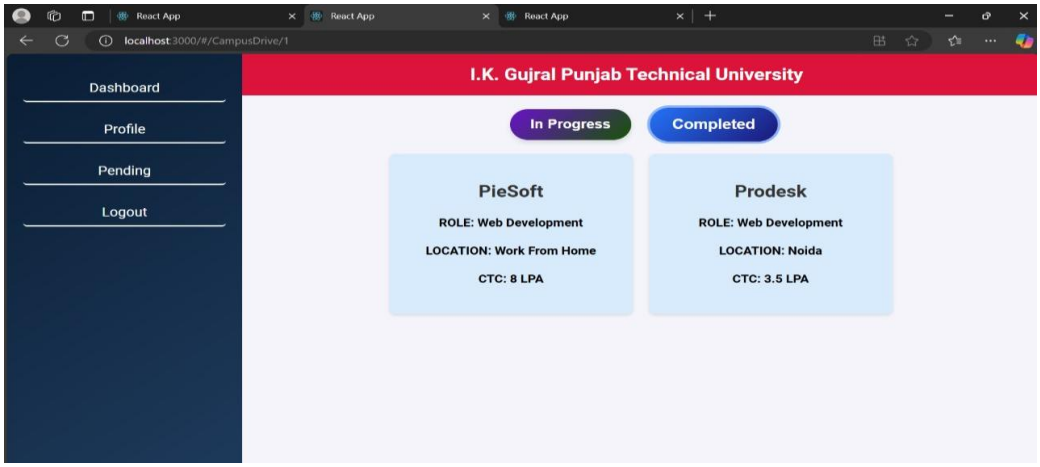
After login to student dashboard homepage will look like:

Campus Drives

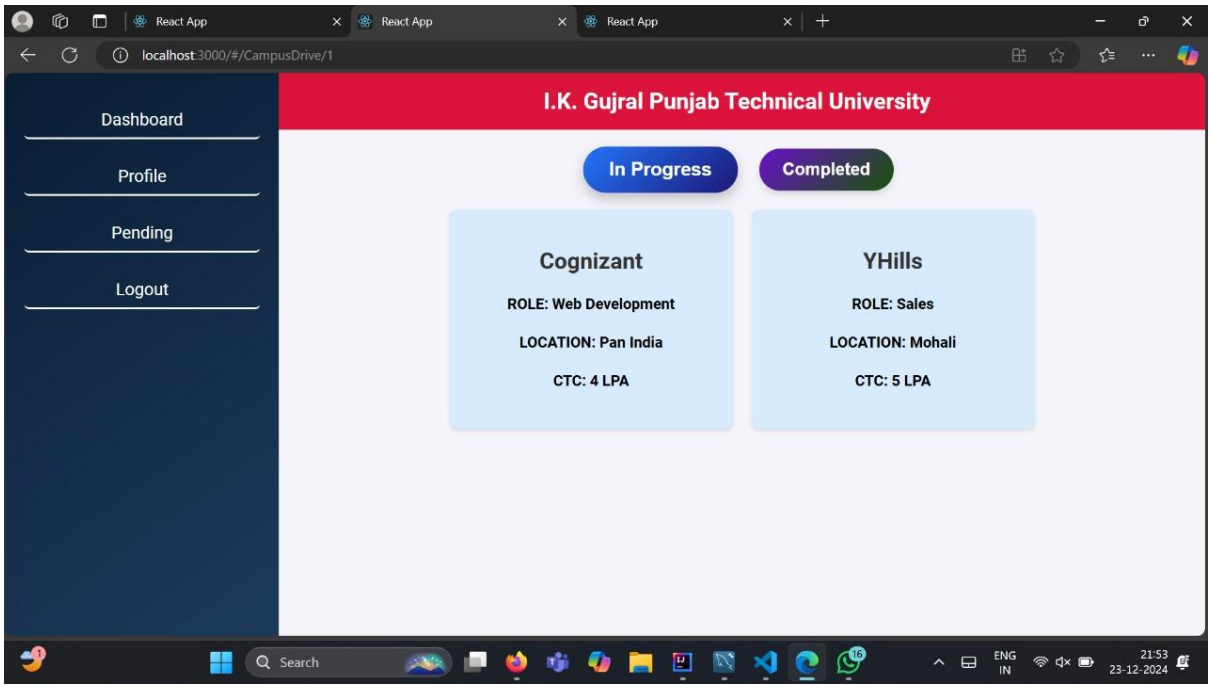
This is the home page of student dashboard here you can find a lot of features. Now we will study each of the feature in detail.



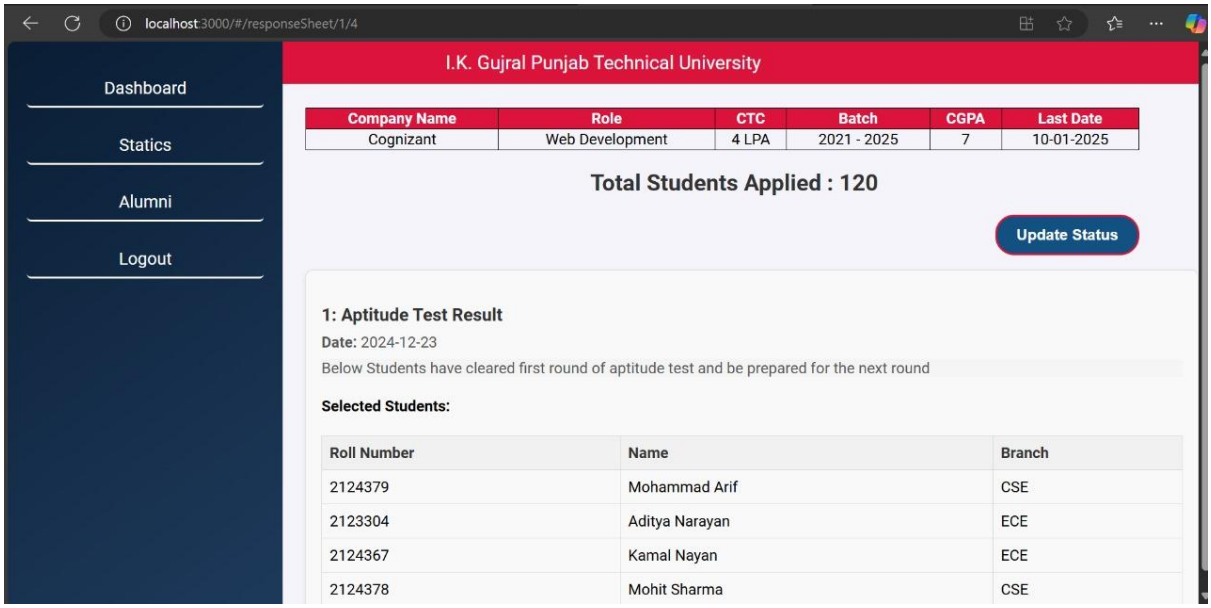
As you can see Upcoming placement drives. This is the list of companies which need to visit later on in the campus.



The companies who have already declared the results of shortlisted students and whose placement drives are over.



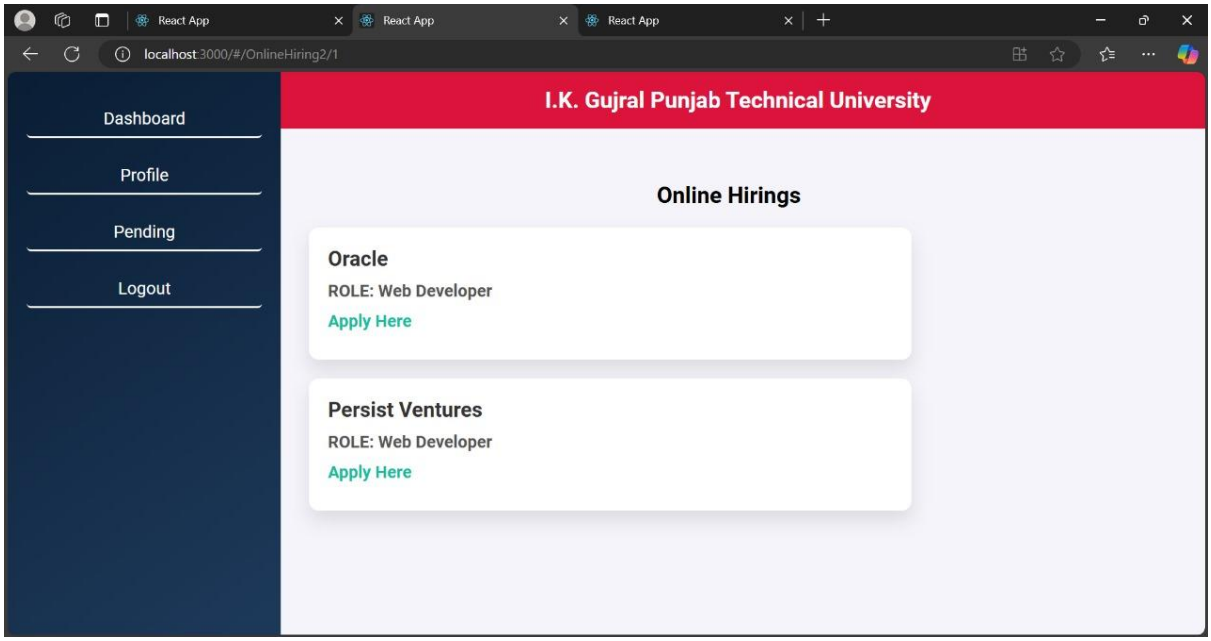
These are those which are in progress and are going on currently in the campus. It provides you with some extra features as shown below



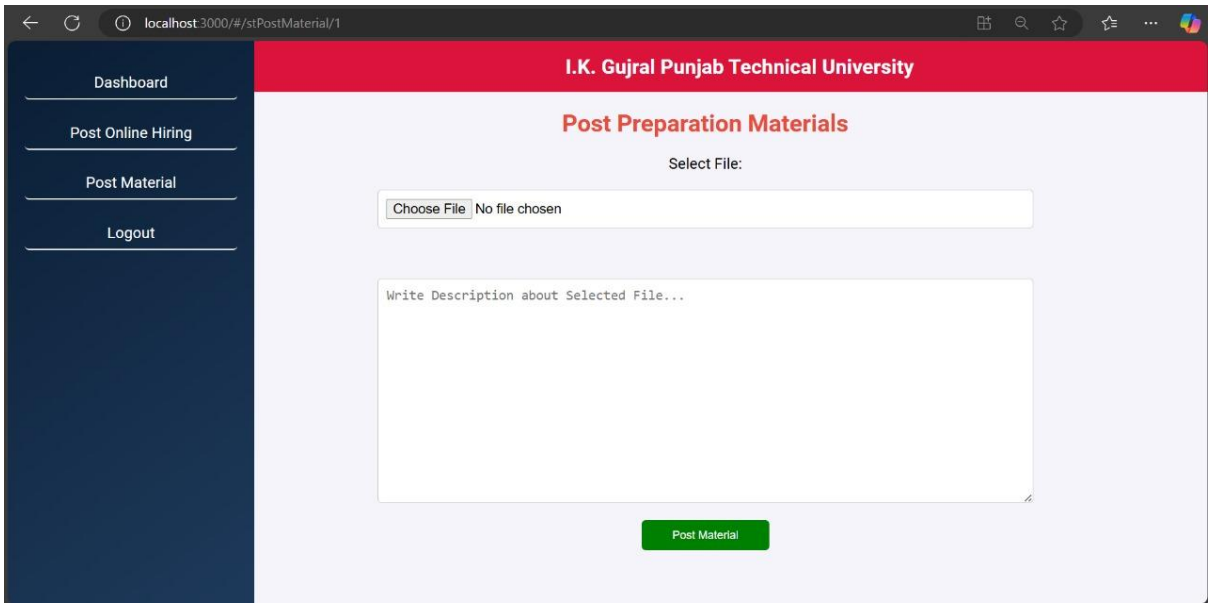
As we can take the example of Cognizant hiring details where you can see in detail about the details of applied students. The result of aptitude round it shows the details of each round how many have applied and further how many got selected for next round.

