Bike Rental Application: GITAM Exclusivity

Ronanki Vishal[1], Madugula Padmaja[2], Pokuri Hari Siva Prasad [3], Marni Alekhya[4]

[1,3,4] *Student, Bachelor of Technology, Department of Computer Science and Engineering,*
GITAM(Deemed to be University), Visakhapatnam, Andhra Pradesh, India.
[2] *Assistant Professor, Department of Computer Science and Engineering,*
GITAM(Deemed to be University), Visakhapatnam, Andhra Pradesh, India.

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ABSTRACT: *This project presents a significant advancement in technology through the development of a Bike Rental Application tailored specifically for GITAM University. Going beyond conventional transportation concepts, this application offers a specialized solution finely tuned to meet the unique needs of the university environment.*

The Bike Rental Application isn't just a generic service; it's a customized experience designed exclusively for GITAM students, faculty, and staff. Exclusivity is a deliberate design choice, ensuring that only individuals affiliated with GITAM can utilize this innovative platform. The rental system operates on an hourly basis, providing flexibility and cost-effectiveness to the dynamic transportation requirements of the academic community.

In addition to addressing transportation challenges, this project introduces a new perspective by enabling students to generate passive income. By leveraging existing resources such as personal vehicles, students can participate in a novel financial empowerment initiative.

Keywords: Web Application, Bike Rental, University Exclusivity, PHP, XAMPP.

1. INTRODUCTION

The " Bike Rental Application: GITAM Exclusivity" is a specialized platform designed exclusively for GITAM University students, offering a seamless and convenient way to access bike rental services within the campus premises. This innovative application addresses the specific needs and preferences of GITAM students, ensuring a hassle-free experience for both bike owners and renters.

1.1 Exclusivity for GITAM University Students:
Our application is tailored specifically for GITAM students, ensuring that only authorized users with valid university credentials can access and utilize the bike rental services. This exclusivity enhances security and creates a sense of community among users.

1.2 Flexible Listing and Rental Options:
Students using the application have the flexibility to both list their bikes for rental and rent bikes from other students. This dual functionality promotes a sharing economy within the university, allowing students to maximize the utility of their bikes and earn extra income while providing convenient transportation options to fellow students.

1.2 Efficient Bike Key Collection and Handover:
To ensure smooth and secure transactions, bike key collection and handover are mandated to take place at designated parking areas within the campus. This procedure adds an extra layer of security and accountability to the rental process, enhancing the overall user experience.

1.3 User-Friendly Interface:
The application features a user-friendly interface with intuitive navigation, making it easy for students to sign up, list their bikes, view availability, rent bikes, and manage rental transactions seamlessly.

1.5 Comprehensive Monitoring and Management:
Administrators can oversee the students' action log by being granted the privilege to access the admin panel which is used to effectively monitor and control all the activities of the students on the platform. On the other hand, these monitoring features enable the public to judge the system's transparency, it also allows them to determine the efficiency of the system as it resolves any rental issues.

1.6 Late Fee Handling:
On occurs of the fine if they return more time than the pre-booked time to the owner, the app is programmed a fine fee which will be forwarded to the owner. Through having this option, we will be able to resolve the arrears and the reclaims in a smooth manner.

2. PROBLEM IDENTIFICATION AND OBJECTIVES

This section identifies the challenges faced by GITAM University students in the current bike rental system and sets specific objectives for the project. Objectives may include creating a user-friendly interface for bike listing and rental,

implementing secure key collection and handover processes, integrating payment mechanisms, and developing an admin panel for monitoring and managing rental activities.

2.1 Problem Identification:

2.1.1 Inefficient Rental Process: The current bike rental system at GITAM University lacks efficiency, leading to long waiting times and inconvenience for students. Users often face challenges in finding available bikes, completing rental transactions, and returning bikes on time.

2.1.2 Lack of Accountability: The absence of a structured system for key collection and handover results in accountability issues. Students may forget to return keys, leading to bike misplacement or unauthorized use.

