A Report on

CRMS (Cycle Rental Management System)

by

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For the partial fulfilment of the course on

Object Oriented Analysis & Design

Submitted to

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1. INTRODUCTION

BITS Pilani Campus is vast in area, and students are not allowed to use motor vehicles, so several students face the problem of roaming around the campus like going to the library, classes, Connaught,etc. But many people don’t prefer purchasing and maintaining a cycle. So the problem that we wish to handle is developing an application where students can rent cycles with minimal cost and without any hassle.

In our application, we will be designing modules such as booking, management, tracking cycles, queries etc. using the concepts of Object Oriented Design. We’ll maintain pickup and drop points at all the prominent places on campus including all the bhawans,food junctions,NAB,Library,etc. Booking will be done online. Students can see the available cycles and depending on that they can book the cycles by filling the details of location from which they want to start their ride. If anyone wants to use the service he/she can pick up cycle from any pick up/drop point and later can drop at any of the points.

The money will be deducted directly from individuals BITS account depending on the time and distance they have travelled. Once the booking is confirmed,the ID of the cycle to be accessed is shown and a random pin is generated to unlock that cycle.Once the trip ends, the fare will be generated, which will be deducted from his BITS user account. As an extension to this, once the trip ends, the user can report bugs, problems etc.

2. SOFTWARE SPECIFICATIONS:

- Client on Internet: Internet Browser (Any with support functionalities of JS)
- Databases: MySql
- Operating System: Any Operating System
- Scripting Language: JavaScript
- Tools: Spring Tool Suite - Spring Boot
- Programming Language: Java
- Web Server: Apache Tomcat 9.0
- Web Services: Restful

3. MAJOR FEATURES

Our website has two categories of users as follows:

- Admin
- Students

Based on the category of the user different functionalities are provided by our application. The functions admin user can have access to are as follows:

- Maintain cycles-Add/Remove/Update

  The admin user can add a new cycle filling in all the required parameters associated with it (cycle model, initial location etc). He can also remove non functional cycles or update details of any cycle in the database.

- Show Trips

  The admin can check the number of trips taken by different students and also each of these trip's details like trip duration,

bill amount, student name and id etc.

- Show complaints

  The admin can check the feedback provided by the students for each trip and take necessary actions on it.

The functions student user has access to are as follows:

- Registration

  The student needs to register in the system in order to book the cycles. While registering, the student needs to enter all the details such as name, mobile number, email-id etc.

- Login

  After registering, the student needs to login into the system using the userid and password he had entered while registering to use the functionalities of the system.

- Book Cycle

  The student can book a cycle by selecting the bhawan from the drop down menu from where he wants to start the ride. After which he can see all the available cycles from which he can select the cycle he wants by entering the OTP received in the next page.

- Start Ride

  The student can start the ride by entering the OTP and clicking on the Start Ride button which will start the timer to calculate the time of the entire journey.

- End Ride

The student after reaching his/her desired destination can just click the end ride button to end the trip and proceed for bill generation.

- Cancel Booking

  At any point while booking the cycle if the student realizes that he/she by mistakenly proceeded with wrong cycle selection and wants to cancel the booking then they are free to do so by clicking the cancel booking button. The application will take the user back to the home page.

- Generate fare

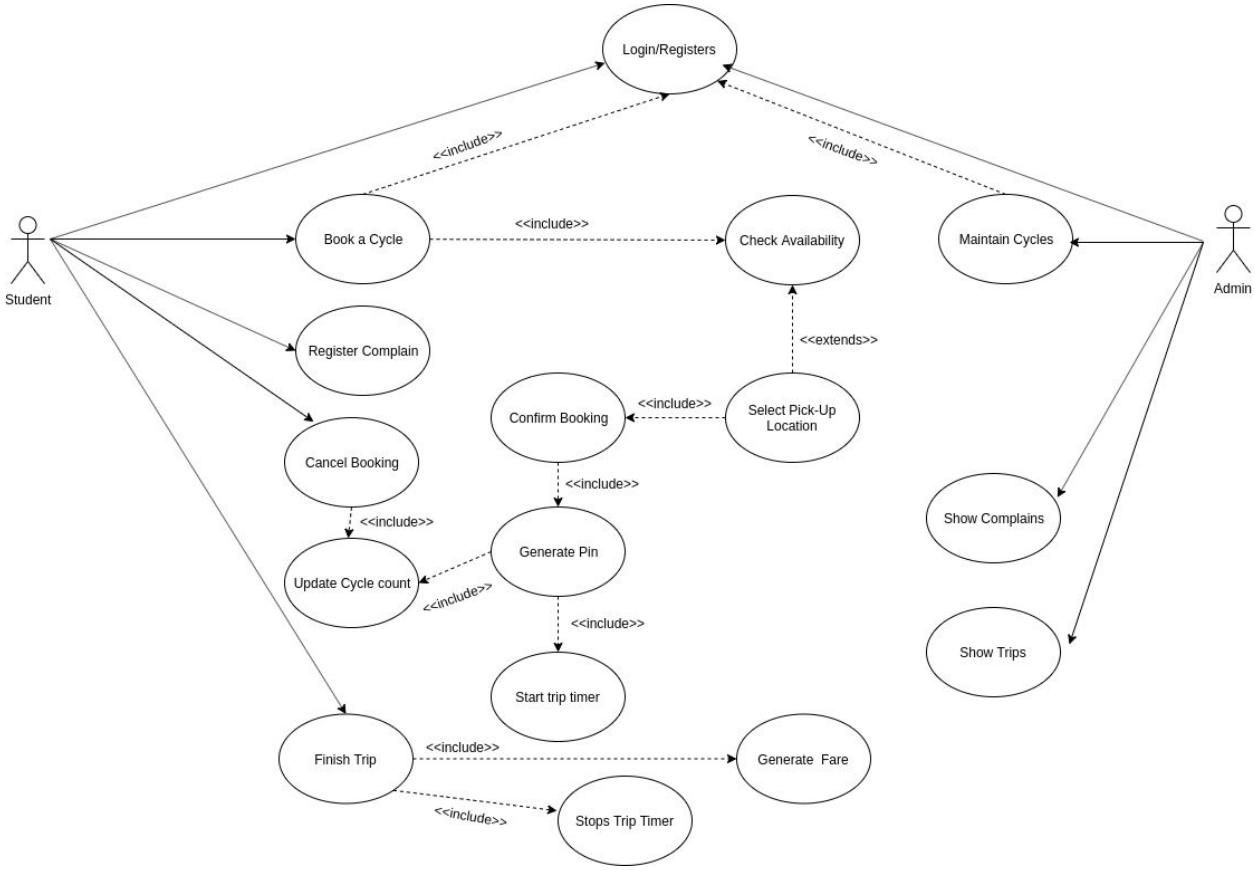
  Once the student clicks the end ride button our application automatically generates the bill for the trip based on the distance travelled and duration of the ride. The bill amount will then get deducted from his/her SWD account.