Online Hirings

Now moving on to next feature that is online hirings. In this you can apply online too if you are interested. Anyone who can finds any hirings which is online can post here only after admin approvals. Here by clicking on the link you will get all the details and apply form where you can submit your details.

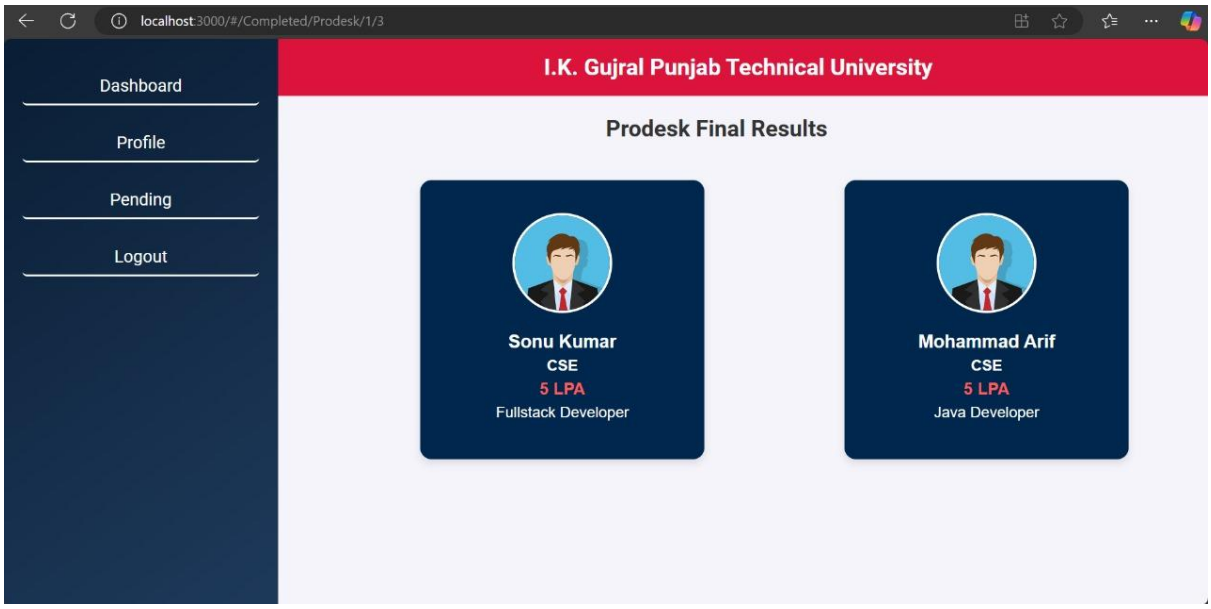


Posts



Our next feature is posts it gives you feature to post any study material as well as online hirings if you find any materials that can be useful to other students also.
It helps student to apply outside the campus also and explore various opportunities outside also. Also, a student can get huge benefits from these.

Placement Results

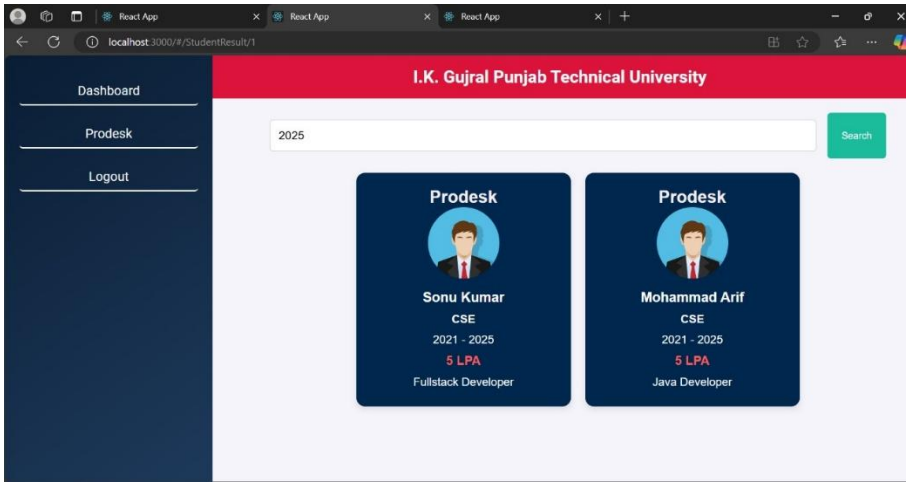


In the result section you can find out the details of various companies and students placed. It gives you method to filter out students on the basis of year (or session) and package offered to the various brilliant minded. Here you can sort results also as per your needs.

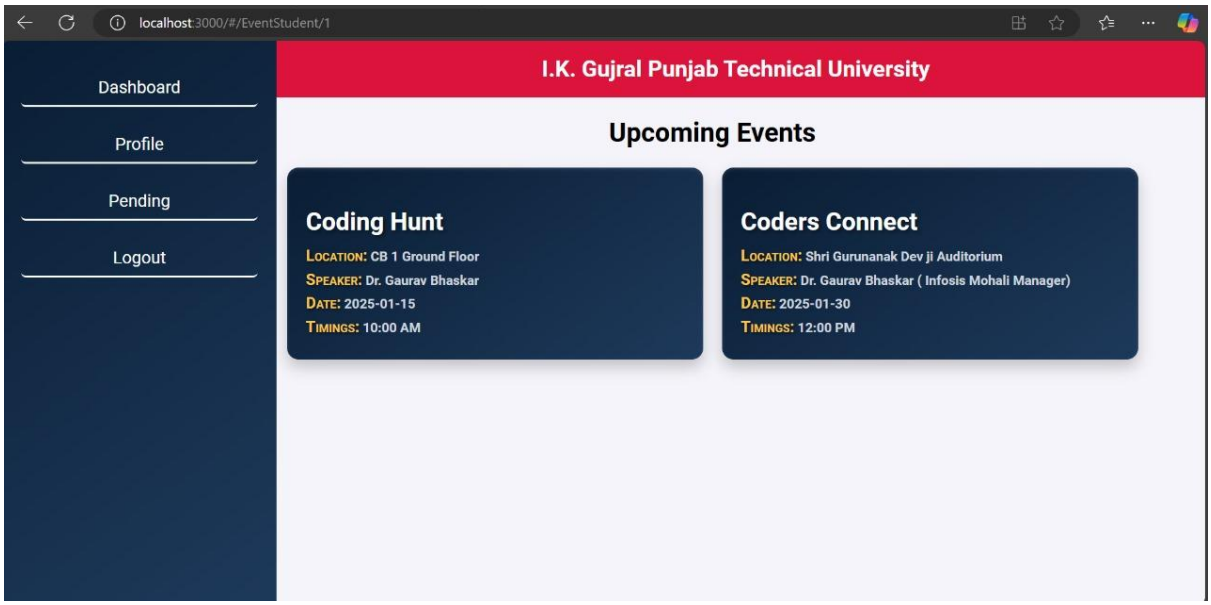
Placezen gives you a platform where you can search result session wise so that you can find placement records in details about which year how many students got placed.

This gives company a better view to look at result and make improvements when and wherever needed. If maximum students got rejected in coding round so then it can make some of the improvements in coding areas and practice some of the DSA sessions for students so that they can improve a lot and placement results so that can be improved.

So, in this way we can see that Placezen gives you a complete platform to handle all kinds of important tasks.



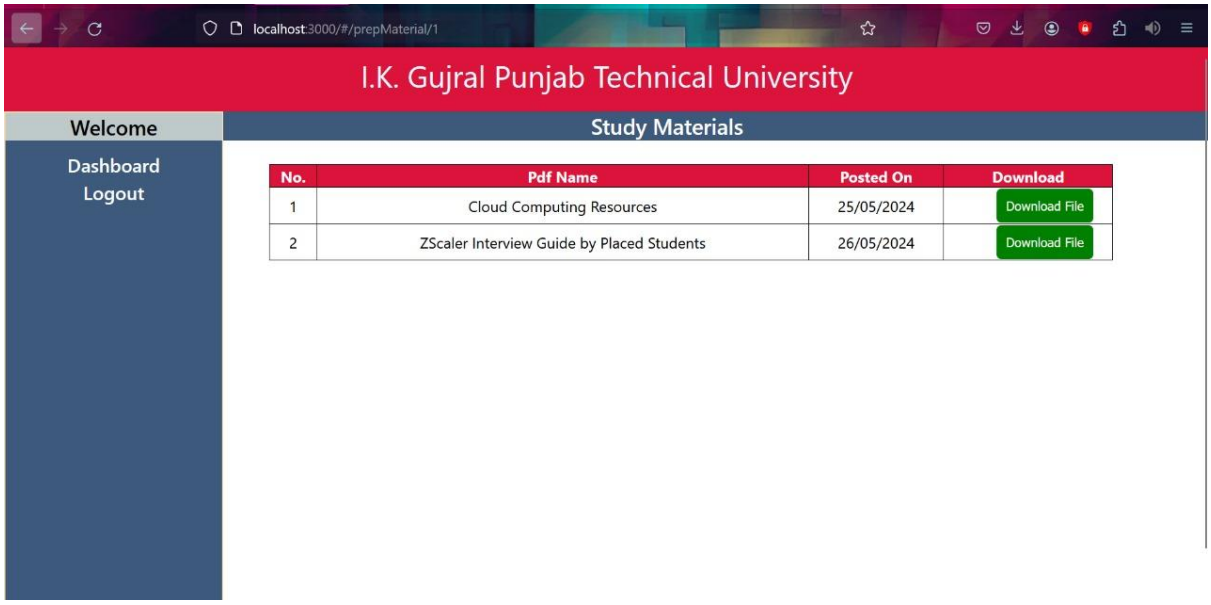
Upcoming Events/Sessions



Any upcoming event or session related to placement which you can attend for more information and knowledge. So, you can get details about various sessions in the event sessions where you will get details about venue, speaker, date and timings.

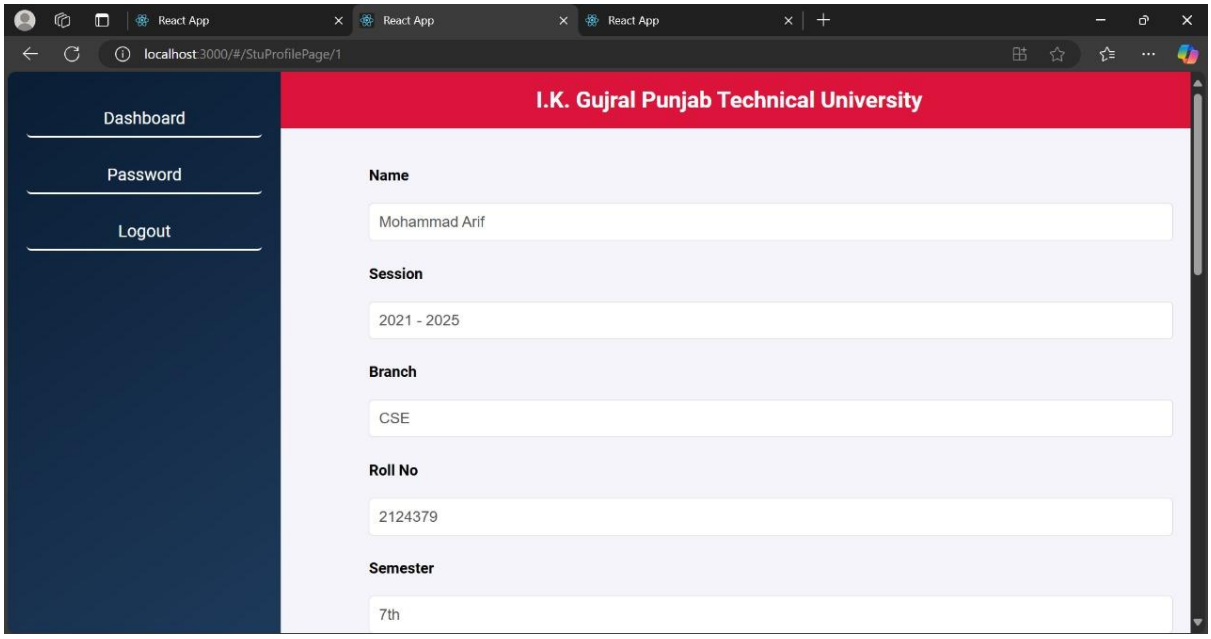
Preparation Material

Here you will get information related to placement like aptitude questions, interview questions, Data structure and Algorithms etc. PlaceZen focuses its students for getting best of internship opportunities so it provides students with latest features. You can download these files easily.



