

A SUGGESTIVE IMPLEMENTATION ON STUDY OF AN IOT-BASED DOCK-LESS BICYCLE SHARING VENTURE

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Abstract: Over the last three years, the dock less bike sharing scheme has become prevalent in the context of the boom in the sharing economy, the wide use of mobile online payment, the increasing environmental awareness and the inherent market demand. This new kind of dock less shared bikes, with great advantages of accessibility, flexibility, efficiency and affordability, helps to solve the 'last mile' problem, reduce the travel time, and seems to be very environmentally-friendly and sustainable. It is important to emphasize that governments, enterprises, and the public participate in multi-party cooperation and build synergic governance networks to carry forward the advantages and avoid the negative effects of the new bike sharing system.

Keywords: bike sharing; sustainable mobility; sharing economic; urban studies

I. Introduction

In recent years, growing concerns over climate change, deteriorating urban environment and unhealthy lifestyles have placed more attention on sustainable transportation alternatives such as bicycles. The bicycle, compared to other kinds of vehicles, has many advantages for both cyclists and society: it is a low-cost, low-polluting, health-improving way to travel.

What is dock less bike sharing? As the name suggests, dock less bike share does not require a docking station — an expense that could sometimes limit the number of bikes a city could afford. With dock less systems, bicycles can be parked within a defined district at a bike rack or along the sidewalk. Dock less bikes can be located and unlocked using a smartphone app.

Bike sharing system:

A bicycle-sharing system, public bicycle system, or bike-share scheme, is a service in which bicycles are made available for shared use to individuals on a short term basis for a price or free. Many bike share systems allow people to borrow a bike from a "dock" and return it at another dock belonging to the same system. Docks are special bike racks that lock the bike, and only release it by computer control. The user enters payment information, and the computer unlocks a bike. The user returns the bike by placing it in the dock, which locks it in place. Other systems are dock less. For many systems, smartphone mapping apps show nearby available bikes and open docks.

Goals of bike sharing:

The reasons and goals of Bike-sharing vary but can be grouped into the following Most large-scale urban bike sharing programmes utilise numerous bike check-out stations, and operate much like public transit systems, catering to tourists and visitors as well as local residents. Their central concept is to provide free or affordable access to bicycles for short-distance trips in an urban area as an alternative to motorised public transport or private vehicles, thereby reducing congestion, noise, and air pollution. Bicycle-sharing systems have also been cited as a way to solve the "last mile" problem and connect users to public transit networks.

Bike Sharing Market in India:

The bicycle market in India is worth \$1.2 billion, and production currently stands at 15 million units. To date, bicycles remain the most important mode of transport in rural India. However, there were not many public bike sharing programs in India, owing to higher capital cost required to setup stations and lower return on investment. Bike-sharing seems to be the new 'in' thing in India as dock less bikes, smart bikes, and bike sharing has started seeing traction. A 'Dock less' commute refers to providing transportation from Point A to Point B without human intervention. It gives people the option of picking up a vehicle within 100 metres of a bus, metro, or train station, or at a given location.

There is a similar application named 'ola pedal' which says, "Made in India, these are App based Smart Cycles with GPS enabled locks, making them safe and secure once you are done riding," says the company's official blog. "Which means you can reserve the nearest cycle through the app, ride to your nearby destination and drop it off where you want."



Fig 1.0 Working of Easy Bike [Source: <http://www.trbimg.com/img-5aac3725/turbine/sd-1521235745-0ktm172n2x-snap-image>]

How it works?

Find a bicycle from a nearby bicycle station, that is, spot a cycle at a nearby station.

Link your Paytm wallet- it uses paytm for easy a secure payments.

Scan the QR code to unlock the cycle-scan the QR code which is placed at the rear mud guard of the cycle to unlock the cycle. Incase if the QR code doesn't get scanned then entre the number given below the QR code.

Lock and end trip-lock the bicycle to a specific allocated station to end the trip.

Literature review

Over the last three years, the dock less bike sharing scheme has become prevalent in the context of the boom in the sharing economy, the wide use of mobile online payment, the increasing environmental awareness and the inherent market demand [1]. It is important to put forward effective regulations since bike-sharing has both positive and negative impacts on sustainable development [2]. A new generation of bike-sharing services without docking stations is currently revolutionizing the traditional bike-sharing market as it dramatically expands around the world [3]. In China, dock less bike-sharing programs (DBSPs) play a significant role in promoting the goals of sustainable urban travel and carbon emissions reduction [4].