- Provide Feedback/Complaint

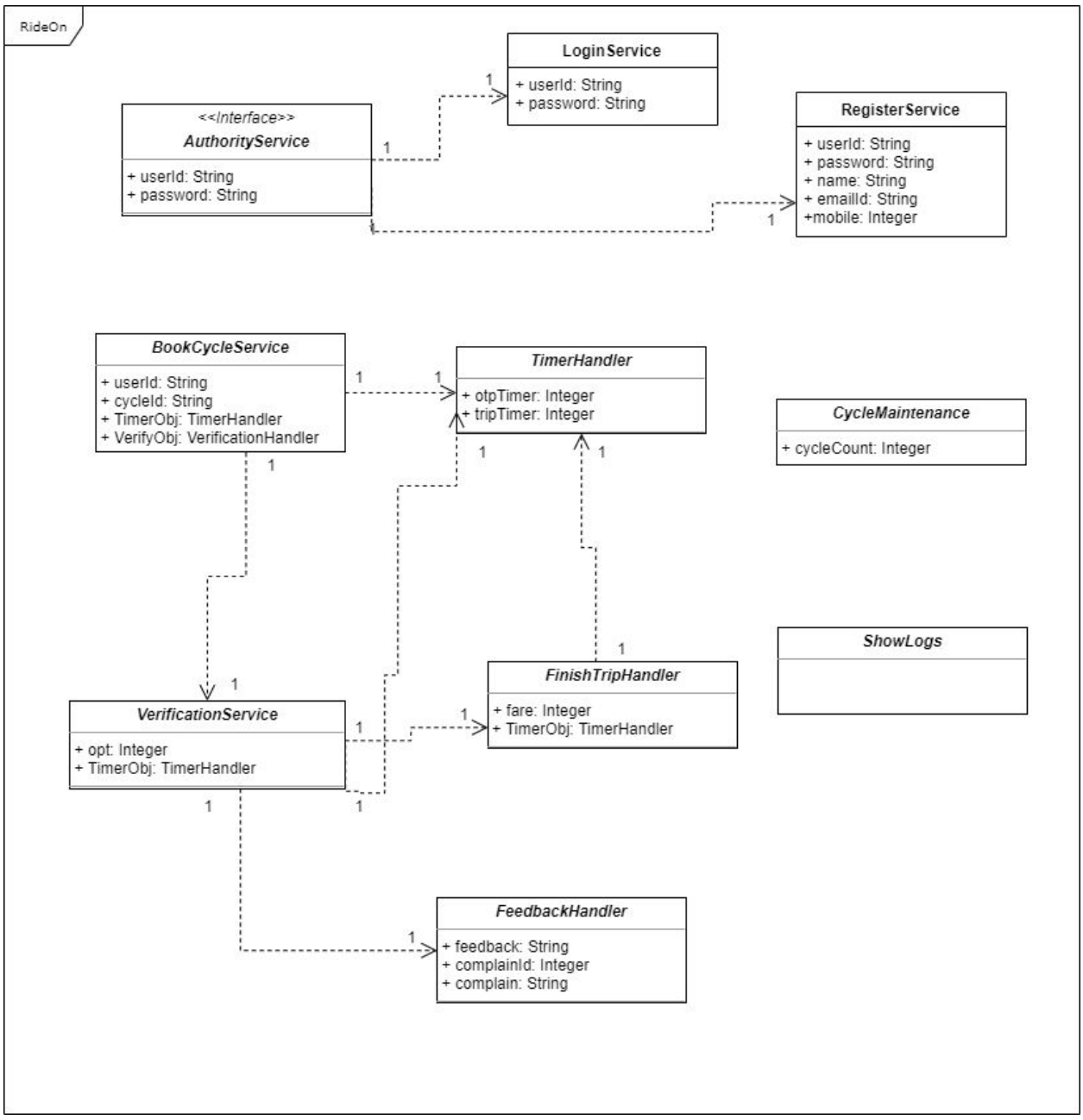
  At the end of each trip the student is asked to provide feedback about the trip. He/she can report problems in the cycle they just rode or inform any difficulties faced by them while using our application.

