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PEDAL PALS-CYCLE RENTING ANDRIOD APP

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Abstract - This project is designed so as to be used by Cycle Rental Company specializing in renting cycles to customers. It is an online system through which customers can view available cycles, register, view profile and book cycle. The advancement in Information Technology and internet penetration has greatly enhanced various business processes and communication between companies (services provider) and their customers of which car rental industry is not left out. The main objective of the PEDAL-PALS is to manage the details of cycle, payment, booking,and customer. The project is totally built at administrative end and thus only the administrative is guaranteed the access. The purpose of the project is to build an application program to reduce the manual work for managing the cycle, payment, booking, and customer.It tracks all the details of the booking. This system helps you to keep the information of customer online. You can check your customer information any time by using this system. PEDAL PALS is a unique and innovative product. The user shall login to the system and check for availability of cycles. The System shall check for the availability of the cycle and rent the cycle to the customer. PEDAL PALS can lead to error free, secure, reliable and fast management system. No formal knowledge is needed for the user to use this system. Thus, by this all it proves it is user-friendly. PEDAL PALS reduces the error while entering the data. It helps the organization in better utilization of resources.

Key Words: Bicycle Renting Service; Environmentally Friendly; Android Application.

1.INTRODUCTION

Cycle sharing system or Cycle renting system programs seems to be a very great initiative and these programs came into considerations in current years. People are encouraging this concept more and taking initiative to bring back the cycle culture again because modern transport is a very big achievement but they have ruined the atmosphere and environment, health issues are increasing day by day and this modernization is also a factor of these issues. This concept of bike sharing is of very old form early 1960's but the growth of these programs had been slow because there were no innovations in the idea and problem solution, but now people came up with improved technology like tracking of cycle, automatic lock, access through phones and many newer and improved features. This development in technology helps bike sharing system to rapid increase of these programs throughout Europe and now mostly other continents during this development era. Bike sharing or renting programs have constantly progressed over numerous peers, becoming more evolved and refined. Previous generations in which first and second generation includes, faced problems with destructions or damages of cycle, theft which leads to the third generation where innovation is improved to solve these issues and also improved payment methods, cycle distribution all over the city and user data. In fourth generation of Cycle sharing service it leads to the electric bike with dock less feature, because parking of cycle was also a problem in public space but dock less offers more flexible solutions in usage of parking and cycle distribution issues. As day by day improvements and variations are increasing in Cycle sharing services so cities will also be able to implement or adopt and control this system in its local environment. The diversity of alternatives now days involves more detailed analysis or exploration, stead-fast development and principles for new generation rather than previous generations, specifically if someone is looking for new business models within the private zone. Cycle sharing services are beneficial in many ways than using other transportation modes like buses etc. This Cycle-sharing or renting programs has facilitated to reduce the hurdles to use the cycle as a genre of transport, as well as security and safety parameters, parking space, travel configuration, weather and environment, general fees and maintenance. Companies have tried to reduce the barriers and challenges so more people will likely to use the service because everyone needs easy access and

comfort, thus automatically it will contribute in effort to upsurge the transport approachability. This BSS service helps to improve atmosphere of the environment by:

- Reducing the air pollution,
- No high greenhouse gas emission,
- Health of people, • Improved quality of life,
- No carbon gas emission.

Sustainable improvement is a very important and crucial concept, nowadays in all areas of communities. In this modern era, individuals are using more size of the earth to offer the assets that the humans need to endure. Due to the massive consumption of energy, resources and capacity of earth this era is not sustainable. Cycles are good substitute to cars because it is:

- Eco-friendly,
- Energy effective,
- Reducing traffic,
- Cheap and effective rides,
- Certainly maintained,
- An egalitarian vehicle.

The background of cycle-sharing system is discussed in this section. The advancement and progress of Bike-sharing programs have four generations up till now.

- First generation,
- Second generation,
- Third generation,
- Fourth generation.

Each generation is different from each other in aspects of technology. Now this generation is about smart cycle renting services. All four generations have different way of payment method and tracking way of cycle. This Cycle sharing service was first introduced in early 1960's, formal bike sharing but at that time this concept didn't expand rapidly until modern years.

First Generation

First generation of Cycle-Sharing service first started in Amsterdam in 1965 in which they started a scheme of unlocked and free use of cycles in many open and free areas of the city.

Second Generation

Second generation of cycle-sharing service launched in Denmark in 1995, the scheme that they launched was that use of cycles were continue to be free, while the individuals who use the cycles or riders required to insert a coin to unlock the cycle. They just have to put a coin to use cycle freely in the city.

Third Generation

Third generation of Cycle-sharing service was launched in 1998 in France. In this generation technology was improves and advanced and contains automated options for example:

- Credit card,
- Smart card.

These were the payment methods that were implemented to deduct the cost of ride. And to track the cycle they plant embedded GPS systems to track cycle data.

Fourth Generation

In fourth generation of Cycle-sharing service have been changed and improved in such a way that cycle is now:

- Have automated locking system,
- No need of a dock,
- Electric bike,
- Solar panels used for bike powers.