2.1.3 Limited Visibility: There is a lack of real-time visibility in bike availability, maintenance status, and rental history. Students struggle to make informed decisions about bike rentals without up-to-date information.

2.1.4 Security Concerns: Security risks, such as theft or damage to bikes, are a concern due to the absence of secure key collection and monitoring mechanisms. Ensuring bike security and user safety is paramount.

2.1.5 Administrative Challenges: The administration faces challenges in managing rental activities, tracking overdue bikes, and resolving disputes between users. A centralized system for monitoring and reporting rental transactions is essential.

2.2 Objectives:

2.2.1 Enhance User Experience: Improve the overall user experience by providing a user-friendly interface, intuitive navigation, and real-time bike availability update. Streamline the rental process to reduce waiting times and enhance convenience for students.

2.2.2 Implement Secure Key Collection: Develop a secure key collection and handover system at designated parking areas. Ensure accountability by tracking key usage and implementing authentication protocols.

2.2.3 Ensure Security: Implement security measures such as Campus Exclusivity and user authentication to prevent theft or unauthorized use. Enhance bike security and user safety throughout the rental process.

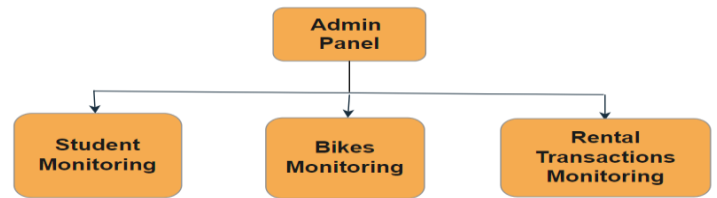**2.2.4 Facilitate Administrative Management:** Develop an admin panel with features for monitoring rental activities,

managing bike inventory, tracking overdue rentals, and resolving user disputes.

3. SYSTEM METHODOLOGY

3.1 Working Methodology:
3.1.1. Admin Panel:
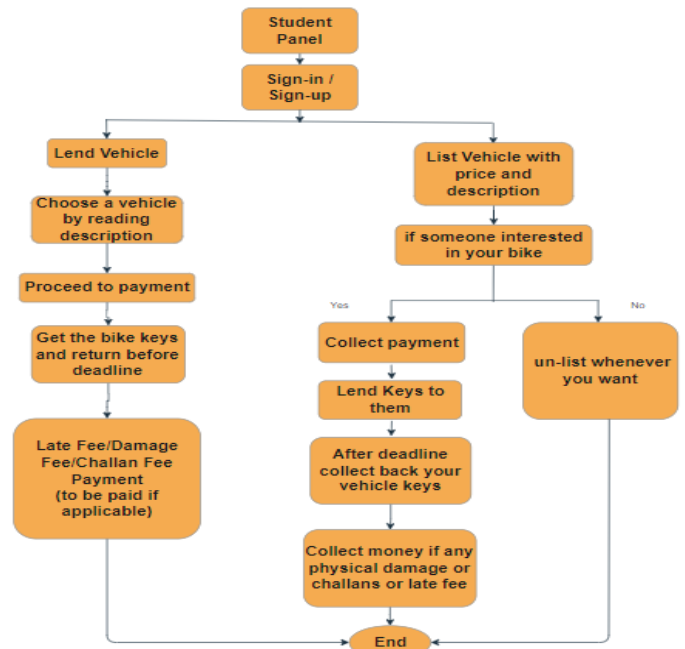   1. Student Monitoring
    2. Bike Monitoring
    3. Rental Transactions monitoring.

Fig 3.1.1: Admin panel monitoring actions

3.1.2. Student Panel:
    1. Listing of bikes (Students can give their bike for rent to other fellow students).
    2. Lending of bikes (Students can also lend bikes from other students who listed their bikes).

