

Report on the Himalayan Explorers' Club Trek Management App

Submitted

by

Group No. 14

for the CSN-254 course project

done under the supervision of

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Individual Contributions by group members

Faizan Nabi(f_nabi@ee.iitr.ac.in)- main backend development in PHP and MySQL, also code for the LLAMA model integration. Some front end CSS.

Shah Krish Sanjay(s_ksanjay@ee.iitr.ac.in)- basic UI design for the app including some CSS.

Harsh Pandey(harsh_p2@me.iitr.ac.in)- insights into how to actually improve the UI using JavaScript.

Deepak Sharma(deepak_s1@me.iitr.ac.in)- writing the HTML code for the app .

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Section 1: Introduction

Background Topics

The Himalayan Explorers Club Management System is a web-based application designed to streamline the management of trekking events organized by the Himalayan Explorers Club of IITR. The motivation behind this project stems from the need for an efficient system to manage trek registrations, user profiles, and event details in a centralized platform.

Motivation of Project

Currently, the Himalayan Explorers Club relies on Google Forms for trek management. However, this approach is inefficient due to its decentralized nature, lack of comprehensive background statistics on user registrations, and absence of payment handling capabilities. Manual verification of payments made through UPI IDs further complicates the registration process, leading to inefficiencies for both users and administrators. Also a lack of platform where users can share their post-trek experiences in the form of blogs.

Application Domain of Project Problem

The primary domain of the project problem lies in trek management for adventure clubs or organizations. Specifically, the Himalayan Explorers Club faces challenges in efficiently managing trek registrations, user profiles, and event details. This application domain is relevant to any organization or club that organizes outdoor events and requires a centralized platform for managing event logistics, participant information, and payments.

Proposed System

The proposed system aims to address the aforementioned challenges by providing a comprehensive web-based application for managing trekking events. This system will offer features such as centralized event management, user profile management, automated payment verification, and detailed statistical analysis of user registrations. By leveraging modern web technologies and integrating payment gateways, the proposed system seeks to improve efficiency, transparency, and user experience for both administrators and participants.

Section 2: Detail of the Proposed System

The proposed system, the Himalayan Explorers Club Management System, is designed to streamline the management of trekking events organized by the Himalayan Explorers Club (HEC) at the Indian Institute of Technology Roorkee (IITR). The system aims to provide an efficient and centralized platform for managing trek registrations, user profiles, event details, and administrative tasks. Below are the key components and functionalities of the proposed system:

1. User Registration and Profile Management:

- Users can register for trekking events and write blogs by creating an account on the platform.
- Upon registration, users can provide their personal details such as name, email, enrollment number, department, year, gender, WhatsApp number, and hostel information.
- Users have the option to view their profiles including profiles of other users and update their information as needed.

2. Trek Management:

- The system allows administrators to create and manage trekking events via the admin portal.
- While adding a trek, the administrator can auto-generate a description of the trek. This is implemented using **machine learning models in particular the LLAMA 2 model from MetaAI**.
- Administrators can add new treks, update existing trek details, and delete outdated events.
- Trek details include the trek name, date, duration, description, total cost, trek leaders' information, registration cost, and images.

3. Registration and Payment Handling:

- Users can browse through upcoming treks and register for events of their choice.
- The system facilitates secure online payments for trek registration fees using integrated payment gateways.
- Upon successful registration and payment, users receive confirmation emails and their registration details are stored in the database.

4. Statistical Analysis and Reporting:

- The system generates comprehensive statistical reports on trek registrations, user demographics, and event attendance.
- Administrators can access detailed insights into user participation, popular treks, payment status, and other relevant metrics.
- Statistical analysis helps in planning future treks, optimizing resource allocation, and enhancing user engagement.

5. Block Diagram of the Proposed System:

Fig 1.1 This is the block diagram for the user registration portal.

The checks are performed using SQL queries sent to the MariaDB database. The table structures are shown in subsequent diagrams.