Other than this some more features include

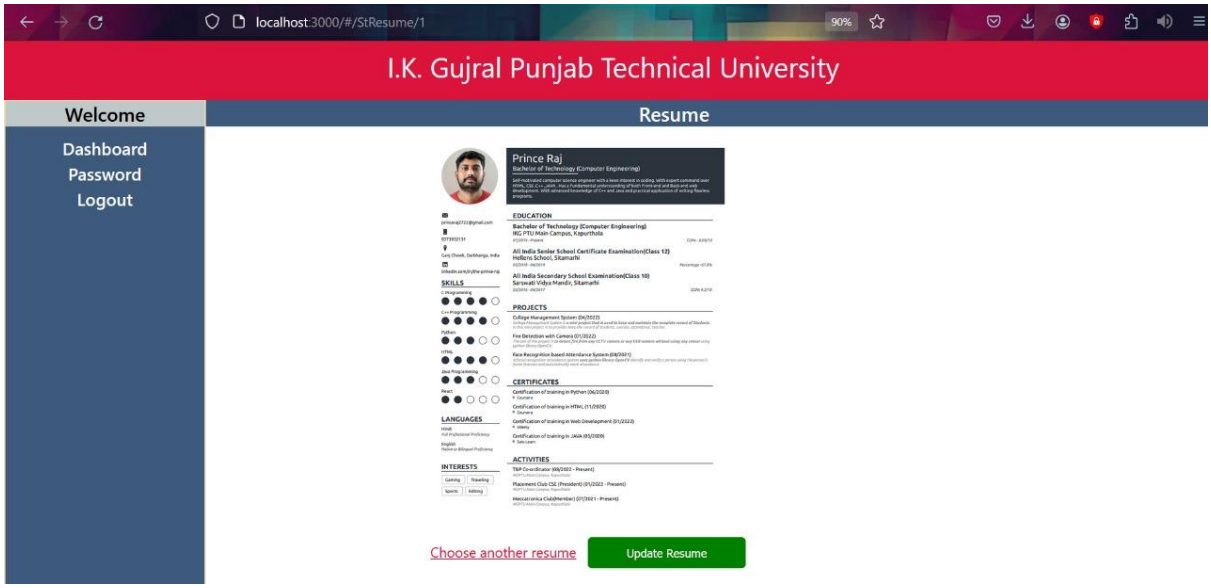
Profile



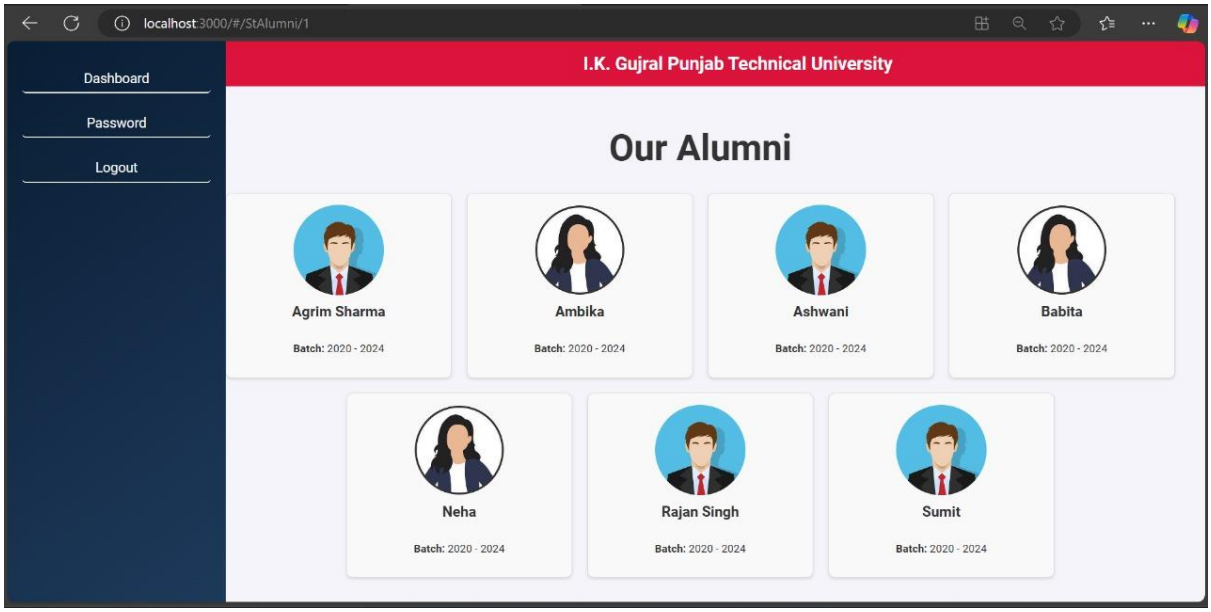
You can update your profile as per your needs and your details will automatically be updated to admin side too.

Resume

You can add and update your resume as per your details, skills and projects. So, that if any company wants student resume too then admin can fetch them directly as per needs of company.



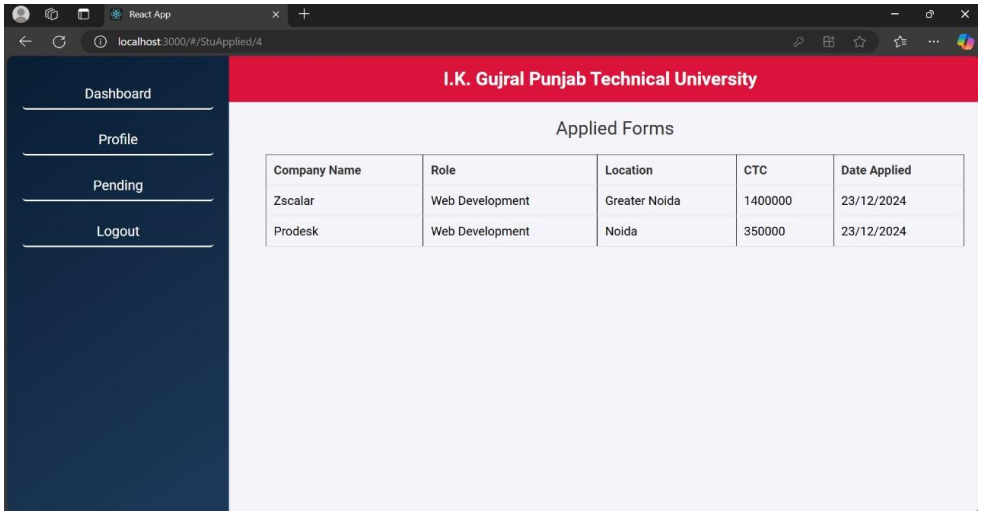
Alumni



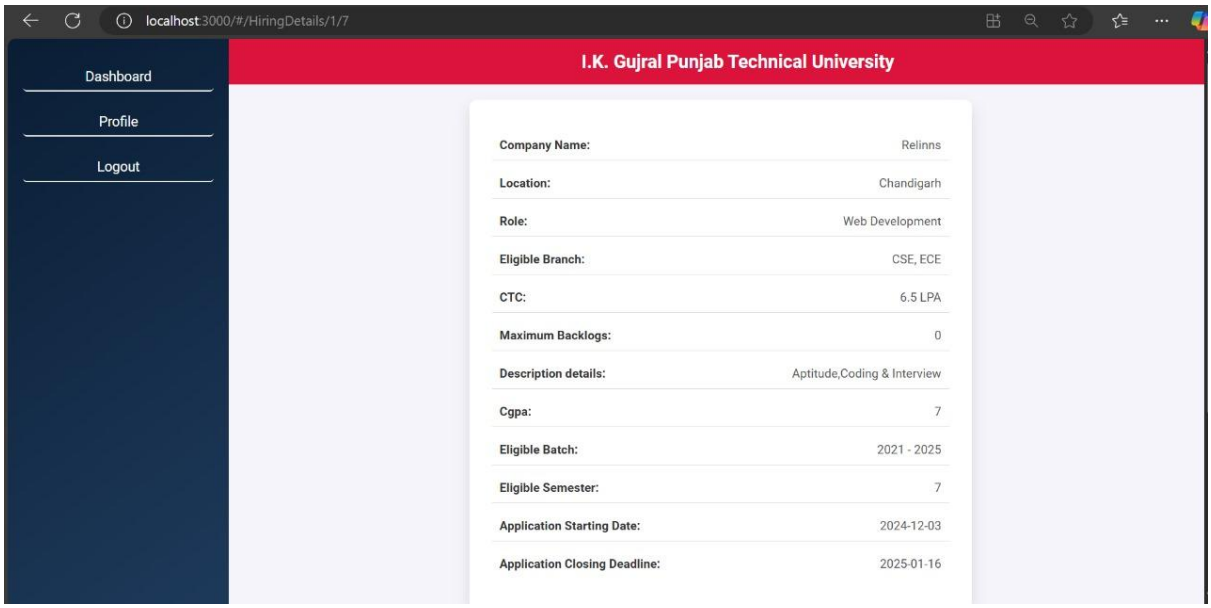
You can meet any of alumni by contacting them so, that you can get in touch with them. Seniors provides you with best ever guidelines as per their experiences with all the problems which you are facing today. So PlaceZen provides you with its best ever features by getting in touch with your alumni's.

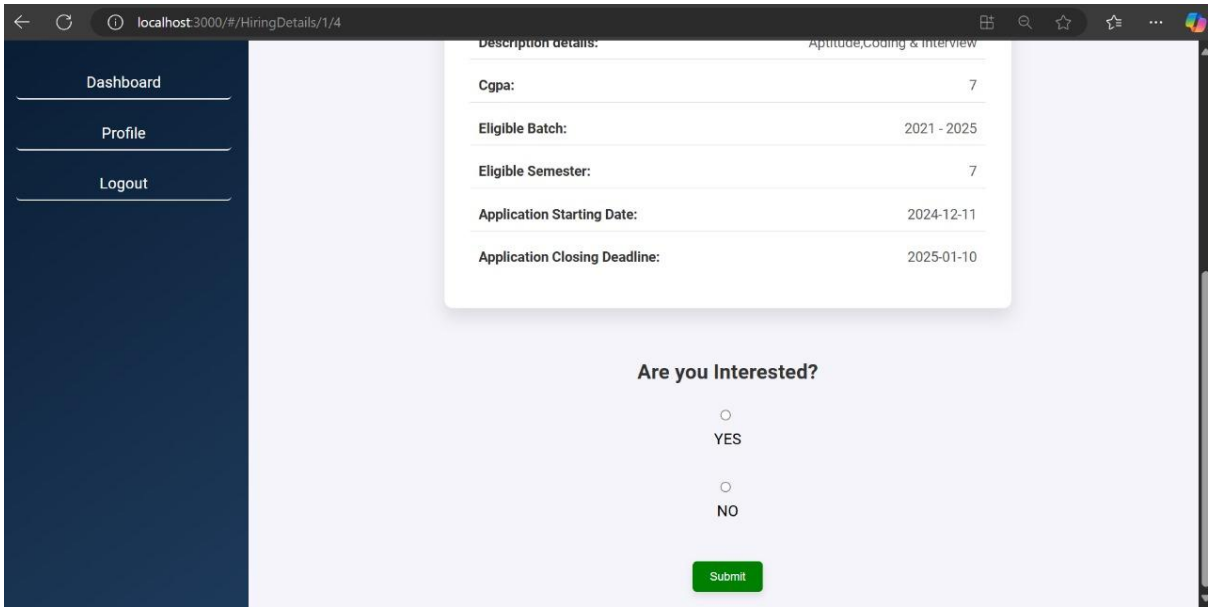
Applied and Pending

This feature will update you with the feature of applied and pending forms. You can check for all applied forms and pending forms which you need to apply. After applying to any on campus recruitment you can check the details here that whether your details have been successfully submitted or not.

