NSTAY

Seamless Boarding Finder for NSBM Students

Python Programming and Group Project Challenge
UGC 22.2

Presented To
FACULTY OF COMPUTING NSBM

Presented by
Group R

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Acknowledgment

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Team Members: We would like to acknowledge the outstanding contributions of our team members

1. Sadeesha Jayaweera
2. Hansana Senadheera
3. Chanuka Dilshan
4. Dewmi Liyanage
5. Kasunu Priyawada
6. Vidura Sadeepa
7. Yureshi Thrishala
8. Madushani Buddika
9. Tharidu Ethpatiyawa
10. Ashani Gamage

Their dedication, hard work, and collaborative spirit were essential in bringing this project to fruition. We are fortunate to have worked with such a talented and supportive team. We are deeply grateful to everyone who has supported us in this project. We are confident that the knowledge and skills we have acquired will be invaluable in our future endeavors.

Background and Context

NSBM Green University is the first ever green university in South Asia and sets an example for the whole South Asia by paving the way for environmental sustainability. The university is open for both national and international student community and it has turned a new chapter in Sri Lankan higher education.

NSBM Green University is established under the Ministry of Education and it is renowned for its world-class academic offerings. This state-of-the-art university offers nationally and internationally recognized, UGC-approved degree programmes and foreign degree programmes in four faculties: Business, Computing, Engineering, Science, and Postgraduate Studies.

The university is spread over an area of 26 acres and the massive university complex was built with the intention of providing an opportunity for both national and international students to have a fully-fledged education in Sri Lanka. Currently, more than 12,000 students are studying at the university and the highly qualified local and foreign lecturers who teach at the university are committed to preparing these undergraduates to face any challenge the world has to offer.

Due to the high demand for enrolment at NSBM, a considerable number of students, around 60%, come from various parts of Sri Lanka and live quite a distance from the campus.

The university's decision to set itself a bit away from the town is to maintain a friendly and conducive learning environment.

While it's common for universities to struggle with providing accommodation for all their students, NSBM tackles this by offering housing for first-year girls with all the necessary facilities.

However, other students need to find boarding on their own.

The challenge is that NSBM is situated outside of the town, and the available boardings are situated within a nearly 20 km radius.

These boardings come in various types, like budget options for students facing financial difficulties, full homes, air conditioning or without, places with parking and transportation services, and options exclusively for girls.

Basically, there are thousands of places to stay spread out in a big area.
At the same time, many students are looking for a place that fits what they need.

Motivation

Our Plan to Make Finding Student Accommodation Easier within few seconds. We want to make it easier for students at NSBM Green University to find places to live. Moving to a new place for university can be tough, and finding a good place to stay is really important. That's why we're proposing to create a simple and helpful Boarding Finding System. We believe that where students live can affect how well they do in their studies and how happy they feel.

Our goal is to change the way students find places to live near the university. We want to make it **quick, easy, and personalized.** Our system will be like a guide for students. It will show them different places to live and let them choose based on what they want, like where it is, what's available, and how much it costs.

We'll use new technology and design it to be easy to use for everyone. We care about students' happiness and success at NSBM Green University. Our project isn't just about making web application; it's about using technology to help students. We want to make it simpler for them to find a place to live so they can focus on their studies and feel more connected to their university community. This project is part of our commitment to making university life better for everyone. We want to create something that lasts and helps students, now and in the future. We're excited about making this happen and making a real difference for students at NSBM Green University. This project is about making sure every student feels supported and can concentrate on learning and growing

Problem Statement

Scattered Information: Locating suitable boarding accommodations or housing options is often a time-consuming and fragmented process. Information about available boarding places might be dispersed across various platforms or might not be comprehensive enough, leading to difficulty in making informed decisions.

Existing platforms might lack user-friendly interfaces or robust search functionalities, making it cumbersome for users to navigate and find the most suitable boarding places.
Hostel/boarding house owners or might lack efficient tools to manage their boarding bookings, and user interactions, leading to inefficiencies and potential missed opportunities. Cannot finding this facilities.

Opportunity to address these challenges:

Aggregating Information: Creating a centralized platform with comprehensive information about various boarding places, including descriptions, amenities, prices, and availability.

Developing an intuitive and user-friendly interface for users to easily search, filter, and explore available accommodations.

Offering a platform that simplifies the boarding finding process, reducing time and effort for users. Building a trustworthy platform that ensures reliable informations.