Fig3.1.2: Detailed flow of student actions

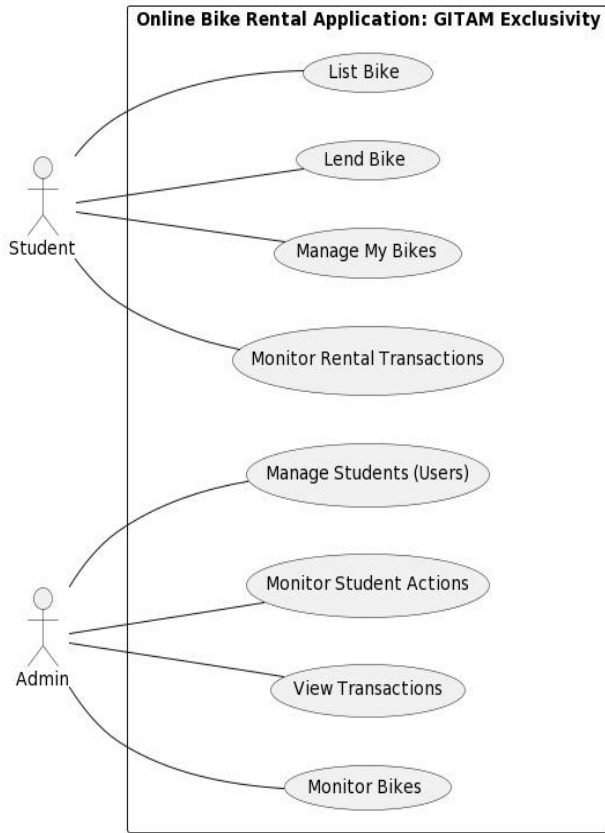## 3.2 UML Diagrams:

3.2.1 Use Case Diagram:

Fig 3.2.1: Use case diagram.

Actors:

1. Student
2. System Admin

Actions:

1. Student:
   - List Bikes
   - Lend Bike
   - Manage Rentals
2. System Admin:
   - Monitor Rentals
   - Manage Students
   - Monitor Actions
   - View Transactions
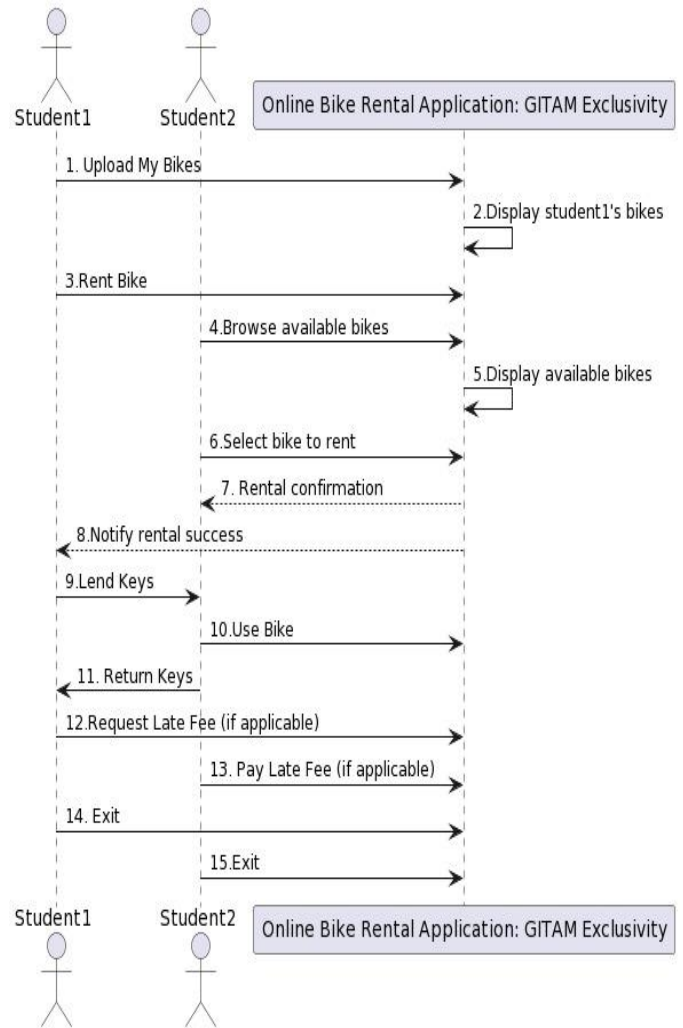   - Monitor Bikes

3.2.2 Sequence Diagram:

Fig 3.2.2: Sequence diagram.