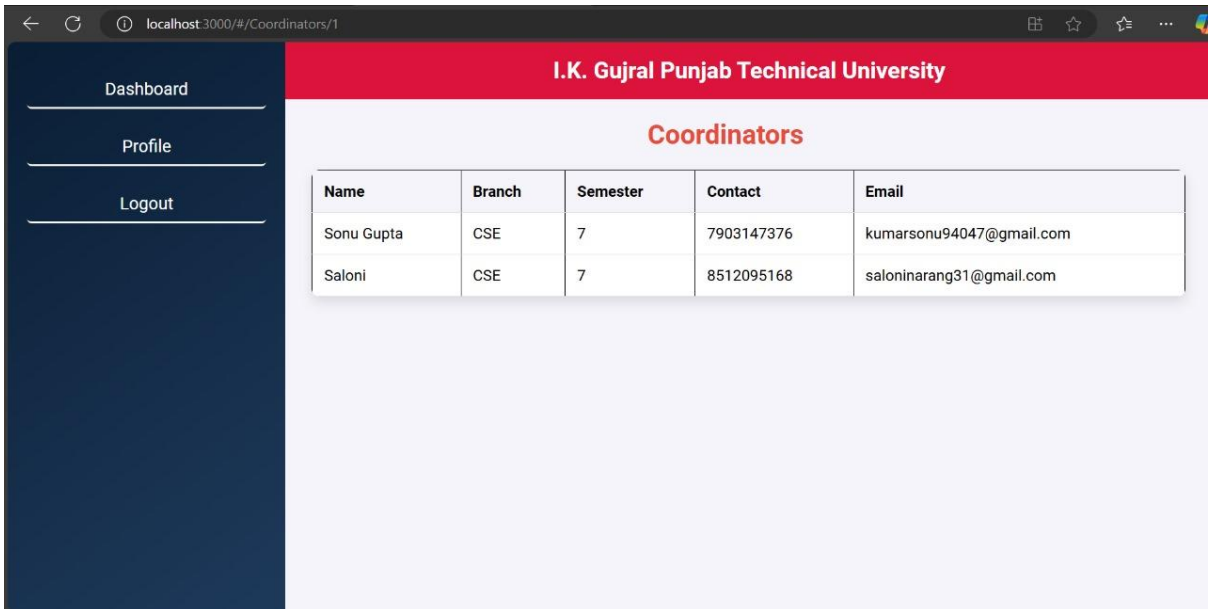


You can also click on any company to go for detailing and apply button.





T & P Co-ordinators

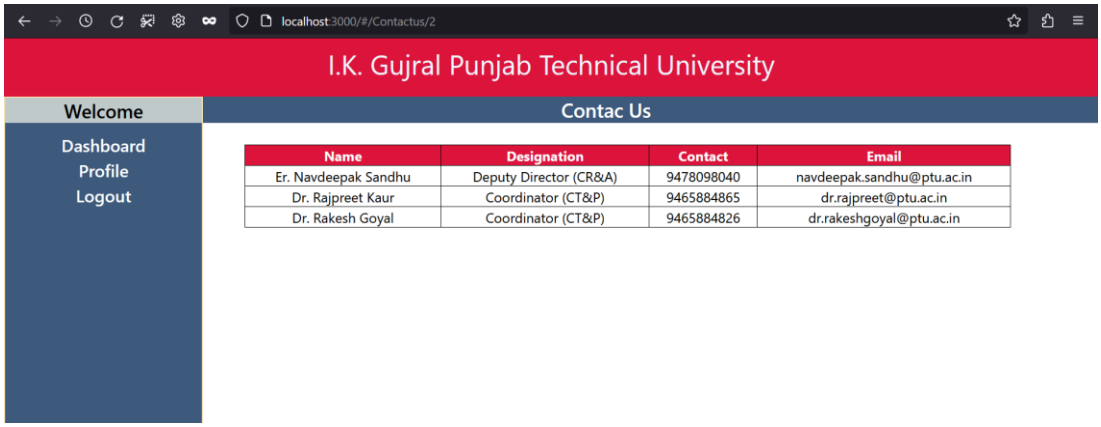


If you face any issues related to placement you can contact the coordinators they will help and support you solving various problems if you face any and also update you with latest updates of placements.

Top Recruiters

You can check for the top recruiters that visits here frequently. So, that you can get information about all the recruiters and fill the forms as per the interest of your company and skills.

Contact Us



If you want to call any company's HR so, you can contact top faculty for this they will help you getting in touch with HR since these are professionals so they have much greater experience how to contact anyone for hirings so that they can visit the campus for recruitment.

Also

At every section you will find out options for log out and password change if you find your account insecure you can change the password so that feel much safe that no one will steal your information.

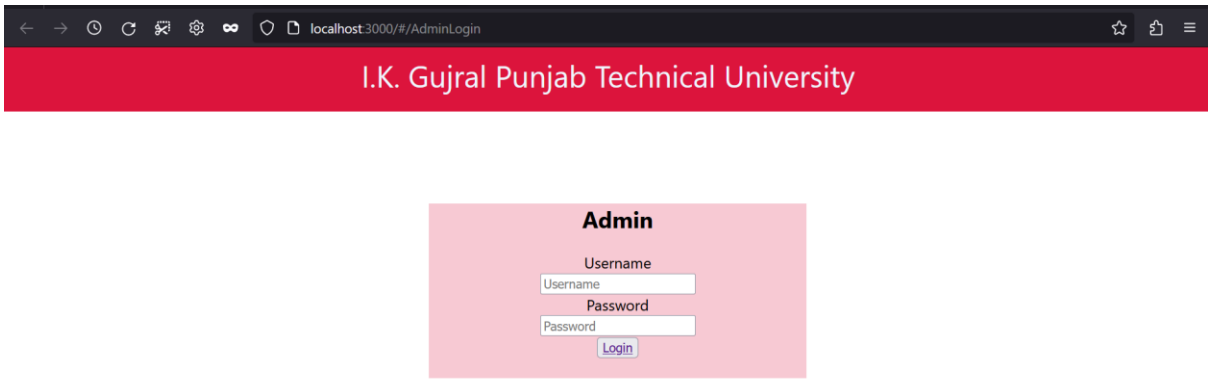
So, PlaceZen offers so many features to its student like on as well as off campus recruitment, preparations material, guidelines from seniors, updates about placement events for placement related details so that a student can grow to successful heights with greatest Job and internship opportunities and led to a bright and shining future.

Since PlaceZen is an authenticated platform so it is safe to use since it gives access to students only. No one else can use it so it is totally secure to use. Your information will have access to admins only other than that no one can use or see it.

Features For Admins

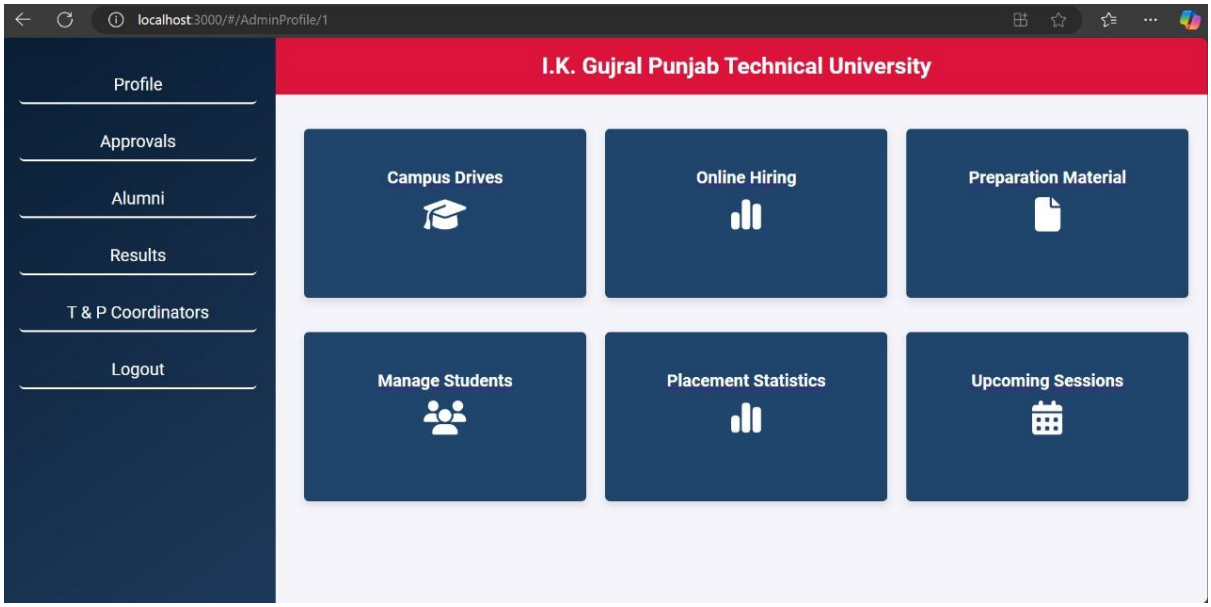
All of the features which you have seen in the student portal are added by admins. Admins manage all the overall website so that students can use them efficiently without any issues or problems faced. The overall management and control are in the admin side. Admin can add and remove students, upgrade students with CGPA to next semester, add results, calls HRs for recruitment of students so that they can get better job opportunities.

Now earlier from the PlaceZen front page we have moved to student side. Now we are moving towards admin side.



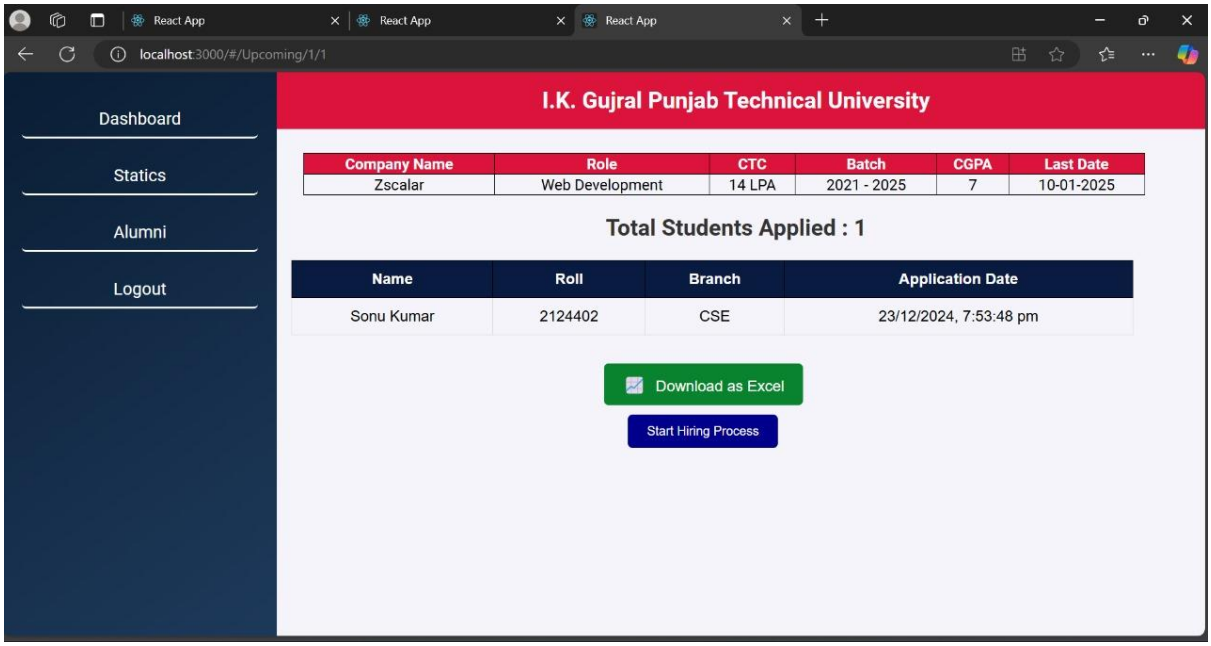
Admins cannot be added by singing up options. They can be added from database at backend or they can be added directly from admin side i.e., one admin can add other admins easily and quickly. Since it is authorised and authenticated web portal so admins have no options for sign in. So, no unauthorised user can login in. Only T & P co-ordinators and faculty staff have admin controls.