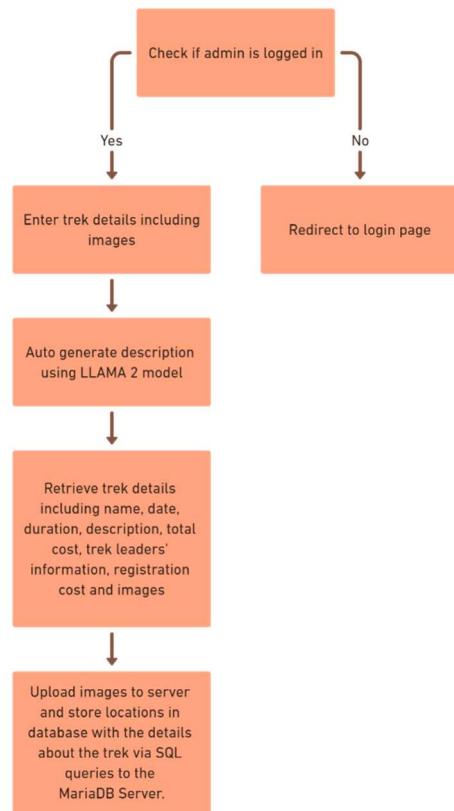
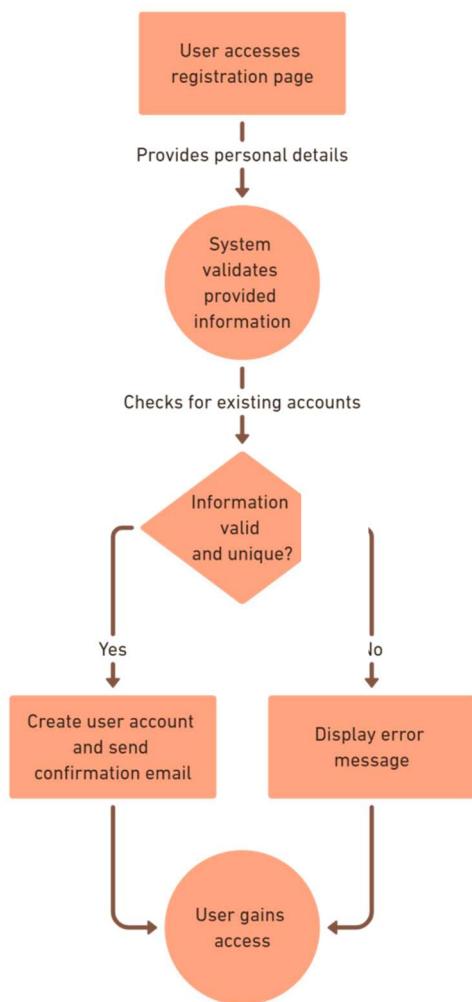


Fig1.2 This diagram shows the algorithm for adding a new trek on the admin portal.

The admin login is checked by checking if cookies are stored on the user's system and validating them against the values previously defined. The description generation is carried out but prompt engineered requests to **LLAMA 2**.

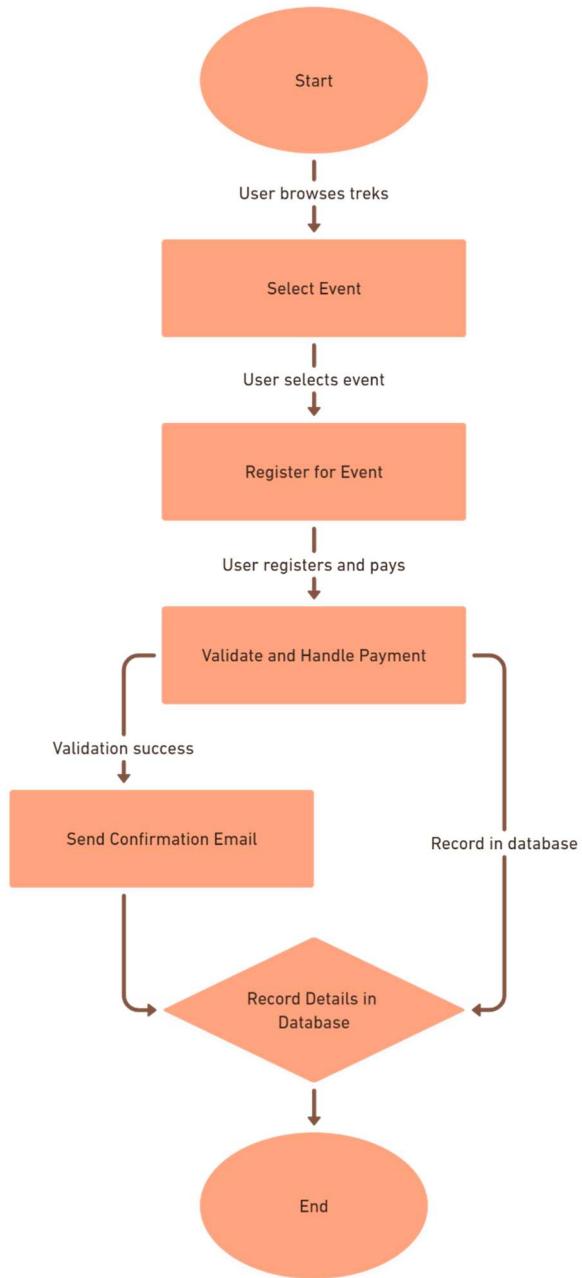


Fig 1.4 This figure is a diagram for the trek registration algorithm employed by the app.