Catering to Diverse Needs: Addressing the needs of various user segments seeking different types of boarding accommodations.

Scalability: Creating a scalable platform capable of accommodating increased user demand. Cover in nearly university geographic locations in boarding place.

The project aims to create a solution that simplifies the process of finding, and managing boarding places, thereby enhancing user experiences and catering to a market seeking reliable and convenient housing solutions

Project Objective

Implement a secure and streamlined boarding finding system. Improve user satisfaction by offering a reliable and trustworthy platform that simplifies the boarding finding process, reduces search time. Build a boarding /hostels capable of accommodating increased user demand. Offer analytics and reporting features to empower stakeholders with valuable insights, aiding in decision-making, and enhancing the overall platform performance. These objectives collectively aim to create a holistic boarding finding web application that not only simplifies the process for users but also provides efficient management tools for property owners or administrators. The focus is on delivering user-centric platform that meets the needs of both seekers and providers of boarding accommodations while ensuring scalability and reliability.

Project Scope

Detailed information about boarding places, including descriptions, images, amenities, pricing, and availability. Intuitive interface facilitating easy navigation and efficient search functionalities. User registration, login, and profile management functionalities. Robust web application for property owners/administrators to manage listings and user interactions.

Advantages:

Efficient Accommodation Search,
Comprehensive information and user-friendly interface enabling users to find suitable accommodations quickly and effortlessly.

Effective Property Management:
Empowering property owners/administrators with efficient tools to manage their listings and interactions.

Trust and Reliability,
Creating a trustworthy platform offering reliable information.

Scalability and Expansion:
Building a scalable platform capable of accommodating diverse user needs and expanding to cover various locations and accommodation types.

Boundaries of the Project:
Development of front-end and back-end systems for the boarding finding web application. Implementation of user account management, search functionalities and admin panel. Database design and integration for storing boarding place information and user data. Testing phases including unit tests, integration tests, and user acceptance testing. Documentation development (technical documentation).

About Us

Welcome to our team! We are a group of enthusiastic undergraduate students from the Computing Faculty at NSBM Green University. Fueled by our passion for technology and a shared vision for innovation, we've joined forces to tackle a common challenge faced by many university students: finding the perfect boarding solution.

Driven by the desire to make the lives of our fellow students easier, we've developed a cutting-edge web application that redefines the process of finding suitable boardings. Combining our diverse skills in programming, design, and problem-solving, we aim to provide a seamless and user-friendly experience for anyone in search of the ideal boarding accommodation.

TEAM MEMBERS FOR THE PROJECT

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Ashani
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Tharindu
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Madushani
29201

Methodology

System Design and Overview

In designing our system, we have adopted a comprehensive and user-centric approach, ensuring that every aspect of the user experience aligns with our goal of providing a seamless and efficient boarding finding solution. Below is an overview of our system design:

Overall Approach

Our overall approach centers around creating an intuitive web application that simplifies the process of finding suitable boarding accommodations for university students. We prioritize user-friendliness, accessibility, and real-time functionality to deliver a platform that meets the diverse needs of our user community.

User-Centric Design: Our design philosophy revolves around understanding the needs and preferences of our users. We have conducted user surveys and feedback sessions to incorporate features that resonate with the student community, ensuring a positive and personalized experience.

Smart Matching Algorithm: To enhance the boarding search process, we have implemented a sophisticated matching algorithm. This algorithm takes into account user preferences, location, budget constraints, and other relevant factors to provide tailored recommendations, saving time and effort for the users.

Real-Time Updates: We recognize the dynamic nature of boarding availability. Therefore, our system incorporates real-time updates on boarding vacancies, ensuring that users have the latest information at their fingertips.

Interactive Map Integration: Leveraging the Google Maps API, our application includes an interactive map feature. This allows users to visualize the location of boardings, nearby amenities, and proximity to the university, empowering them to make informed decisions.

System Overview

Our system comprises the following key components:

User Interface (UI): The front-end of our web application provides a clean, modern, and intuitive interface. Users can easily navigate through the platform, input their preferences, view boarding details, and interact with the map feature.

Matching Algorithm: The heart of our system, the matching algorithm, analyzes user inputs and boarding details to generate personalized recommendations. It factors in location, budget, facilities, and user reviews to deliver accurate and relevant results.

Real-Time Database: A robust and scalable database stores comprehensive information about available boardings, including vacancy status, amenities, reviews, and contact details. The real-time nature of the database ensures that users access the latest information.