Now after login using username and password, we will move to the admin dashboard.

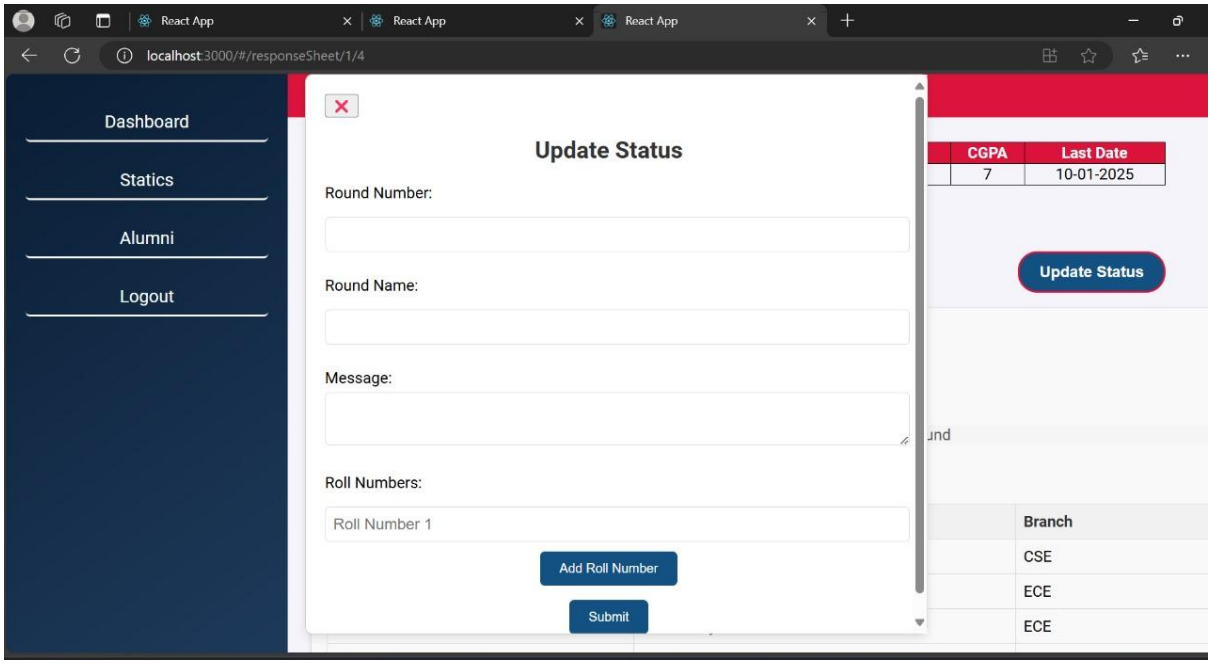


Now we will read about these features in details…

Campus Recruitment



In the student portal you have seen various on campus hirings. These are added and managed at admin side. Admin can easily add and remove hirings for the students so that they can get better job and internship opportunities at campus itself. So, all the relevant details that a company wants for hirings and its description about role, location, package can be provided here.

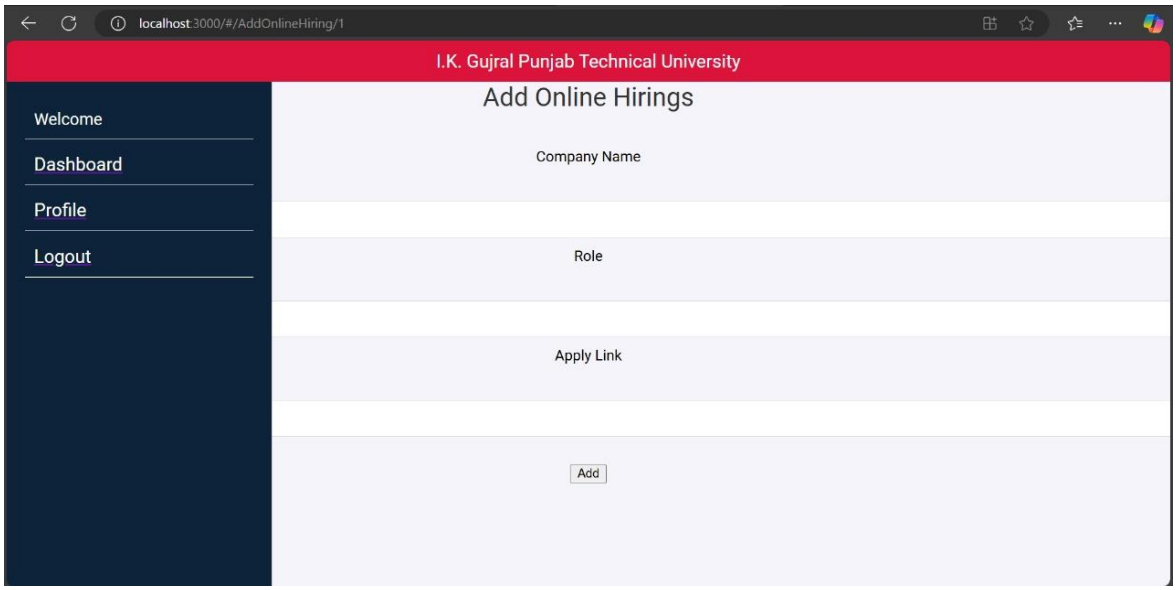


Moreover, it also provides admin with features to check for how many students have applied the forms till yet for any company so that you can sent the details to HR. PlaceZen provides you with the feature to download the response sheet directly in form of excel file or CSV which saves data in tables in the form of spreadsheets.

Extra features:

Admins can separately check for its results how many got placed in this company. Their result statics so that admins can manage to prepare students accordingly i.e., where they are lacking in any skills. Additional to this company can add events if that wants to conduct a session for students before final recruitment. Moreover, a company can call its alumni for their experience and guidelines to tensed juniors which provides a way for placement and better career growth.

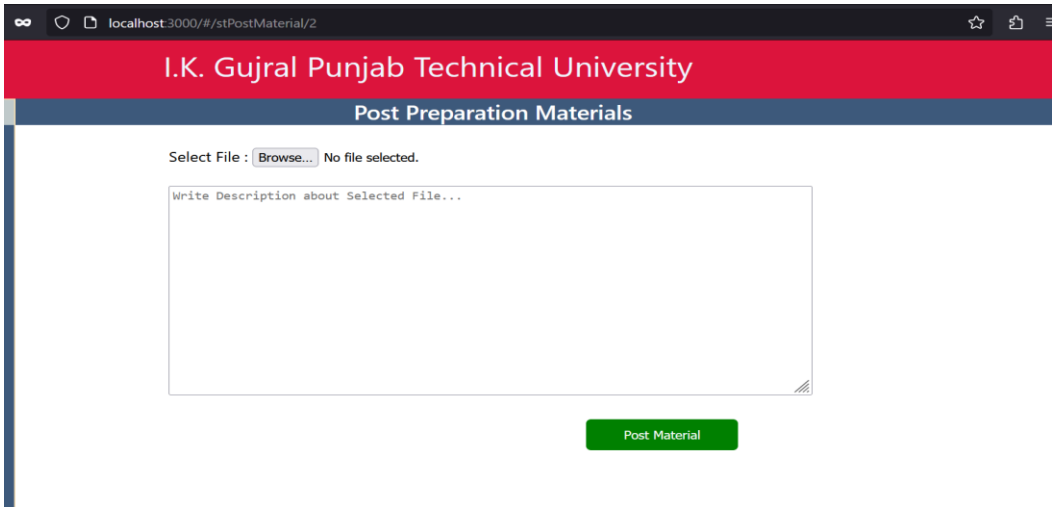
Online Hirings



Sometimes some company, don't have time so visit all the campus for its recruitment purposes. So, they often conduct placement drives of multiple colleges at a common place. This saves company's time. So, in that case PlaceZen provides you with off campus hirings details. You can fill forms for any of off campus drives easily.

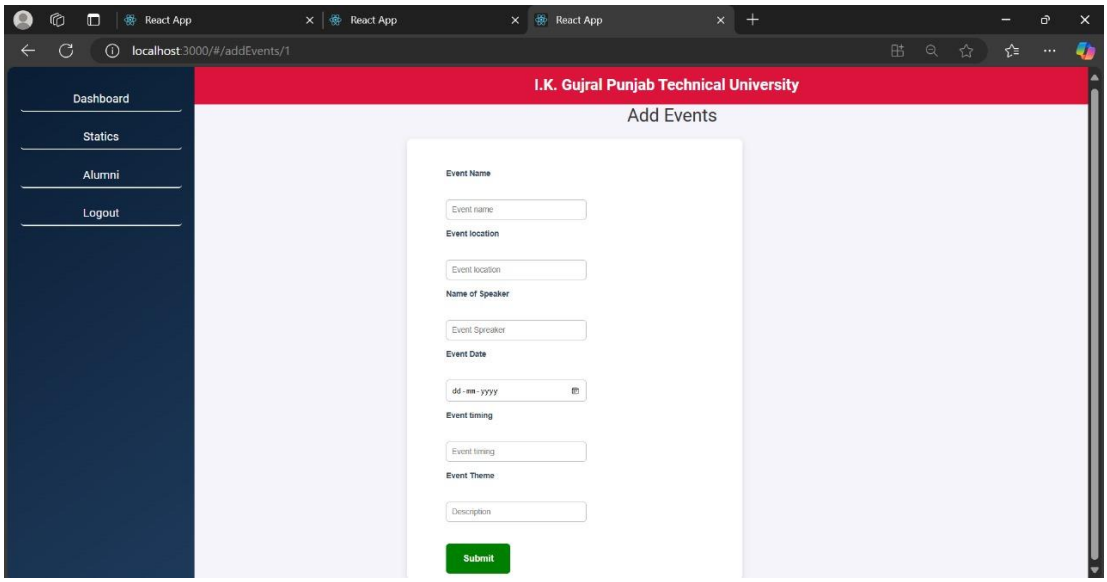
But it does not provide with any extra feature since it is managed online and there is no role of company to manage it. A company can only manage with on campus roles and hirings for off campus it can only updates its students about all the hirings so, that they can't miss any opportunity.

Preparation Material



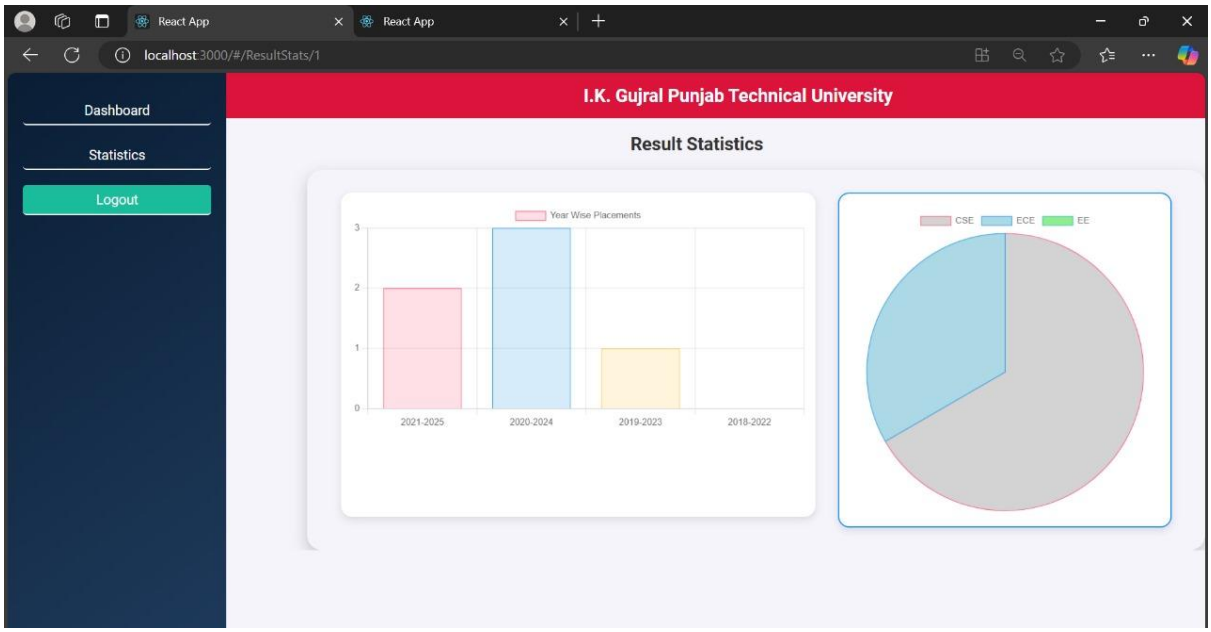
You have already seen that preparation material at student side. All that can be managed by admin side. If any student posts any material, it is also checked and verified by admin before approvals. Similarly, if admin founds any important pdfs related to placement that can be proved useful to students so he can add it for student's reference for best preparations.