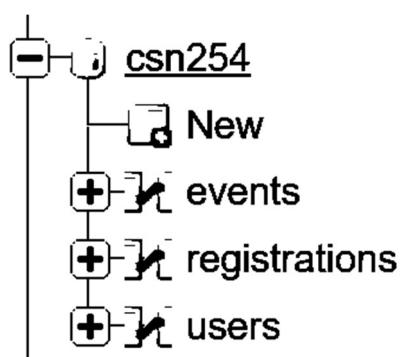


Fig 1.4 This figure shows the database structure for the csn254 database that is used for this project.

Table structure		
#	Name	Type
<input type="checkbox"/>	1 id 	int(
<input type="checkbox"/>	2 firstName	var
<input type="checkbox"/>	3 lastName	var
<input type="checkbox"/>	4 email	var
<input type="checkbox"/>	5 enrollmentNumber	var
<input type="checkbox"/>	6 department	var
<input type="checkbox"/>	7 year	var
<input type="checkbox"/>	8 gender	var
<input type="checkbox"/>	9 whatsappNumber	var
<input type="checkbox"/>	10 password	var
<input type="checkbox"/>	11 hostel	var
<input type="checkbox"/>	1 id 	int(
<input type="checkbox"/>	2 name	var
<input type="checkbox"/>	3 date	var
<input type="checkbox"/>	4 duration	var
<input type="checkbox"/>	5 description	var
<input type="checkbox"/>	6 totalcost	var
<input type="checkbox"/>	7 trekleader1	var
<input type="checkbox"/>	8 trekleader2	var
		# Name
<input type="checkbox"/>	9 contact1	var
<input type="checkbox"/>	10 contact2	var
<input type="checkbox"/>	11 img1	var
<input type="checkbox"/>	12 img2	var
<input type="checkbox"/>	13 rcost	var

Fig 1.5 This figure shows the individual table structure for each of the tables present within the csn254 database.

6. Algorithms and Steps of the Proposed System

The Himalayan Explorers Club Management System incorporates several algorithms and procedural steps to ensure efficient management of trekking events, user registrations, and administrative tasks. Below are the key algorithms and steps involved in the proposed system:

1. User Registration Algorithm:

- Algorithm:

1. User accesses the registration page and provides personal details.
2. The system validates the provided information and checks for any existing accounts with the same email or enrolment number. This is done by the registration form sending the data to the backend server intern the server checks the data against the data available in the database via MySQL queries.
3. If the information is valid and unique, the user account is created, and a confirmation email is sent. This is done by creating a new record in the ‘users’ table of the csn254 MariaDB database.
4. Upon successful registration, the user gains access to the platform’s functionalities, including trek registration and profile management.

2. Trek Creation and Management Algorithm:

- Algorithm:

1. Administrators log in to the system and access the admin portal.
2. In the admin portal, administrators can create new treks by entering relevant details such as trek name, date, duration, description, total cost, registration cost, trek leaders' information, and uploading images. This is the heart of the app and the part where most of the new technology has been incorporated into the app, the trek descriptions are auto generated using **LLM** in particular **LLAMA** model from **MetaAI**.
3. The system automatically updates the trek database and notifies users about newly added or modified events.

3. Registration and Payment Handling Algorithm:

- Algorithm:

1. Users browse through the list of upcoming treks and select the ones they wish to participate in.
2. Upon selecting a trek, users proceed to the registration page, where they provide necessary details and make payment using integrated payment gateways.
3. The system verifies payment status and updates the registration database accordingly.
4. Users receive confirmation emails containing trek details and payment receipts upon successful registration.