Design

User interface diagram:



Fig 2.0 User interface of Easy Bike

Flow chart:

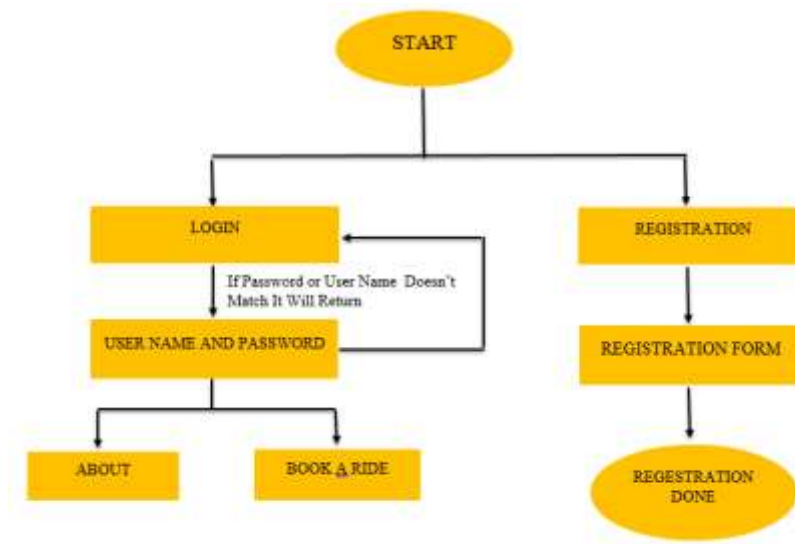


Fig 3.0 Flow chart of Easy Bike

DFD (Data Flow Diagram):

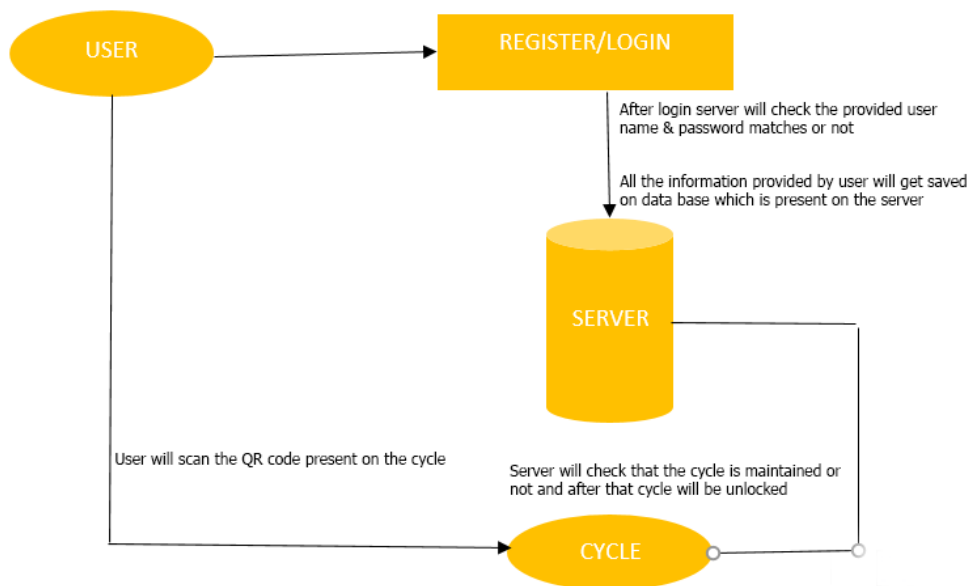


Fig 4.0 Data flow diagram of Easy Bike

Advantages:-

1. The benefits of dock less bicycle sharing scheme include transport flexibility, health benefits, reduction of vehicle emission, and reduced congestion on road and reduce fuel consumption, and financially savings for a specific individual.
2. But the most important specific quality of this bicycle is the idea of sharing.
3. Dock less system require less hardware for securing and managing inventory, translating into lower capital costs, expanded geographical reach, and lower costs for consumers.
4. Its user benefits from sheer flexibility of picking up and dropping off bikes freely.
5. Mobile payments allows users to access and pay for bike with a greater ease.

Conclusion

The Future Scope & Need for Support by the Government Dock less bicycle sharing promises to bring radical changes in the way we Indians have grown accustomed to commuting. However, these set of radical changes cannot be implemented overnight. In

order to bring dock less bicycle sharing to mainstream prominence and acceptance, we would need to resolve a set of following factors:

1. Making bikes available
2. Usability

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