Upcoming Events/Sessions



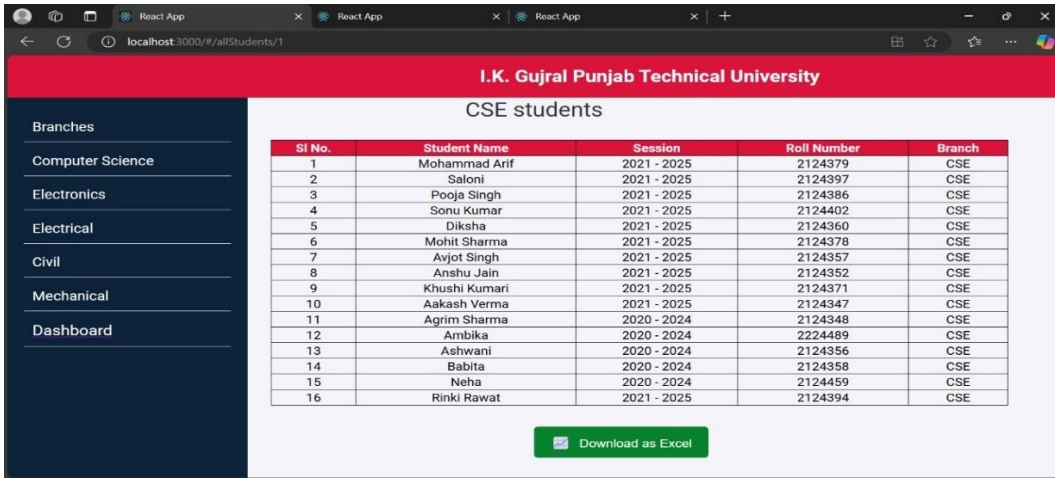
Admins add all the upcoming events and session details for students. So, that they can't miss a single opportunity from any top recruiters for guidelines. Events and sessions can be proved useful to a student since it guides and prepares them for the placement. The sessions provide you details about the event name, venue, date & time, speaker etc. So, if you think it is a benefit for you if you attend you will get some of great tips and tricks for preparation. So, you should not miss out any of these opportunities.

Placement Statistics



Result statistics helps company in analysing that which students are lacking from placement. According to this data we can find out that maximum placements is only from CSE. So, for CSE branch we have extra talented and brilliant mind students. From this analysis we can conduct a session for other branches to check the areas they are lacking and from session we can guide them how to prepare, where to prepare, areas to be focused etc.

Manage students

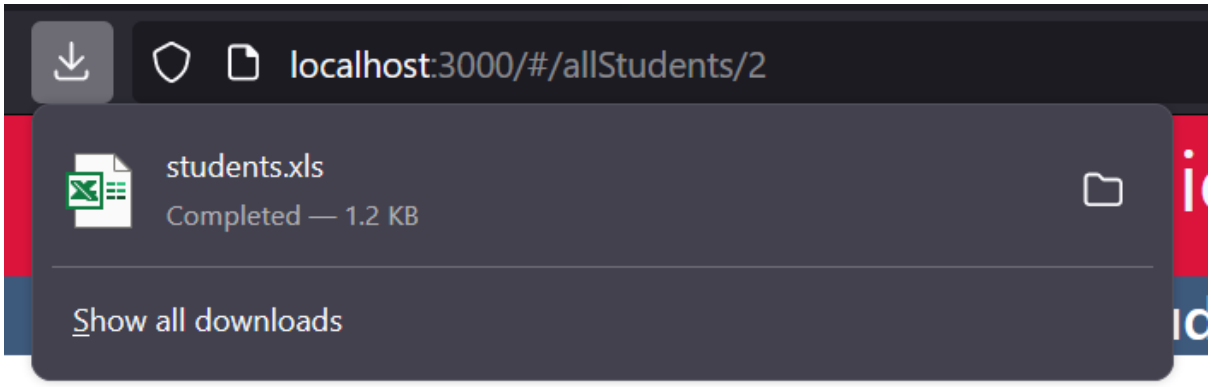


Sl No.	Student Name	Session	Roll Number	Branch
1	Mohammad Arif	2021 - 2025	2124379	CSE
2	Saloni	2021 - 2025	2124397	CSE
3	Pooja Singh	2021 - 2025	2124386	CSE
4	Sonu Kumar	2021 - 2025	2124402	CSE
5	Diksha	2021 - 2025	2124360	CSE
6	Mohit Sharma	2021 - 2025	2124378	CSE
7	Avjot Singh	2021 - 2025	2124357	CSE
8	Anshu Jain	2021 - 2025	2124352	CSE
9	Khushi Kumari	2021 - 2025	2124371	CSE
10	Aakash Verma	2021 - 2025	2124347	CSE
11	Agrim Sharma	2020 - 2024	2124348	CSE
12	Ambika	2020 - 2024	2224489	CSE
13	Ashwani	2020 - 2024	2124356	CSE
14	Babita	2020 - 2024	2124358	CSE
15	Neha	2020 - 2024	2124459	CSE
16	Rinki Rawat	2021 - 2025	2124394	CSE

It is the role of every institute or university to manage its students. PlaceZen provides admins this facility to manage students branch wise. These are details of CSE students similarly we can see details for ECE, EE, ME, Civil etc.

Moreover, it provides us with features to download the details as excel sheets and sends directly to company's HR for recruitment purposes. These excel files represent the data in tabular format known as spreadsheets and most of the company demands for this excel files before recruitment. Excel files are also known as Comma Separated Values (CSV).

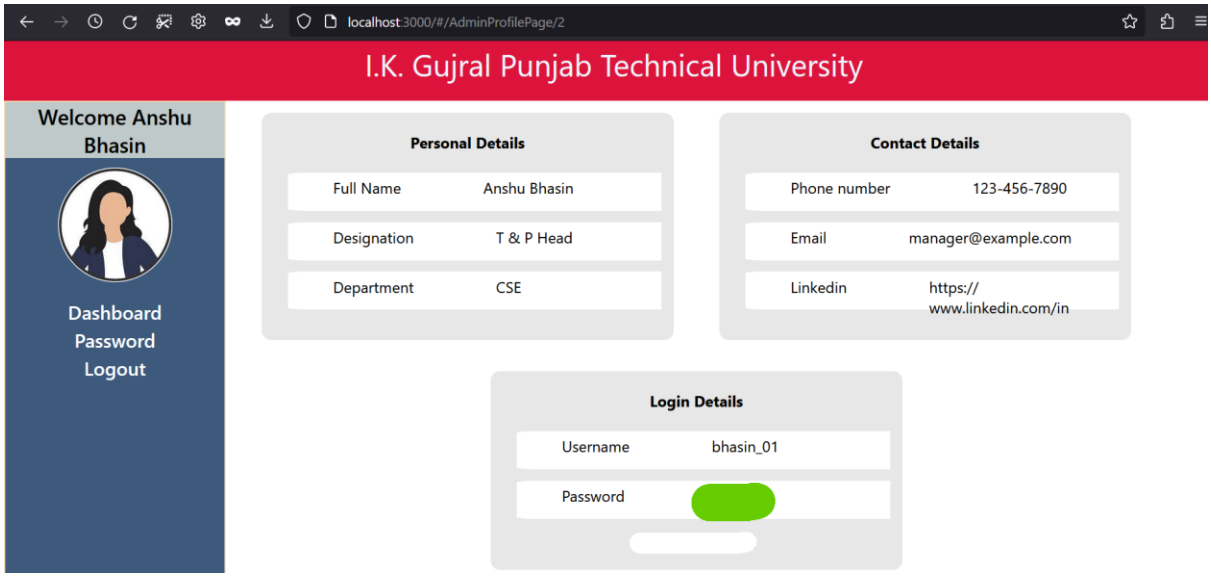
PlaceZen manages the work of admins easily by proving this facility.



	A	B	C	D	E	F
1	**Sl No.**	**Student Name**	**Session**	**Roll Number**	**Branch**	
2	1	Sonu Kumar	2021 - 2025	2124402	CSE	
3	2	Saloni	2021 - 2025	2124397	CSE	
4	3	Talha Khan	2022 - 2026	2124405	CSE	
5	4	Khushi Gupta	2023 - 2027	2124370	CSE	
6	5	Laxmikant	2020 - 2024	2012012	CSE	
7	6	Dakksh	2020 - 2024	20213451	CSE	
8	7	Priyanshu	2020 - 2024	20201234	CSE	
9						
10						
11						
12						

Profile

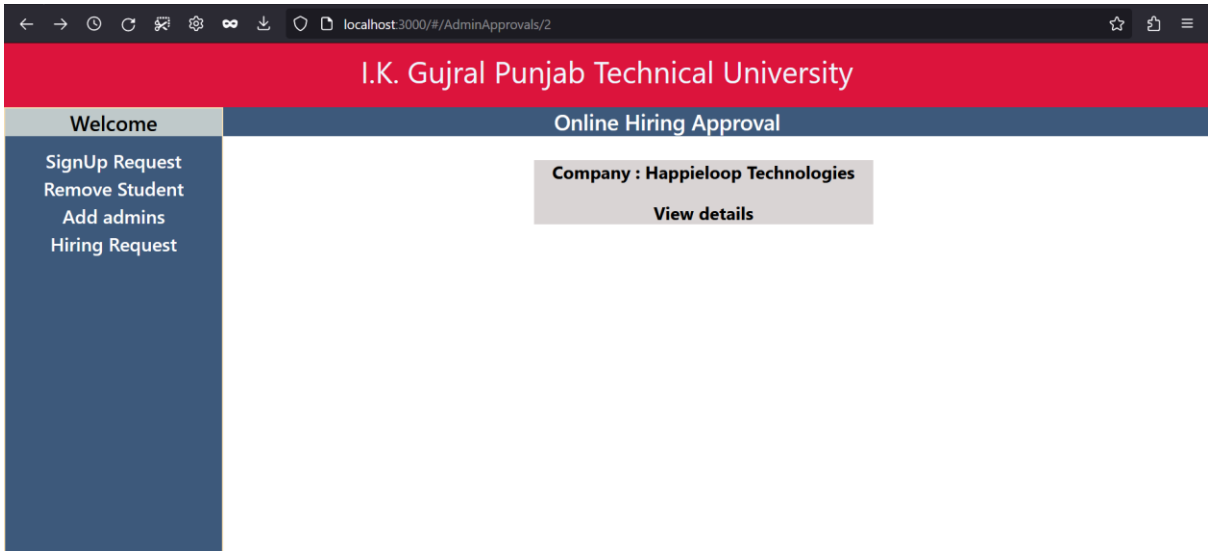
PlaceZen provides you facility to manage the admin profile similarly as the case of student profiles. But admins can't directly update their details if they have any changes since it is an authenticated web portal so it is managed from database at backend only.