4. Statistical Analysis and Reporting Algorithm:

- Algorithm:

1. Administrators access the statistical analysis section of the admin portal.
2. The system retrieves relevant data from the database, including user demographics, trek attendance, payment status, and other metrics.
3. Administrators can visualize the generated reports using interactive charts, graphs, and tables to aid in decision-making and strategic planning. Although this couldn't be implemented due to lack of time

Novelty and Application Innovation:

The proposed system introduces several novel features and innovations to streamline the management of trekking events and enhance user experience:

- Integration of Payment Gateways: Unlike traditional methods currently used by Himalayan Explorers Club that rely on manual verification of payments, the system automates payment handling using secure online payment gateways, reducing administrative workload and ensuring faster registration processing. Although this could not be completed in

time due to Paytm and other gateways providing extremely delayed response to integrate the payment gateway within our app.

-Use of Machine Learning: this can be considered the highlight of our app, as a part of this project we explored LLMs(Large Language Models) in particular the LLAMA model from MetaAI, we integrated this model into our app so that when the admin adds a new trek on the portal it automatically generates the details about the event based on the information available from the internet such as altitudes, distances and features about the trek. In future we could also integrate the model to recommend people what to expect and what gear to take on the trek based on the information available over the internet.

- Centralized Platform: By providing a centralized platform for managing trek registrations, user profiles, and event details, the system eliminates the need for decentralized tools like Google Forms, improving efficiency, and organization within the Himalayan Explorers Club.

- User-Friendly Interface: The system features an intuitive user interface with easy navigation, registration, and profile management functionalities, enhancing user experience and engagement.

Section 3: Implementation

Implementation Details

The implementation of the Himalayan Explorers Club Management System involves several components, including backend development, frontend design, database management, and integration of payment gateways. Here are the implementation details:

Backend Development:

- The backend of the system is developed using PHP, a server-side scripting language known for its simplicity and versatility in web development.
- PHP scripts handle user authentication, data validation, database interactions, and business logic implementation.
- MySQL is used as the database management system to store user profiles, trek details, registration data, and other relevant information.

Frontend Design:

- The frontend of the system is designed using HTML5, CSS3, and JavaScript to create a visually appealing and interactive user interface.
- HTML5 provides the structure and semantics for web pages, while CSS3 is used for styling and layout customization.
- JavaScript enhances the user experience by adding dynamic behaviour to web pages, such as form validation, dropdown menus, and interactive elements.

Integration of Payment Gateways:

- Payment gateway Paytm was meant to be integrated into the system to facilitate secure online transactions but they didn't provide the API key int time to implement it.
- APIs provided by payment gateway providers are utilized to handle payment processing, verification, and transactional data management.

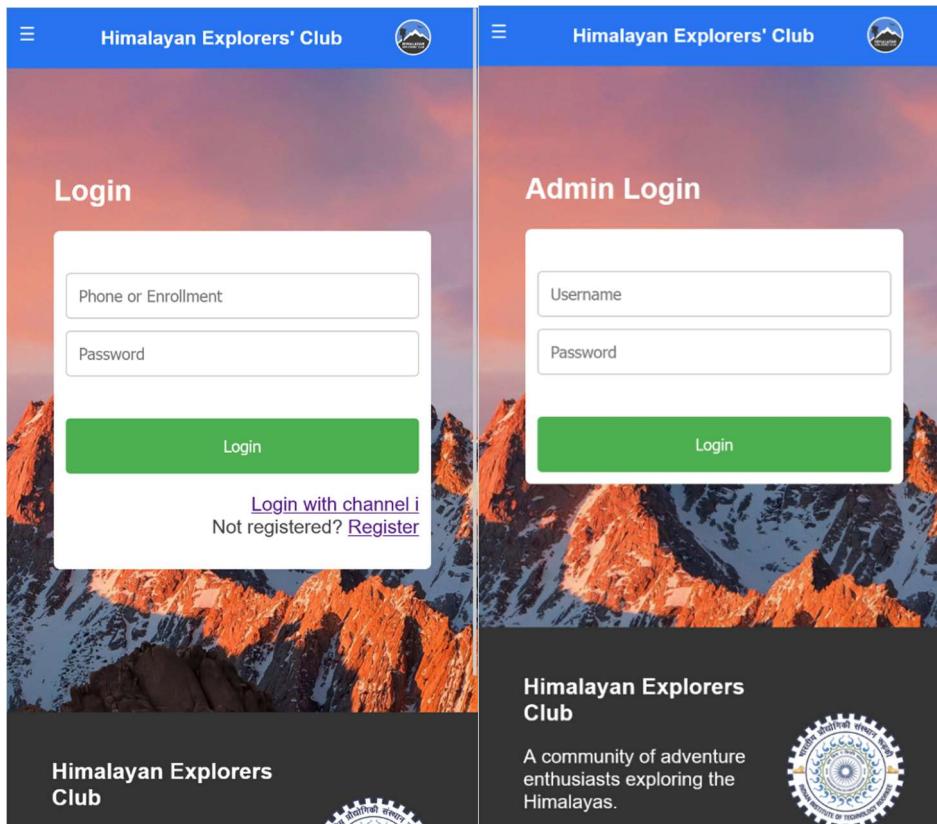
Building the native mobile app:

- The webapp can be seamlessly converted to native mobile apps for both android and iOS using the WebView support available in major frameworks using for native app development with only a few lines of code

Tools and Technologies Used:

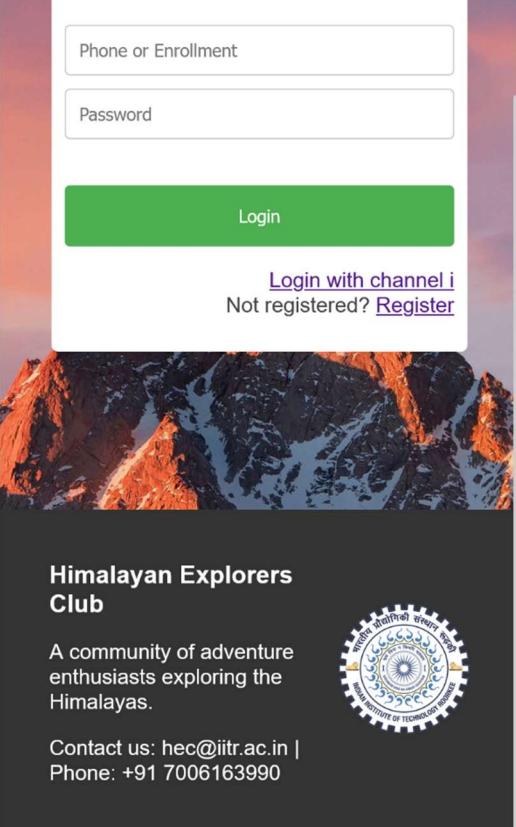
- **Development Environment:** XAMPP (Apache, MySQL, PHP, and Perl) is used as the local development environment to host the web application and database server.
- **Code Editor:** Visual Studio Code is used as the primary code editor for writing and editing PHP, HTML, CSS, and JavaScript code.
- **Database Management:** phpMyAdmin is used as the web-based database administration tool to interact with the MySQL database, execute SQL queries, and manage database operations.
- **LLAMA model API:** As a part of this project, we explored LLMs (Large Language Models), specifically the LLAMA model from MetaAI, to enhance the functionality of our application. We integrated this model into our app using the LLAMA API to automate the generation of event details when the admin adds a new trek on the portal.
- **Automatic Event Detail Generation:** The LLAMA model analyzes the information available from the internet, such as altitudes, distances, and features about the trek, and automatically generates detailed descriptions for the trek events. This automation significantly reduces the manual effort required to input event details, ensuring consistency and accuracy in the information provided to users.

Screenshots of the System:



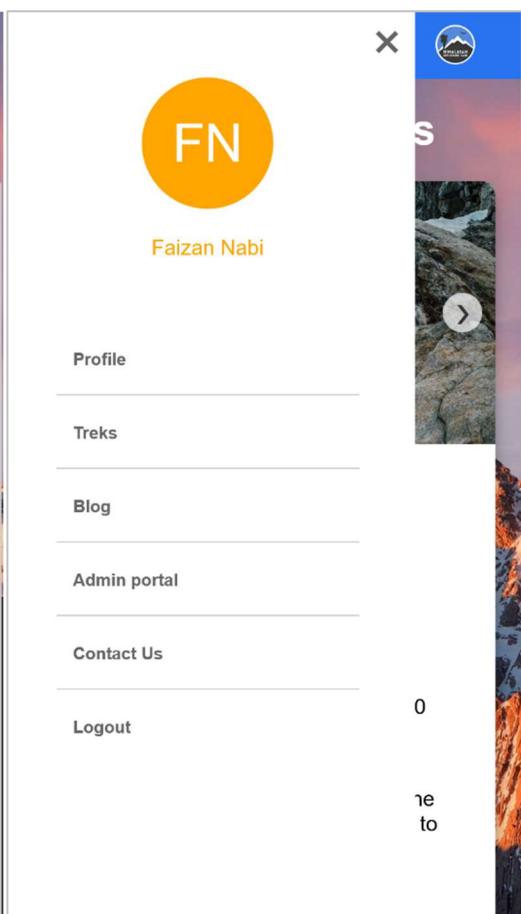
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Himalayan Explorers Club