Google Maps Integration: The integration of Google Maps enhances the user experience by providing a visual representation of boarding locations. Users can explore the neighborhood, assess proximity to the university, and make well-informed decisions.

User Accounts and Reviews: Users can create accounts, save preferences, and leave reviews for boardings they have experienced. This adds a community-driven aspect to our platform, fostering trust and collaboration among the student community.

Admin Dashboard: User Management: The admin dashboard includes functionalities for managing user accounts, ensuring security, and facilitating account-related requests.
Listing Management: Admins can oversee and manage boarding listings, ensuring accuracy, completeness, and adherence to platform guidelines.

Review Moderation: To maintain the integrity of the platform, the admin dashboard allows for the moderation of user reviews, ensuring fair and reliable feedback.
Real-Time Analytics: Monitoring platform usage, popular locations, and user behavior through real-time analytics empowers admins to make data-driven decisions and optimize the user experience.

User Accounts and Reviews: User Authentication: The system's secure user authentication ensures that user accounts are protected, and personal information is handled with the utmost confidentiality.

Review System: Users can leave reviews for boardings, contributing to a community-driven environment where experiences and recommendations are shared.

System Components

For our Boarding Finder app developed using the MERN stack, the main components seamlessly integrate frontend and backend functionalities.

On the frontend, our user interface and experience prioritize 10 pages, including home, search, and user profile, with reusable React components managing navigation and search forms. The backend, powered by Node.js and Express.js, handles routing and middleware for authentication and data validation.

MongoDB serves as our database, organizing user and boarding listing collections with efficient queries for data retrieval and updates. Business logic incorporates robust search algorithms and user authentication.

RESTful APIs define endpoints for user actions and boarding searches. Communication and collaboration are facilitated through Git for version control, enabling collaborative development with branches for features and bug fixes.

Collaboration tools like Slack and task management platforms such as Trello or Jira enhance team communication and coordination.

Unit testing ensures the reliability of both frontend React components and backend functionalities, covering API endpoints and business logic.

Deployment is streamlined with frontend hosting on platforms like Netlify or Vercel and backend deployment on services like Heroku or AWS. Comprehensive code documentation, including inline comments for complex logic and a ReadMe with setup and usage instructions, ensures clarity and ease of maintenance for our project.

Technologies And Resources

In our project, we have strategically chosen a set of cutting-edge technologies to ensure a robust and scalable solution that meets the needs of our users. Here is an overview of the technologies planned for use:

Front-End Development:

ReactJS: As the foundation for our web application's front end, ReactJS provides a modular and efficient way to build user interfaces, enabling us to create dynamic and responsive components.

Figma: Leveraging Figma for UI/UX design allows us to create visually appealing and user-friendly interfaces. Figma's collaborative features facilitate seamless communication within the design team.

Back-End Development:

Node.js: Utilizing Node.js as our back-end runtime environment allows for fast and scalable server-side development, ensuring efficient handling of requests.

Express.js: As a web application framework for Node.js, Express.js simplifies the development of server-side logic, making it easier to manage routes and handle various HTTP requests.

Database Management:

MongoDB: Embracing MongoDB as our NoSQL database ensures flexibility in managing unstructured data. It's particularly well-suited for storing boarding information, user preferences, and reviews.

User Authentication:

JSON Web Tokens (JWT): Implementing JWT for user authentication adds an extra layer of security to our application, allowing for secure transmission of information between the client and server.

Real-Time Functionality:

Socket.io: For real-time features such as live updates and messaging, Socket.io provides a reliable and bidirectional communication channel between the server and clients.

Mapping Integration:

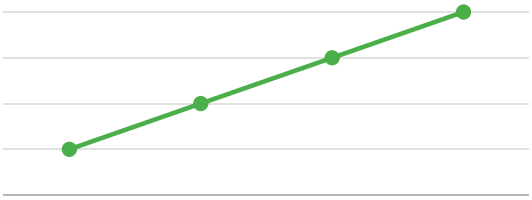
Google Maps API: Integrating the Google Maps API enables us to incorporate an interactive map feature, enhancing the user experience by visualizing boarding locations and nearby amenities.