Description:

Actions performed by the students (both student1 and student2) with the Bike Rental Application starting from bike upload till the logout action.

4. RESULTS AND DISCUSSIONS

4.1 AUTHENTICATION PANEL:

4.1.1 index.php:

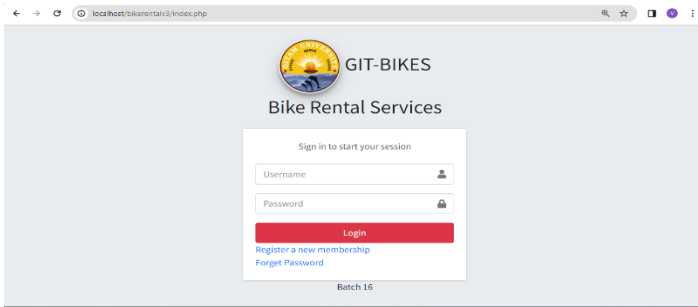User sign in page (Sign in must only be done using GITAM registration number).

Fig 4.1.1: login page

4.1.2 registrationform.php:
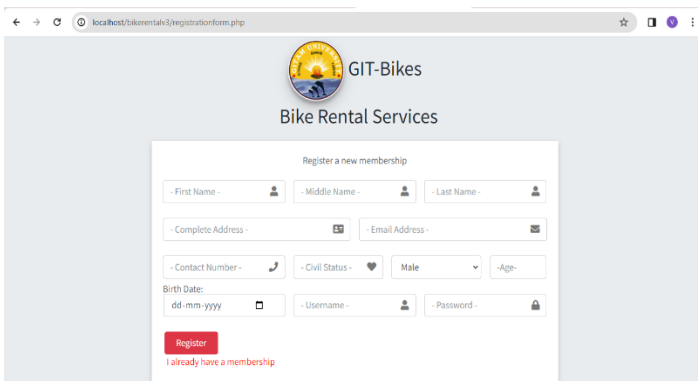New user registration page.

Fig 4.1.2: Sign-up page

4.2 STUDENT PANEL:
4.2.1 memberdashboard.php:
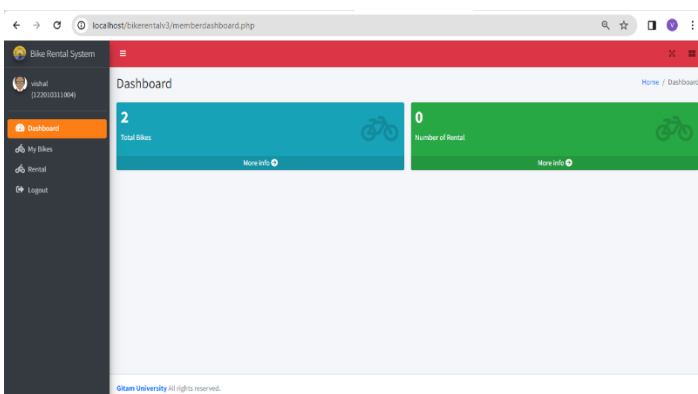If login is done by the user, then they gets redirected to this page.

Fig 4.2.1: Student dashboard

4.2.2 bikeshow.php:
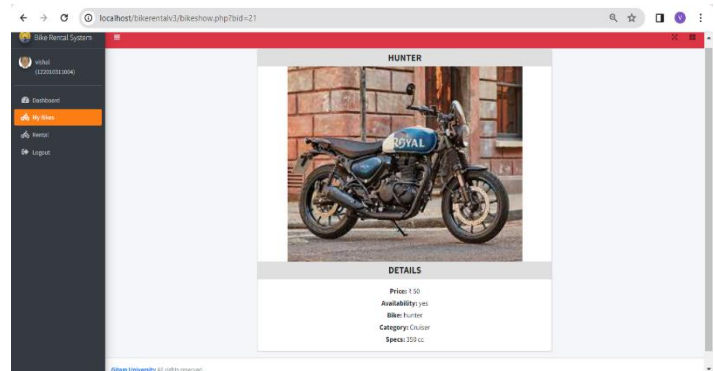Detailed description of user's bike.