 A community of adventure enthusiasts exploring the Himalayas.
 Contact us: hec@iitr.ac.in |
 Phone: +91 7006163990



Dayara Bugyal

Date: 2024-05-02

Total Cost: 4000

Registration Cost: 1000

Trek Leader 1: Faizan - 7006163990

Trek Leader 2: Krish - 7006163567

Sure, here's a short description for the Himalayan Explorers Club, IITR trek to Dayara Bugyal:

"Join us for an unforgettable trek to Dayara Bugyal, a picturesque meadow nestled in the Garhwal Himalayas."

[...read more.](#)

[Already Registered ✓](#)

Brahmatal Trek

Date: 2024-11-25

Total Cost: 3800

Registration Cost: 1000

Trek Leader 1: Jeet - 8997657474

Trek Leader 2: Harshil - 9876776787

Himalayan Explorers Club, IITR presents the Brahmatal Trek, a thrilling adventure through the Himalayas!

Join us for a 3-day journey starting on November 25th, 2024, and experience the breathtaking views.

[...read more.](#)

The screenshot shows the 'Add Trek | Statistics' screen of the Himalayan Explorers' Club app. The background features a scenic mountain landscape at sunset. At the top, the club's logo is visible. The main form contains fields for 'Trek Name', 'Trek Duration (in days)', 'Trek Leader 1', 'Trek Leader 1 Contact', 'Trek Leader 2', 'Trek Leader 2 Contact', 'Total Cost', 'Registration Cost', and 'Trek Description'. Below the form, there is a section for trek details.

Himalayan Explorers Club

Trek Date:

Choose first image
Choose second image

Upload Trek

Himalayan Explorers Club

A community of adventure enthusiasts exploring the Himalayas.

Contact us: hec@iitr.ac.in | 

Add Trek | Statistics

Trek Name
Trek Duration (in days)
Trek Leader 1
Trek Leader 1 Contact
Trek Leader 2
Trek Leader 2 Contact
Total Cost
Registration Cost
Trek Description

The screenshot shows the 'Add Trek | Statistics' screen for the 'Dayara Bugyal' trek. The background features a scenic mountain landscape at sunset. The trek details section shows the date as '2024-05-02' and 'Total registrations: 1'. A dropdown menu lists '1) Harsh Pandey'. Below this, another trek detail section is shown for the 'Valley of Flowers Trek' with the date '2024-05-18' and 'Total registrations: 2'. A dropdown menu lists '1) Faizan Nabi'. At the bottom left, there is a registration form with fields for First Name, Last Name, Password, Email, Enrollment Number, Select Gender, WhatsApp Number, Hostel, Department, and Year, followed by a 'Register' button.

Himalayan Explorers Club

Add Trek | Statistics

Dayara Bugyal

Date: 2024-05-02
Total registrations: 1
1) Harsh Pandey

Valley of Flowers Trek

Date: 2024-05-18
Total registrations: 2
1) Faizan Nabi

First Name
Last Name
Password
Email
Enrollment Number
Select Gender
WhatsApp Number
Hostel
Department
Year

Register

Tabular Comparison with Existing Similar Systems:

Feature	Himalayan Explorers Club Management System	Google forms for event management
User Registration	✓	✓
Trek Creation and Management	✓	✓
Payment Handling	✓	✗
Statistical Analysis of all treks at one place	✓	✗
Integration of Payment Gateways	✓	✗
User-Friendly Interface	✓	✗
LLAMA model for auto content and details generation for admins and recommendations for users	✓	✗

Conclusion:

The implementation of the Himalayan Explorers Club Management System involves leveraging **PHP**, **MySQL**, **HTML5**, **CSS3**, **LLMs(LLAMA)** and **JavaScript** to develop a robust, secure, and user-friendly web application. By integrating payment gateways, providing comprehensive statistical analysis, and offering a centralized platform for trek management, the system aims to revolutionize the way the Himalayan Explorers Club organizes and manages trekking events

Bibliography

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