Project Plan

The Main Three Stages of The Final Product to Be Delivered

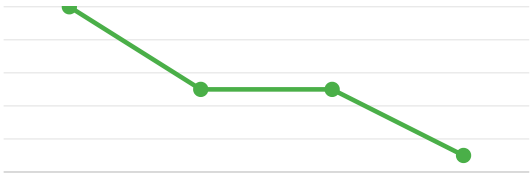
Goal #1 UI UX Design

Designing a Attractive and Ease of UI for the Students and the Boarding Owners



Goal #2 Front End Development

Build a responsive and dynamic front-end using ReactJS, ensuring seamless user interaction.



Goal #3 Back-End Development

Seamless Backend with Faster Data Transfer Between the Frontend.

We Have Divided our outcome of the project into Three Main Parts.

1.UI UX Design

Outcome: Finalized UI/UX design ready for integration with the development phases.

2.Front End Development

Key Steps:

·Select and confirm ReactJS as the front-end technology.
·Design modular components and overall architecture.
·Implement real-time features using Socket.io.
·Conduct testing, debugging, and iterative development.
·Integrate user interaction features and Google Maps API

3.Back End Development

1. Deploy Back-End :
    - Deploy your Node.js and Express back-end on a platform like Heroku. Refer to the respective hosting service documentation for deployment instructions.

1. Update Front-End API Calls:
    - If the front-end makes API calls to the back-end, ensure that the API URLs in your React app point to the correct back-end URL.

1. Environment Variables:
    - If your application uses environment variables, configure them in the Netlify dashboard for the front-end.

Deliverables

Project Scope Statement: Clearly outline the objectives of the Boarding Finder app, including features such as user authentication, a well-designed UI/UX, and efficient business logic for boarding searches.

Work Breakdown Structure (WBS): Break down the project into manageable tasks, including UI/UX design, front-end development, back-end development, database setup, and testing. Each of these tasks can be further divided into subtasks.

Project Schedule: Develop a timeline for the project, specifying when each task and subtask will be started and completed. Use a simple Gantt chart or project timeline for visualization.
Resource Plan: Allocate human resources effectively by ensuring an equal distribution of tasks among team members. Confirm that all team members are adequately trained in React and other necessary technologies.

Risk Management Plan: Identify potential risks, such as technical challenges or delays in learning React, and outline strategies to mitigate these risks. Encourage open communication within the team to address issues promptly.

Communication Plan: Maintain frequent team meetings to discuss progress, challenges, and updates. Use messaging platforms and collaborative tools to keep communication efficient and transparent.

Quality Management Plan: Establish coding standards and conduct code reviews to ensure the quality of the codebase. Implement testing procedures for both the front-end and back-end components.

Change Management Plan: Clearly define how changes to the project scope or schedule will be handled. Ensure that any changes are communicated to the team promptly.

Project Objectives: Clearly state the project objectives, emphasizing the development of a user-friendly Boarding Finder app with industry-level UI/UX and business logic.

Work Schedule: Create and follow a detailed work schedule, breaking down tasks into smaller milestones. Regularly review and update the schedule as needed.

Project Status Reports: Generate regular reports on the project's status, highlighting achievements, challenges, and upcoming milestones. Share these reports during team meetings to keep everyone informed.

Training Plan: Provide ongoing training and support for team members, especially in areas where they may have limited experience, such as React development.

Work Distribution

Authentication and Authorization:
Member's name-Chanuka
- Sign Up - Login - User Authentication - User Authorization -Front End Implementation -Back End Implementation

Boarding Profile:
Members' name-Dewmi and Vidura
- Display All Boarding Details - Display Reviews - Front End Implementation - Back End Implementation

Main Page:
Member's name-Sadeesha
- Data Filtering - Navbar with Routing - All Boardings Display Page - All Available Boardings Display Page - Front End Implementation - Back End Implementation

Boarding Owner Profile :
Member's name-Ashani
-Display Reviews - Show Availability - Edit Details - Front End Implementation - Back End Implementation

Map Functionality :
Member's name-Hansana
- Show Map - Get User Location - Update Location - Google Map API Integration - Front End Implementation - Back End Implementation

Student Profile:
Members' name-Buddika and Yureshi
-Edit Profile Data - Display Profile Data - Front End Implementation Implementation

User Reviews:
Members' name-Tharidu and Kasuni
- Retrieve User Reviews - Display Reviews - Calculate Reviews - Delete and Edit Reviews - Front End Implementation - Back End Implementation

Design Preview of The Product

See what people on social media are interested in.

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End Of Proposal

THANK YOU

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