Fig 4.2.2: My Bikes

4.2.3 bikeshowr.php:
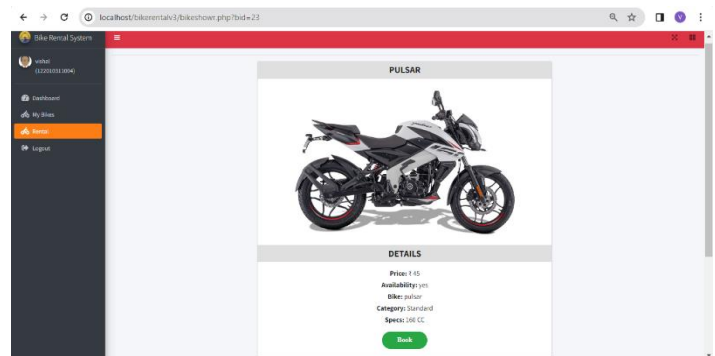This is the page where user can see the details of the bikes (price, availability, specs, description).

Fig 4.2.3: Available Bike Details

4.3 ADMIN PANEL:
4.3.1 dashboard.php:
If login is done by the admin, then they gets redirected to this page.
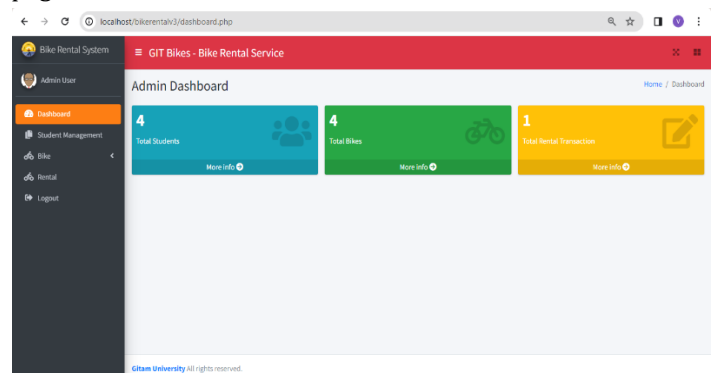

Fig 4.3.1: Admin Dashboard

4.3.2 clientmanagement.php:
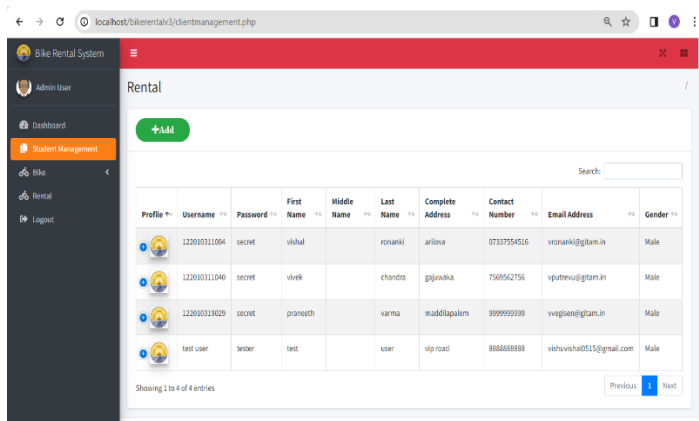
Students (Users) management page for admin.