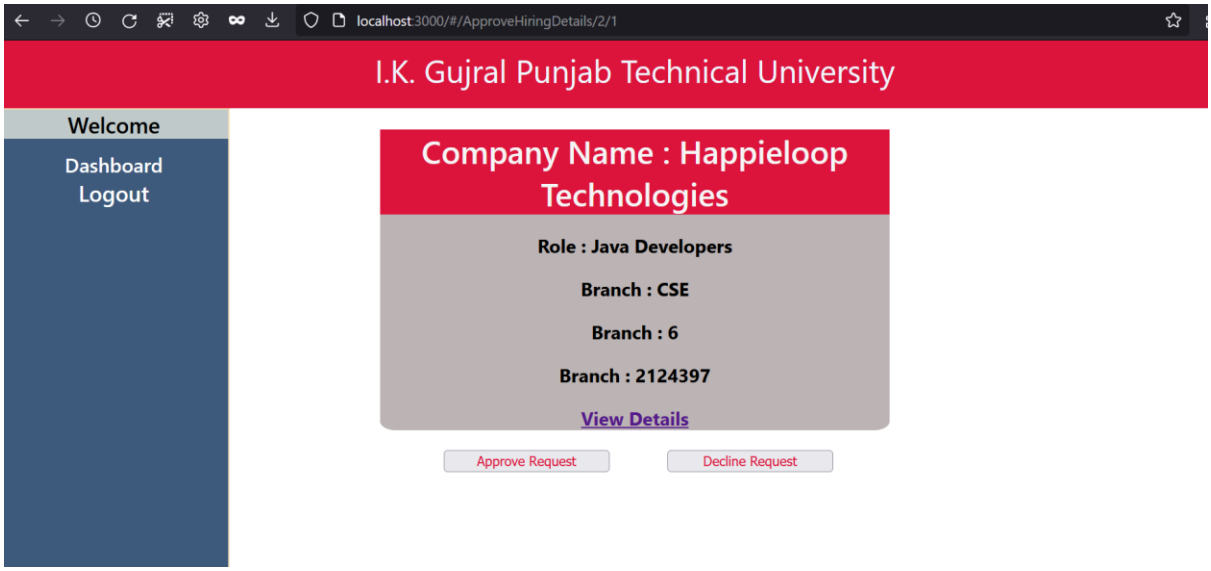
Approvals

It is the most important feature of this PlaceZen portal since it is fully authenticated portal so unauthorised logins are not allowed. It offers four features to admin to manage the web portal efficiently.

First of them is online hiring approvals. Any student who so ever found any off campus internship can post here but what if anyone has posted wrong content so admin can click on view details to verify it.

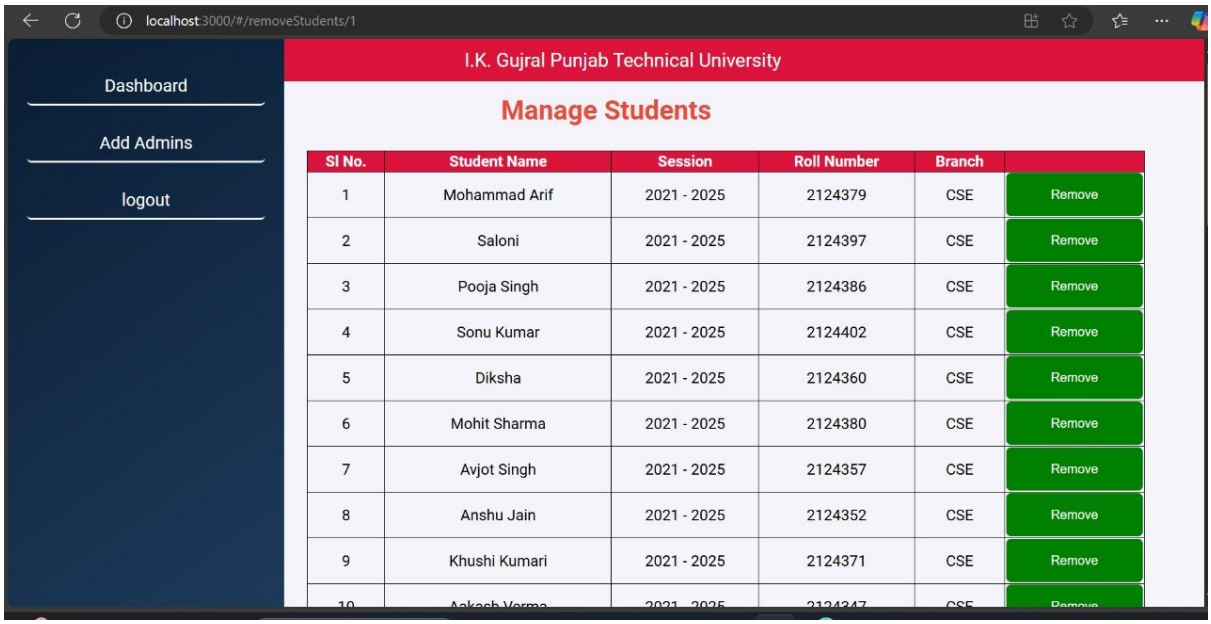


After clicking at view details section admin will get complete information about who have posted this and if it is true content or not. If someone has posted wrong content admin can decline its requests also else, he can accept it so that everyone can apply for it.



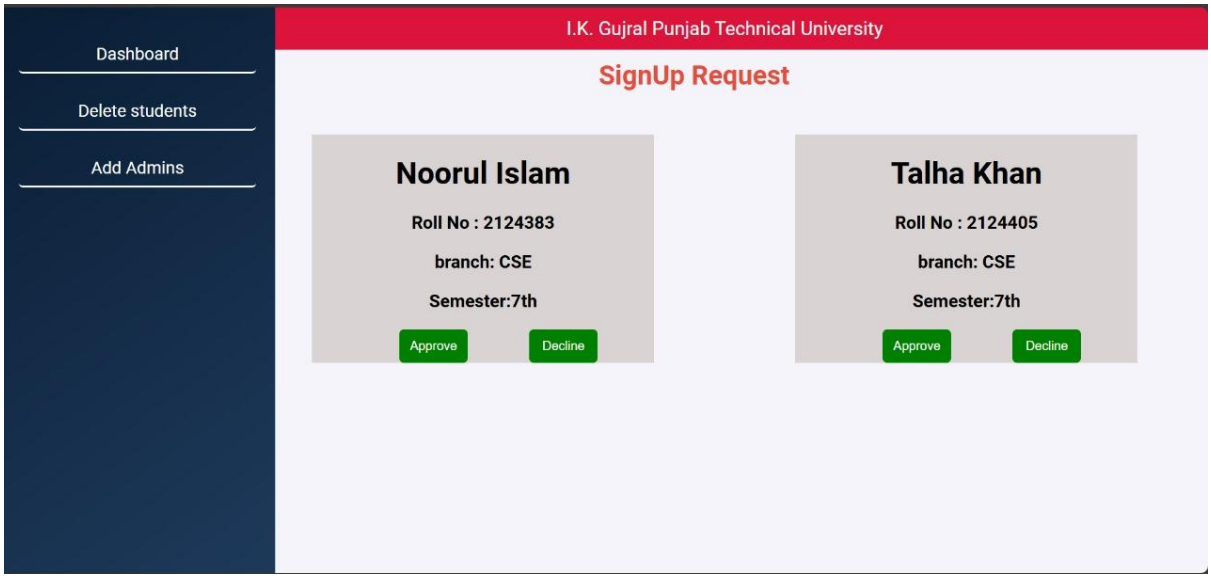
Moving on to next feature of approval is the removal of student. If admin founds any student posting for wrong or irrelevant content then admin can remove it permanently. Moreover, if admin found any other student found in the section, he can also remove it.

This feature helps to secure the web portal totally and efficiently such that any suspensions or malicious activity can be noticed and student should be removed for such mis behaviour actions.

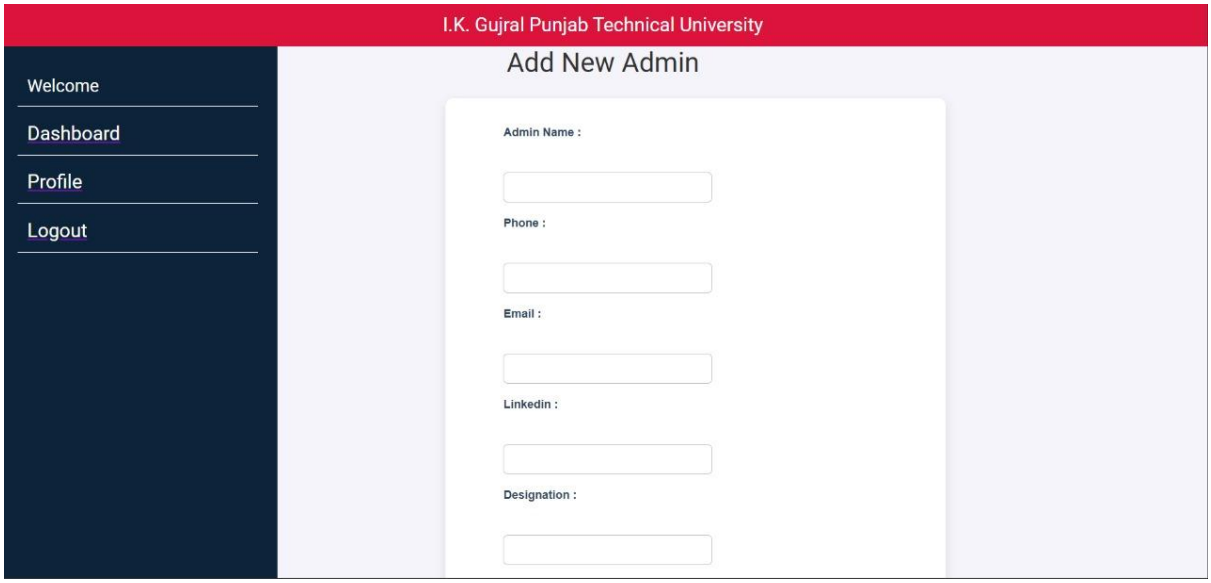


Next feature is sign up request. This feature allows admins to allow sign up to relevant students only.

If admin founds any student not of our campus has requested for registrations. Admin can decline their requests also so that no unauthorised student can enter this portal. It is only for the use of students of campus making it total secure.