2. LITERATURE SURVEY

In last decade, different kind of system has been proposed by different countries. Some of the systems are reviewed below. A smartphone based system called "Green Bicycling" has been developed for public bicycle sharing system using IoT. The aim of this system is to improve the experience of the cyclist and to use it for daily purpose. In this system, it allows the cyclist to get information about bicycle station spots along with number of cycles available. The network prediction model is used to find the location of the cycle. Along with these, in this system, there is provision for the system to measure how much

calories burnt during the trip. The system application is developed in the Windows OS based Phone. Bicycle Sharing system Analysis and Trip Prediction is the model proposed by United states of America in which people can get and give back bikes at any station very easily. The main purpose of Bicycle sharing system module is green and low carbon efficient system development. An IOT based Solution for public bicycle-sharing system was proposed by Kai-Way Chun, Chi-chia sun. The aim is to effectively reduced bicycle theft rate through localization method. The main proposed IOT introduce lithium battery charger to collect energy from the bicycle. It is working based on the remote operator to relocate spare's bike to reduce bicycle station congestion status. This is the Theft control mechanism. Ying Zhangl, Zhengdong Huang is proposing the "Performance Evaluation of Bike Sharing System".IITC faculty, University of Twente, Enscheda, Netherlands, School of Urban Design, Wuhan University, Wuhan, China and give to name "Intelligent Transportation Systems."The advantage of this system is self service and manual. A public rent card is used to rent the bike and this card can be bought using any valid documents. The main disadvantage of this system is that the cost is not accurate. Some of the mobile applications that we referred are: Obike Stationless Bike, Our Bike, Metro Bike Share, City bike Liverpool, NYC Bike Map Offline, Café Bike, Rovereto Bike sharing. The disadvantages in these applications are tried to rectified in our application. Some of the application require facebook account for login and other does not have GPS facility. Updation of the application is not proper. Some application requires lots of memory space and in some application there occurs a problem in login during insufficient charge in your phone. For this we planned to use lithium battery for emergency purpose.

3. PROPOSED SYSTEM

The manual system of is to be computerized in order to overcome the problems, which affect the existing manual system. Computerizing the existing system with the help of some programming language database package ease the work of the system up to a great extent. This Cycle Rental System project will enable the user to rent a cycle. The user shall login to the system and check for availability of cycles. The Cycle Rental System shall check for the availability of the car and rent the cycle to the customer. The tool is designed using Android Studio. All the data regarding the rental cycles are stored in MySQL database. The user has to enter his name, address, phone details and check for the cycles available for rent. The main advantage is that the user shall be able to choose a cycle depending on his budget.

4.SYSTEM ARCHITECTURE

In order to ensure a high availability and increased perfor mance, the backbone of the application is composed of a clusterof Loop Back servers. HA proxy has the responsibility of dis- tributing the work load over the Loop Back servers' cluster. The cluster also facilitates scalability as we can add as many servers (scaling out) as we want if we have an increase of user. Actually, a second load balancer is available in case one of them encoun- ters a failure. At the level of the Enterprise Information System tier, a primary database receive the different queries for data persistence and access. It also replicates all the data on a sec- ondary back-up database. Both databases exchange heartbeats in order for each one to know if the other is up and working. The second database will take over the operations, in case the primary one fails. In this way we are sure that data is redundant to avoid data loss and that a database is always available and working.

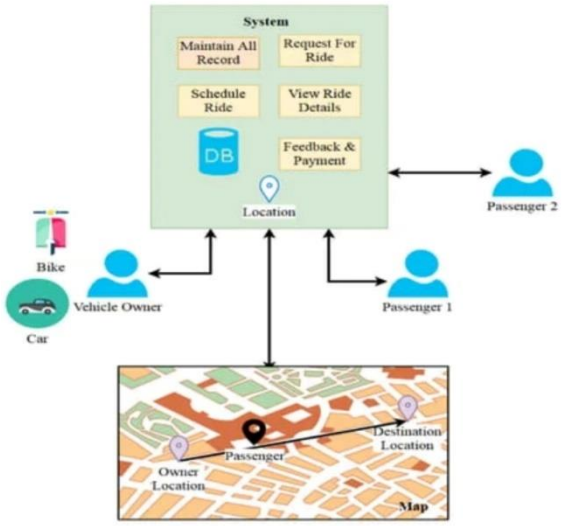

Figure 3.1: Architecture of the Model

5.MODULES

The most creative and challenging phase of the system development is system design. It provides the understanding and procedural details necessary for implementing the system recommended in the feasibility study. Design goes through the logical and physical stages of development. The System have 2 modules.

• Administration
• User Management

1.Administration Admin is basically super user. Admin can add a cycle, manage booking cycle, and rent and view feedback and enquiry. Admin will keep track of each booking. Manage organization representatives. Modules are

Add Cycle: The Admin can add the car so that the user can see the available cars and book the cycle. Manage Rent: The Admin can manage the rent so that the user can see the rent and book the cycle. View Feedback: The admin easily views the feedbacks and solve the query.

Approve Request: The admin can approve the rent request from the customer. View Enquiry: The admin can easily view the enquiry and can solve.

Return: The admin can confirm the return of rented cycles.

Issue: The admin can confirm the issues details of cycles.

Billing: The admin can manage the sales bill and payment.

View customer: The admin can view the customer information.

2.User Management The user is end user of our service. User can view information of available car, booking a car, easily get the car on rent, and also give feedback and can enquiry. User also views the discount and other information to get best deals.
Modules are User Registration: The user can register and login.
Booking Cycle: The user can view Available cycles and user can book for that cycle.
Edit Profile: The user can edit there Personal Information.
My Booking: The user can view the Booking status.
Give Feedback: The customer will give the feedback to the admin.

6.CONCLUSION

Cycle rental business has emerged with a new goody compared to the past experience where every activity concerning cycle rental business is limited to a physical location only. Even though the physical location has not been totally eradicated; the nature of functions and how these functions are achieved has been reshaped by the power of internet. Nowadays, customers can reserve cycles online, rent cycle online, and have the cycle brought to their door step once the customer is a registered member or go to the office to pick the car.
The app-based cycle rental system has offered an advantage to both customers as well as Cycle Rental Company to efficiently and effectively manage the business and satisfies customers' need at the click of a button.

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