Fig 4.3.2: User Management Window

4.3.3 bikeinformation.php:
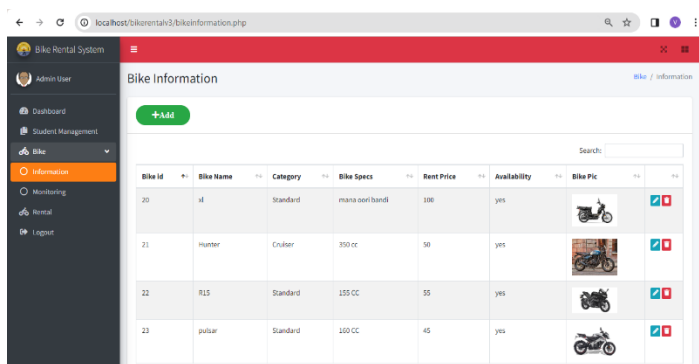
Bike monitoring and management page for admin.

Fig 4.3.3: Bikes Management Window

4.3.4 rental.php:
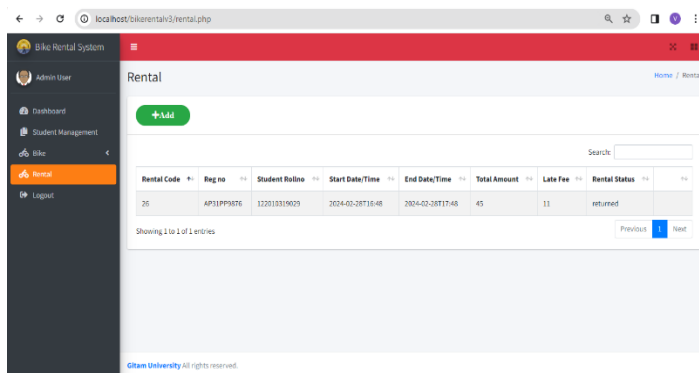
Rental transactions monitoring page.

Fig 4.3.4: Rental Transactions Monitoring.

5. CONCLUSION AND FUTURE SCOPE

5.1 Conclusion:

The creation of the Bike Rental Application, which is specifically developed for GITAM University Students, represents a big step forward in transportation solutions. By addressing students' concerns about bike rentals, accountability, security, and administrative administration, this initiative has created the groundwork for a more efficient, secure, and user-centric system.

The application's exclusive emphasis on GITAM students promotes a sense of community and security while also encouraging a sharing economy on campus. The program improves the entire user experience and promotes convenience for both bike owners and renters by providing features such as customizable listing and rental options, efficient key collection and handover processes, user-friendly interfaces, and extensive monitoring capabilities.

5.2 Future Scope:

There are various areas for future expansion and refinement when developing mobility solutions within the university:

5.2.1 Service Expansion:

Think about expanding the application's services beyond bike rentals to include additional forms of transportation, such as electric scooters or carpooling, to provide students with more options for their commuting.

5.2.2 Integration of new Technologies:

To further streamline the rental process and increase user happiness, use new technologies like GPS tracking, predictive maintenance, and automated payment methods.

5.2.3 Continuous Feedback and Improvement:

Establish procedures for gathering user feedback to identify areas for improvement and prioritize future development efforts accordingly. Regular updates and upgrades to the application will guarantee that it remains relevant and successful in fulfilling the increasing demands of the GITAM University community.

The Bike Rental Application: GITAM Exclusivity has the potential to become a cornerstone of the university's transportation infrastructure, offering convenient, affordable, and sustainable mobility solutions for years to come.

6. REFERENCES

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ABOUT THE AUTHORS

First Author – Ronanki Vishal, B. Tech. CSE, GITAM(Deemed to be University), Visakhapatnam, Andhra Pradesh, India.

Second Author – Madugula Padmaja ,Assistant Professor, GITAM(Deemed to be University), Visakhapatnam, Andhra Pradesh, India.

Third Author – Pokuri Hari Siva Prasad, B. Tech. CSE, GITAM(Deemed to be University), Visakhapatnam, Andhra Pradesh, India.

Fourth Author – Marni Alekhya, B. Tech. CSE, GITAM(Deemed to be University), Visakhapatnam, Andhra Pradesh, India.