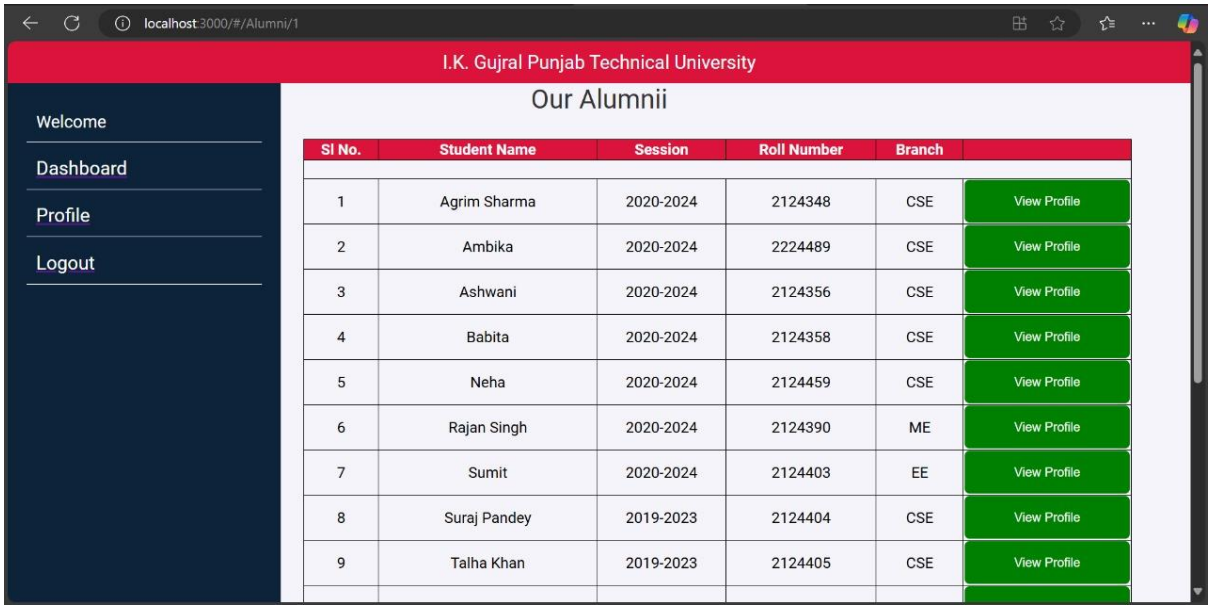


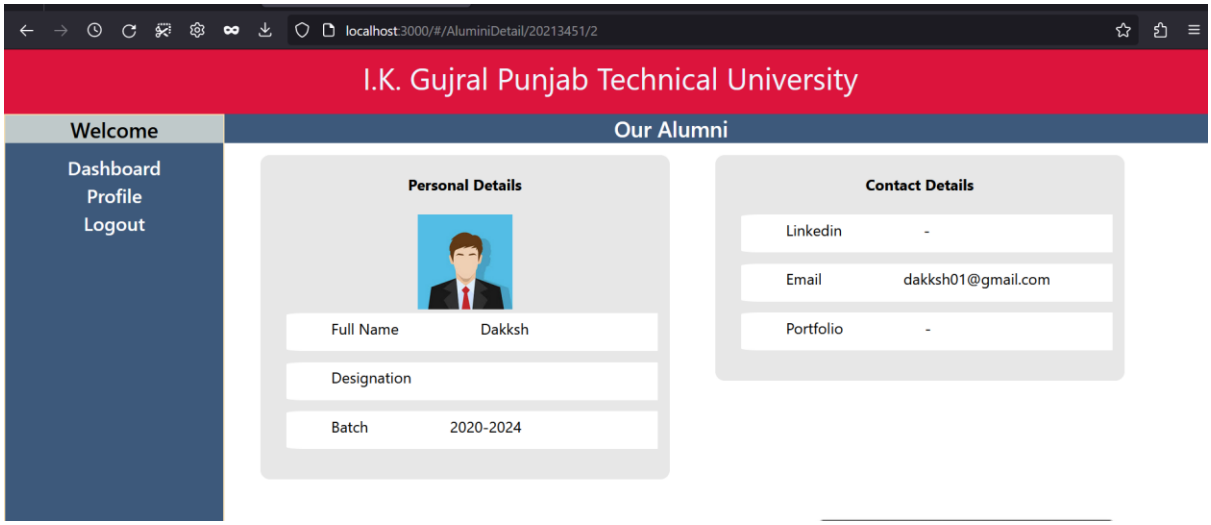
Next feature is to add admins. As mentioned earlier also we can add admins either directly from database at backend side or else we can add admins from here also. It means we need to add one admin from backend side from database and that admin can add other admins and coordinators quickly so that the portal can be managed well.



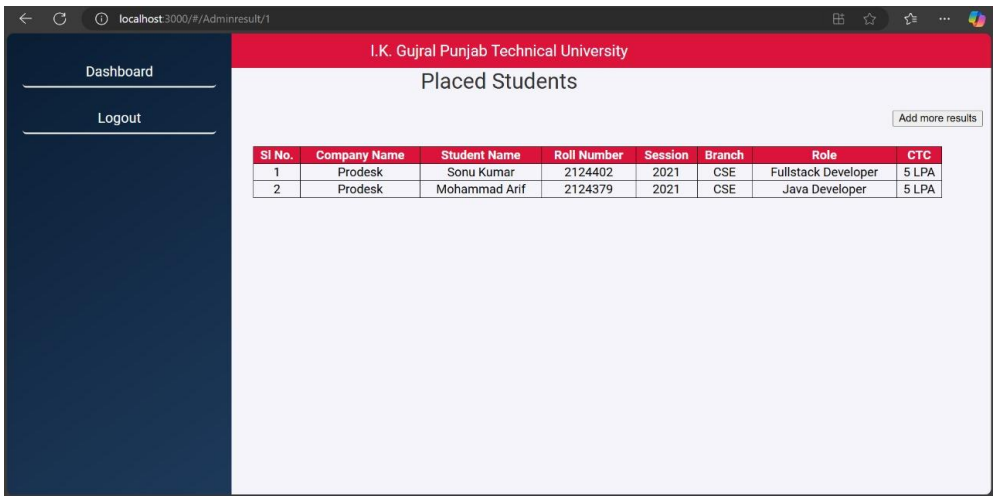
Alumni

Alumni section provides you with the placed students. These students can be helpful in contacting so that they can share their experiences and guidelines with the juniors for preparations. We can get their current status and content details so that we can get in touch with them.

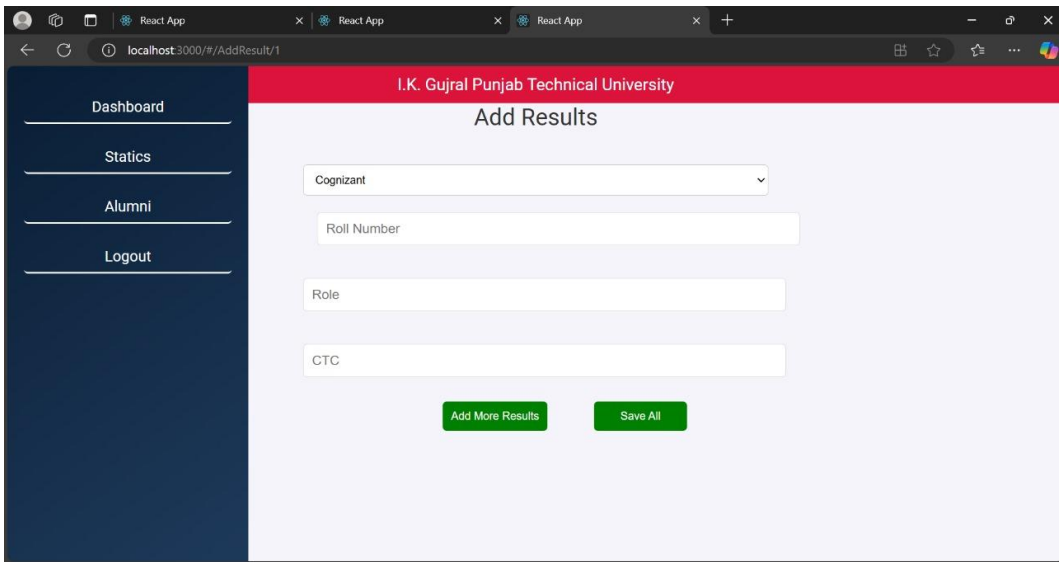

localhost:3000/#/Alumni/1
I.K. Gujral Punjab Technical University
Welcome
Dashboard
Profile
Logout
Our Alumnii
Sl No.
Student Name
Session
Roll Number
Branch
1 Agrim Sharma 2020-2024 2124348 CSE View Profile
2 Ambika 2020-2024 2224489 CSE View Profile
3 Ashwani 2020-2024 2124356 CSE View Profile
4 Babita 2020-2024 2124358 CSE View Profile
5 Neha 2020-2024 2124459 CSE View Profile
6 Rajan Singh 2020-2024 2124390 ME View Profile
7 Sumit 2020-2024 2124403 EE View Profile
8 Suraj Pandey 2019-2023 2124404 CSE View Profile
9 Talha Khan 2019-2023 2124405 CSE View Profile


localhost:3000/#/AluminiDetail/20213451/2
I.K. Gujral Punjab Technical University
Welcome
Dashboard
Profile
Logout
Our Alumni
Personal Details
Full Name Dakksh
Designation
Batch 2020-2024
Contact Details
Linkedin -
Email dakksh01@gmail.com
Portfolio -

Results

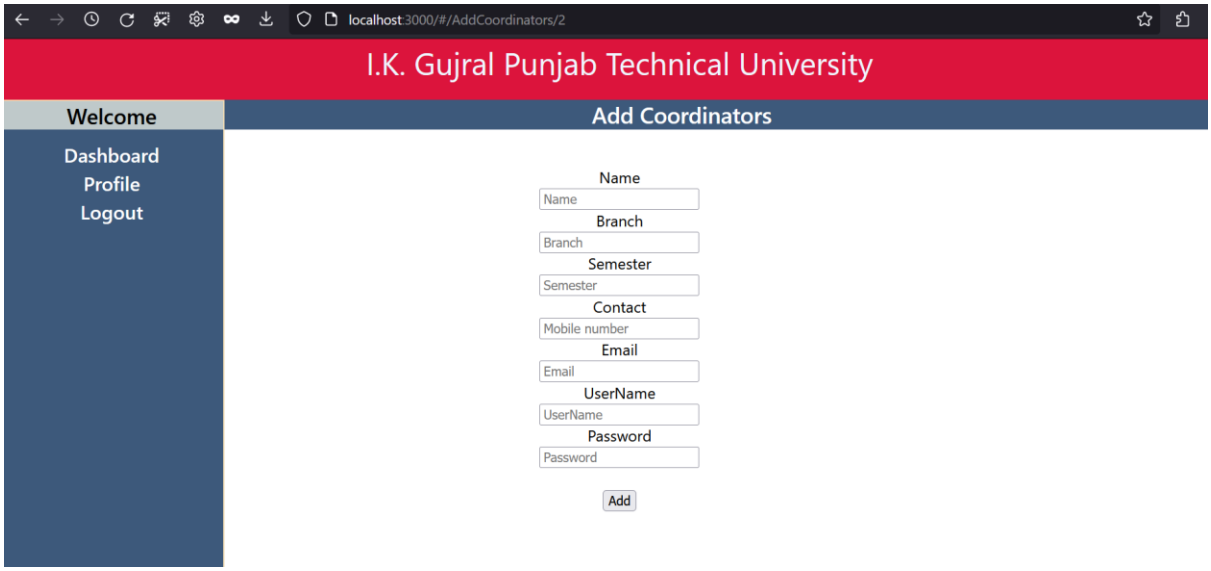

localhost:3000/#/Adminresult/1
Dashboard
Logout
I.K. Gujral Punjab Technical University
Placed Students
Add more results
Sl No. Company Name Student Name Roll Number Session Branch Role CTC
1 Prodesk Sonu Kumar 2124402 2021 CSE Fullstack Developer 5 LPA
2 Prodesk Mohammad Arif 2124379 2021 CSE Java Developer 5 LPA

Placement results are most important criteria for any university. We can check the placement results of all students as well as we can check the results company wise too if we want so.



Moreover, all the results shown to students are added by admins itself so he can add the results too.

T & P Co-ordinators



Any new T & P coordinator can be added easily by admins so that they can help students if they face any issues related to placement.

Conclusion

In conclusion, this placement management web application significantly enhances the efficiency and effectiveness of the placement process for students, administrators, and alumni. By providing a centralized platform for posting and applying to online and on-campus hiring opportunities, it reduces the administrative burden on both students and the administration. Students can directly upload their resumes, eliminating the need for manual collection by administrators. The automated generation of updated Excel sheets ensures that data is always current and accurate, simplifying tracking and analysis.

The application also offers features for posting study materials, providing valuable resources for student guidance and preparation. The event notification feature allows administrators to keep students informed about important events and deadlines, ensuring they never miss crucial opportunities. This ensures that students are always well-prepared and aware of upcoming placements and related activities.

Furthermore, students can only fill out forms for which they are eligible, which streamlines the application process and reduces unnecessary applications. If a student is already placed with a higher package, the system can automatically update their eligibility status, preventing them from applying to other opportunities. This ensures that opportunities are distributed fairly and efficiently among the students.

Lastly, the admin-alumni-student connect feature fosters a supportive community where alumni can share insights and guidance with current students. The automated statistical analysis provides critical insights into success rates across different branches and years, enabling targeted improvements and strategic planning. Overall, this web application streamlines the placement process, promotes better data management, enhances connectivity among all stakeholders, and supports student success through comprehensive resources, timely information, and an efficient application process.

References

We have taken references from following sites:

- https://ptu.ac.in/placements/placement-drives/

We have taken references from official website of I.K.G.P.T.U placement for the reference of PlaceZen.

- https://www.placecom.co/

We have taken reference from this site too for the better view of result statists so that we can work according to the statistics shown.

Future Scope

For future scopes of improvements, we can consider the below factors:

- ✓ It is the direct communication section for alumni's so that juniors can content alumni directly from this portal and they can response when-ever they will be free and email will be auto generated and sent to them that juniors want to interacts with you kindly help them with your guidance. This will be a more interactive platform between alumni's and juniors so that they can prepare well.

- ✓ Moreover, we can make this platform authenticated by directly sharing mail to the selected students.