4. UML DIAGRAMS

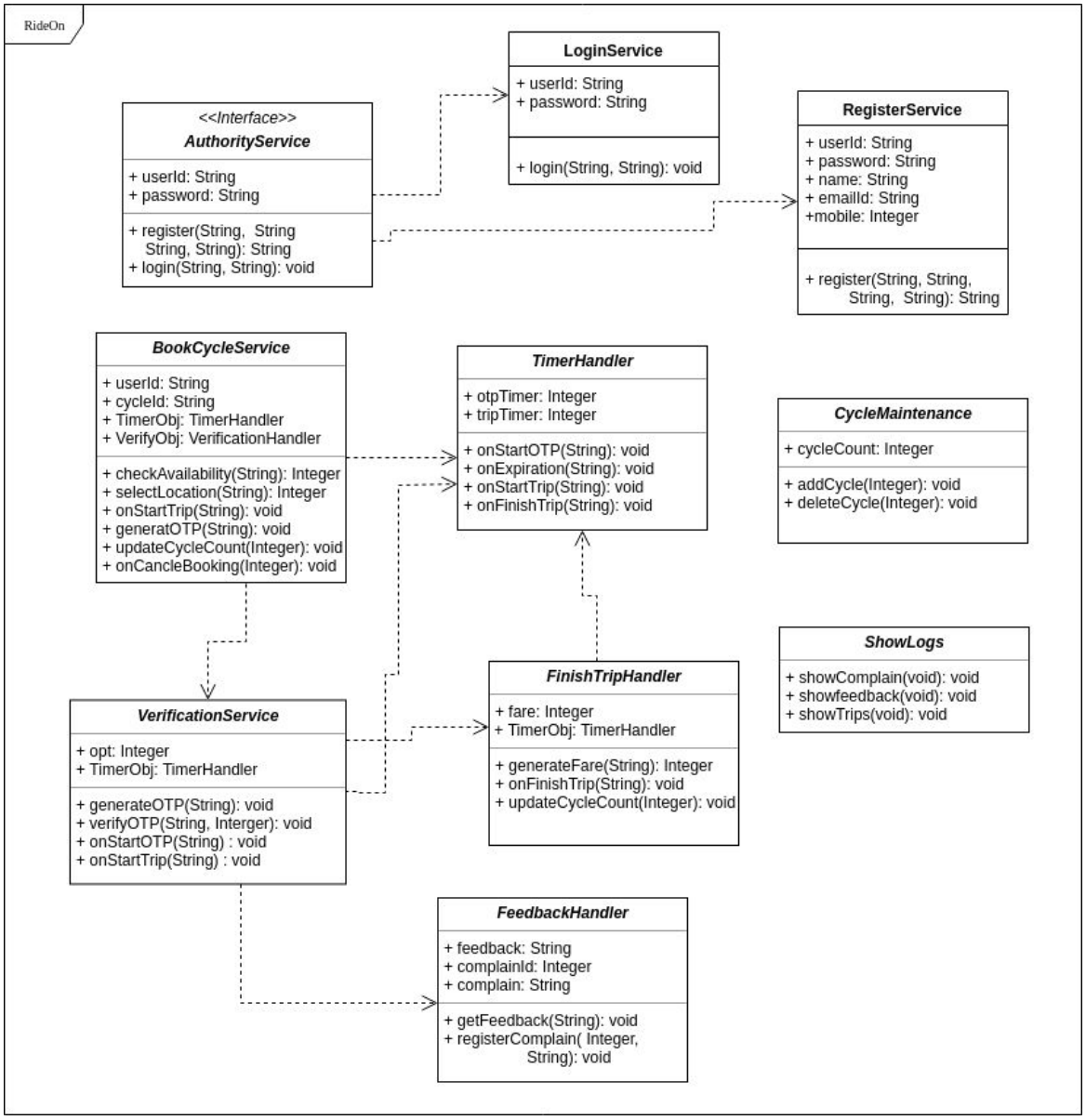
4.1 Use Case Diagram:



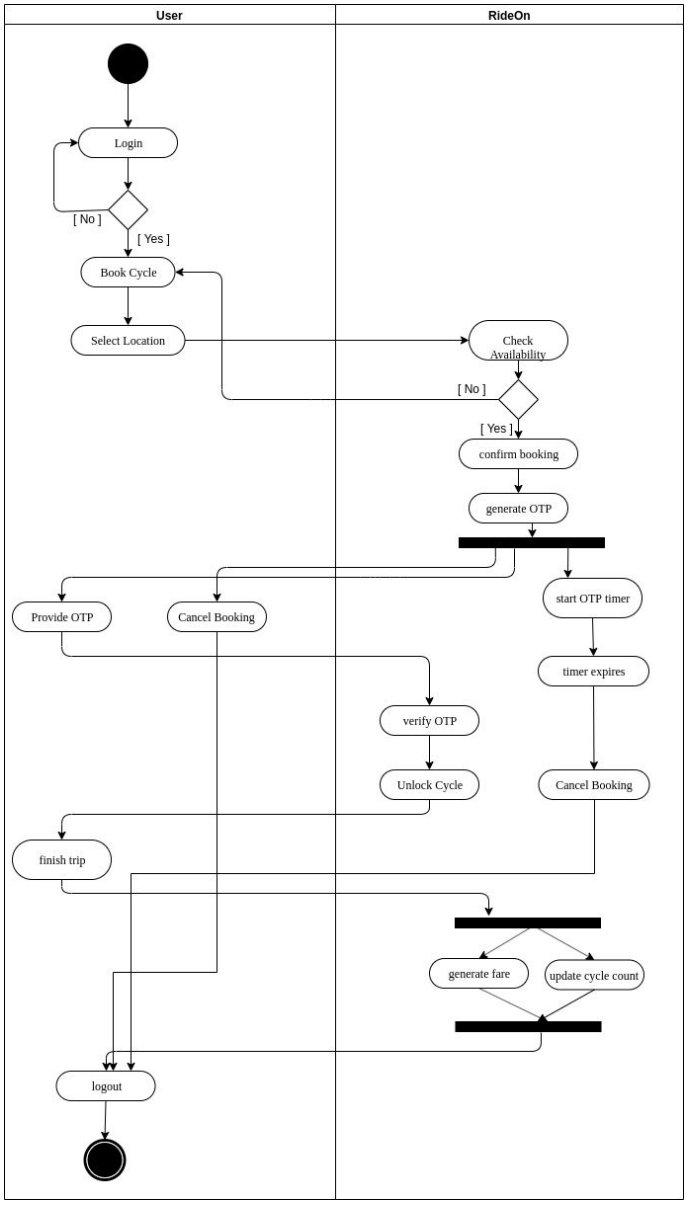
4.2 Domain Model:



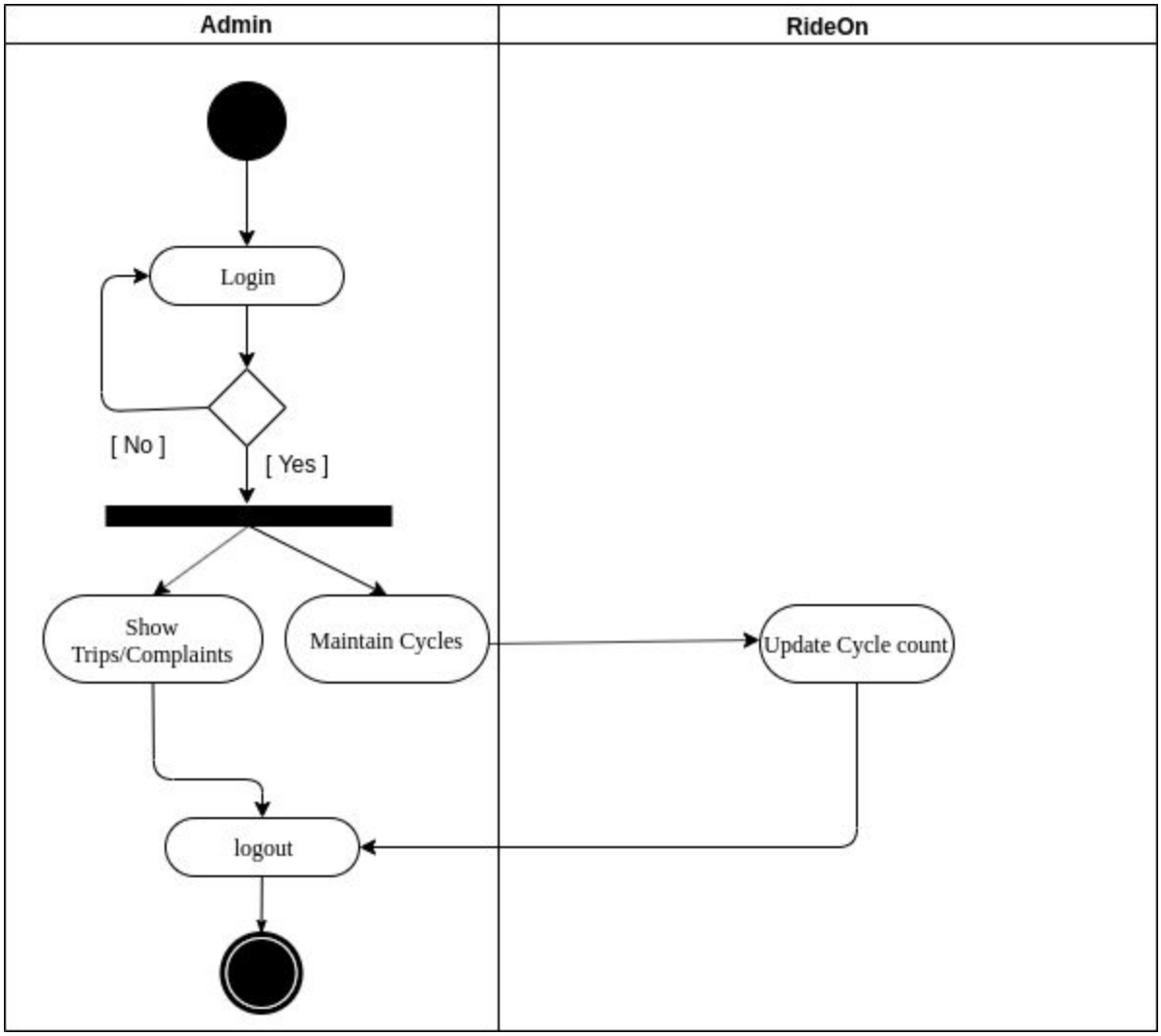
4.3 Class Diagram:



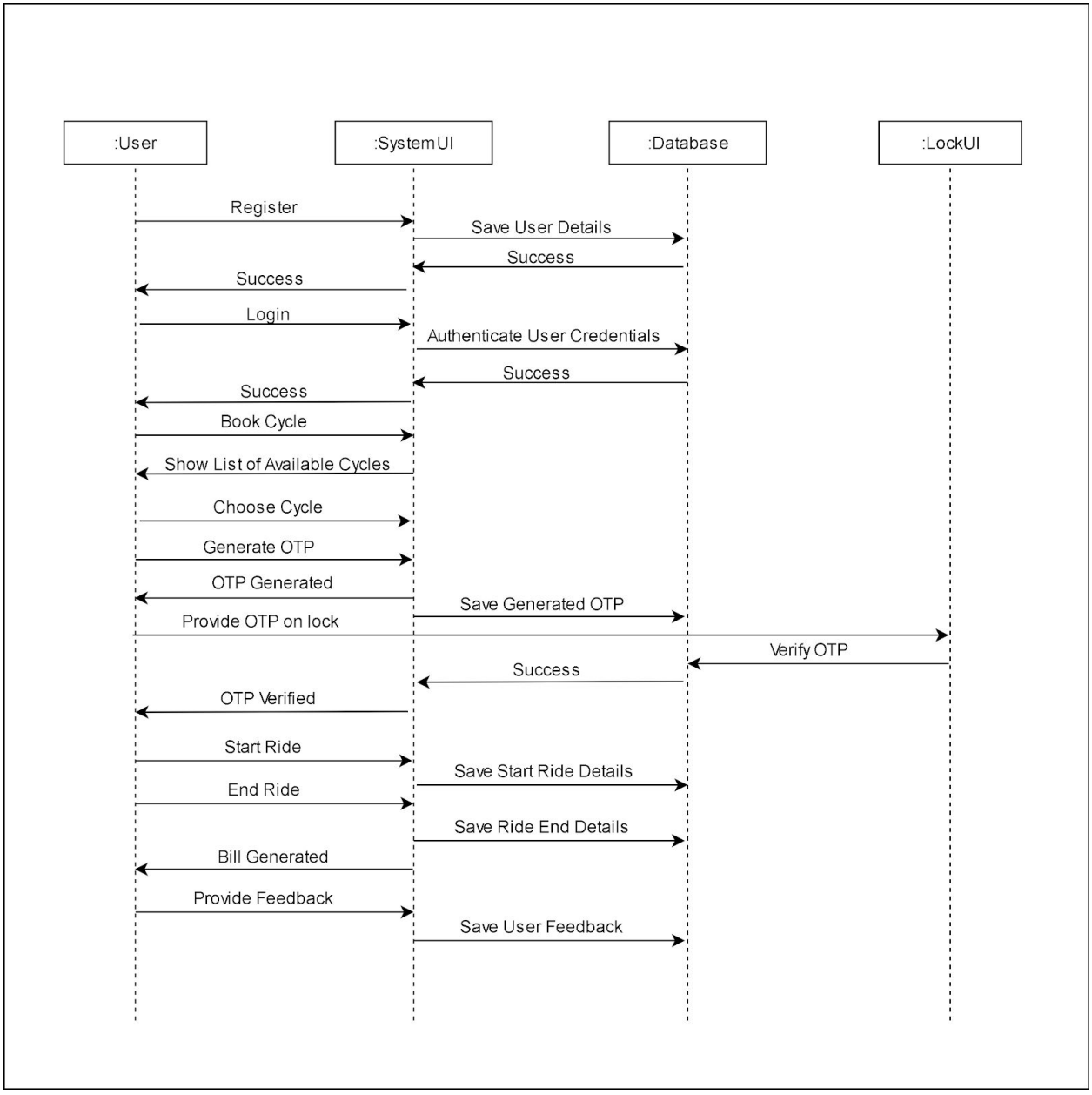
4.4 User Activity Diagram:



4.5 Admin Activity Diagram:

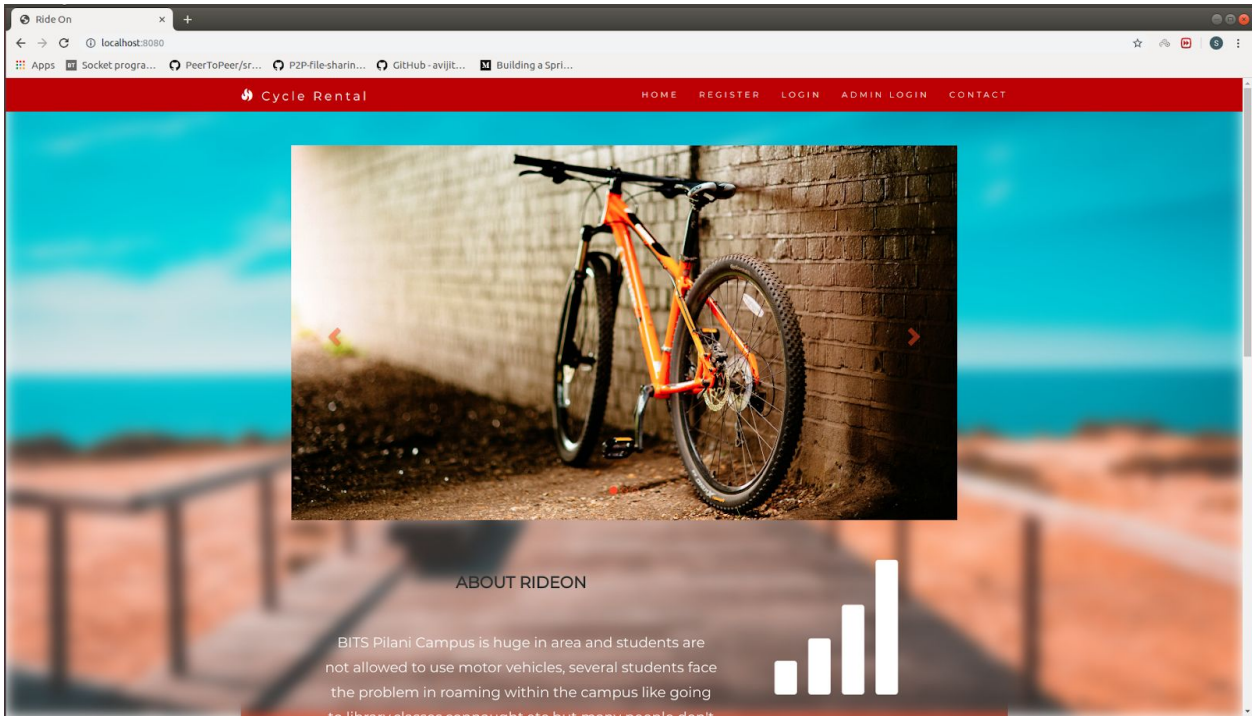


4.6 Sequence Diagram:

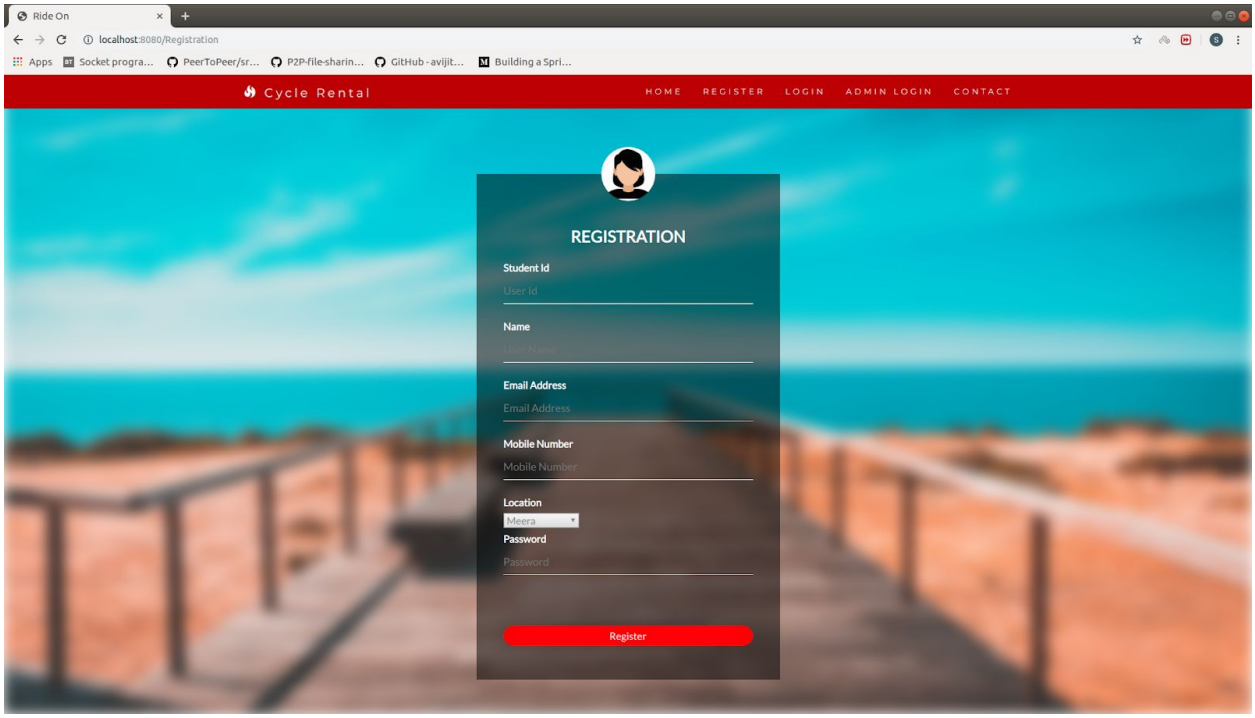


5. SCREEN SHOT

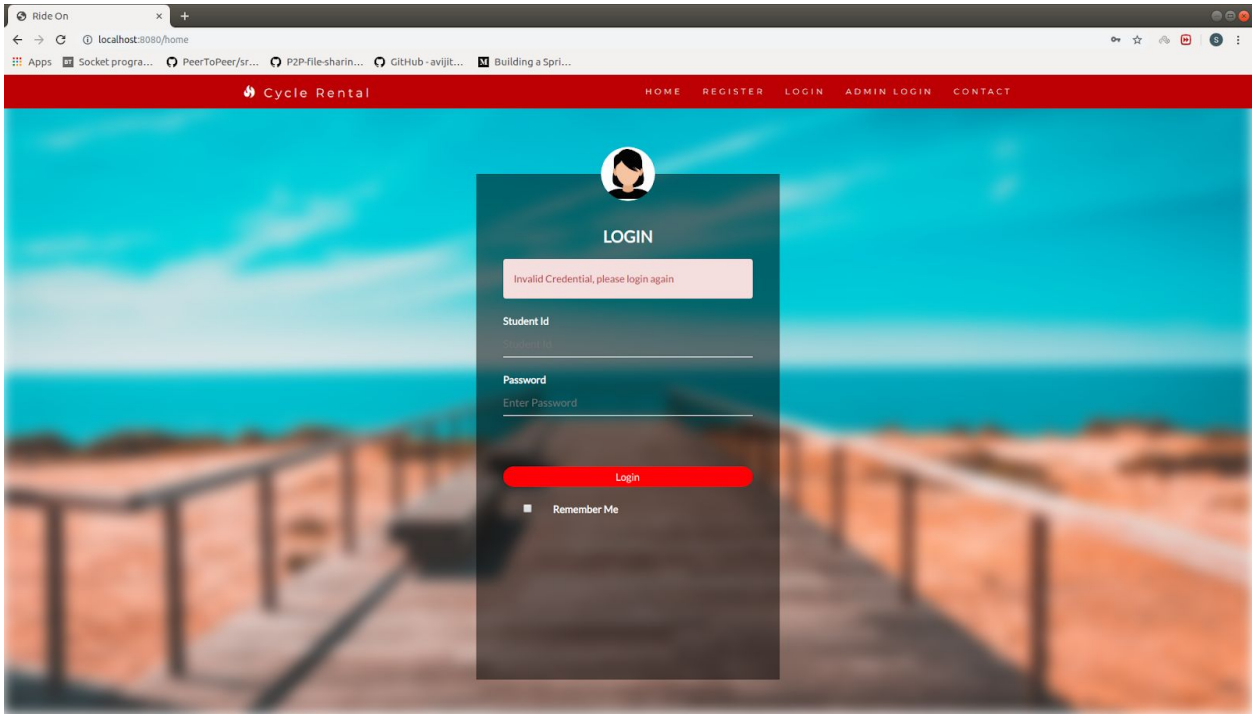
HOME PAGE:



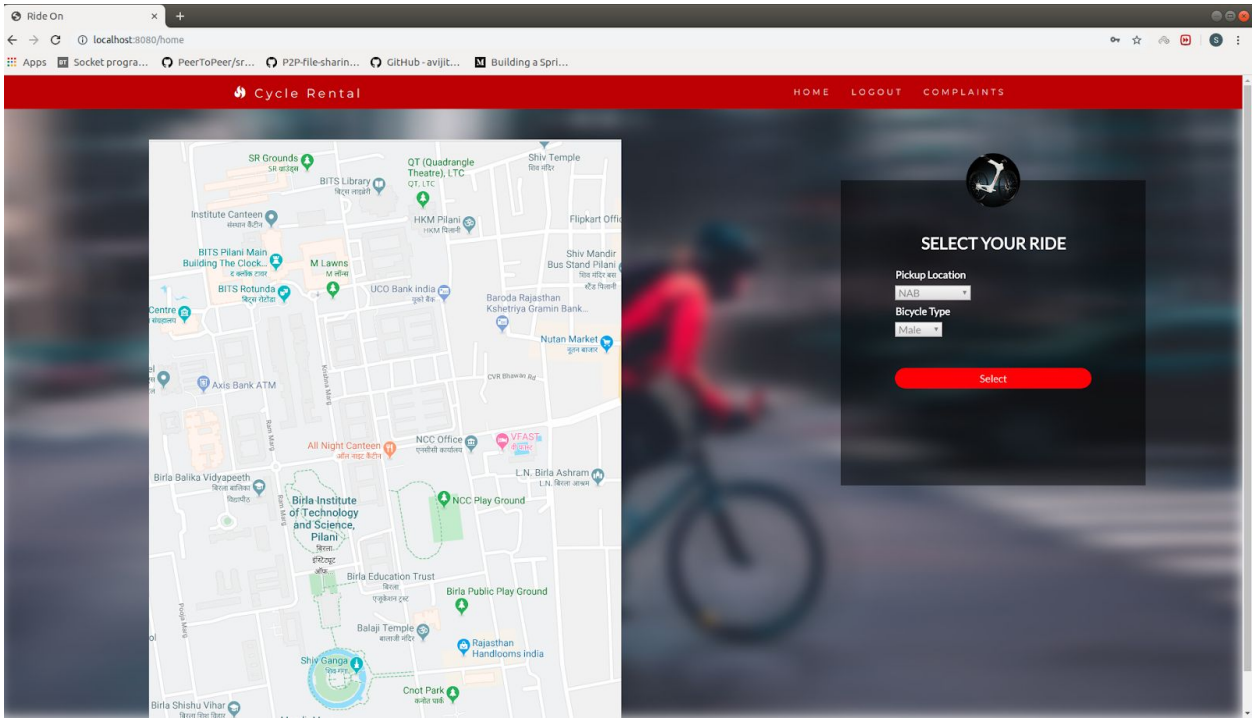
REGISTRATION PAGE:



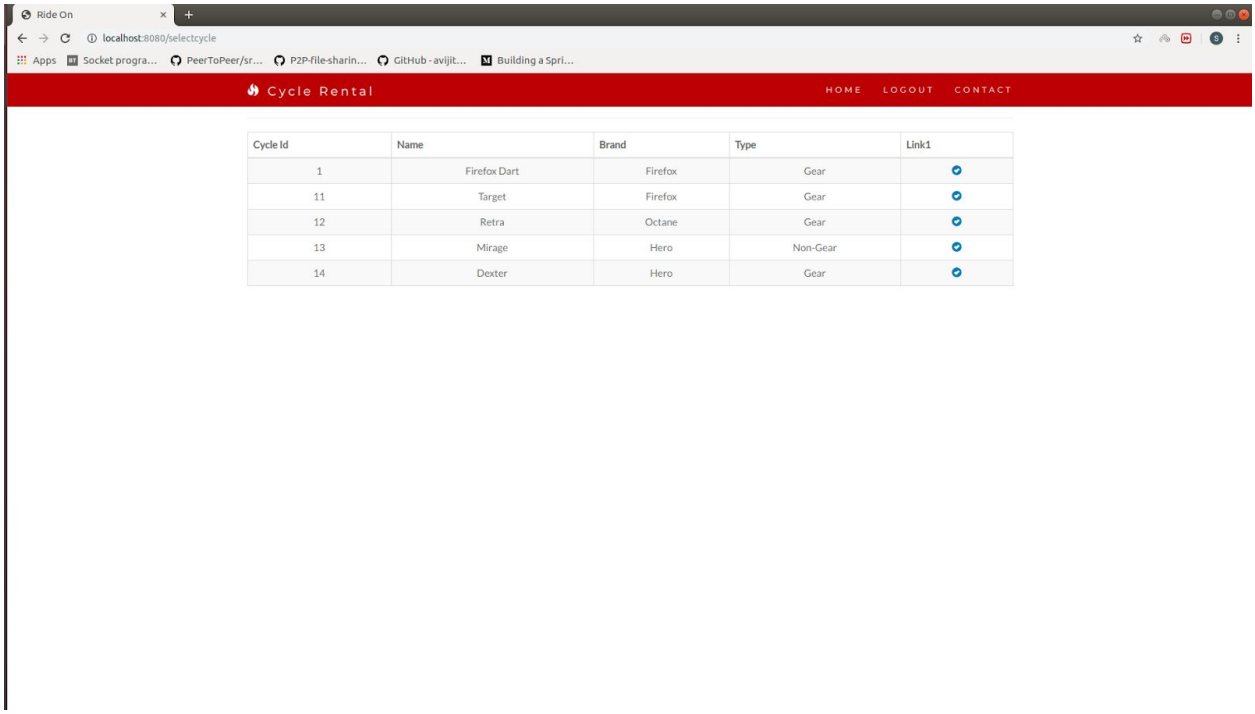
LOGIN PAGE:



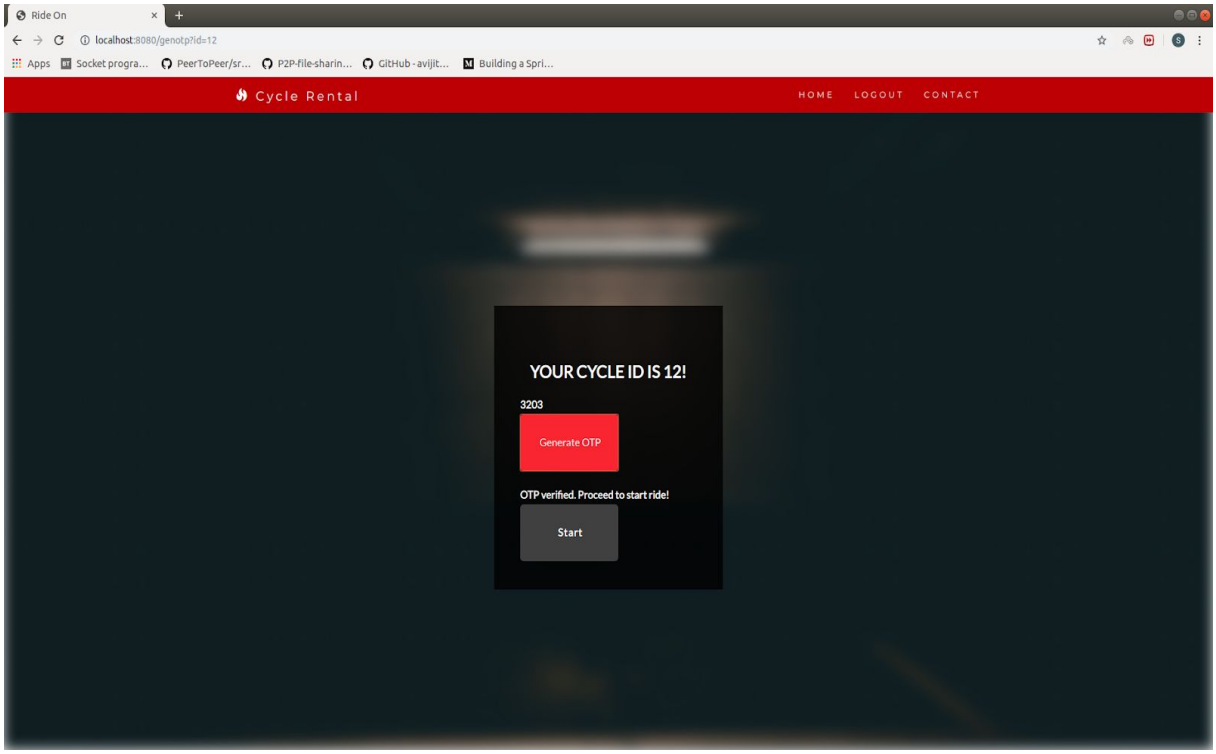
BOOK A CYCLE:



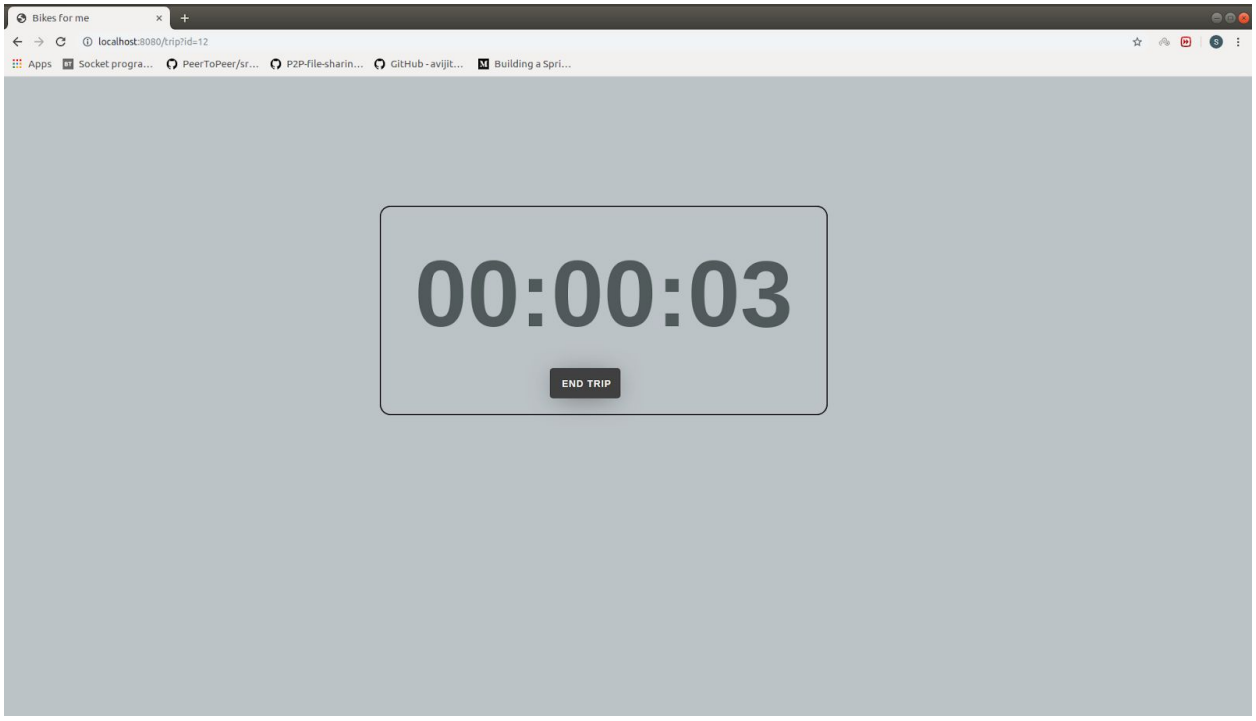
AVAILABLE CYCLES:



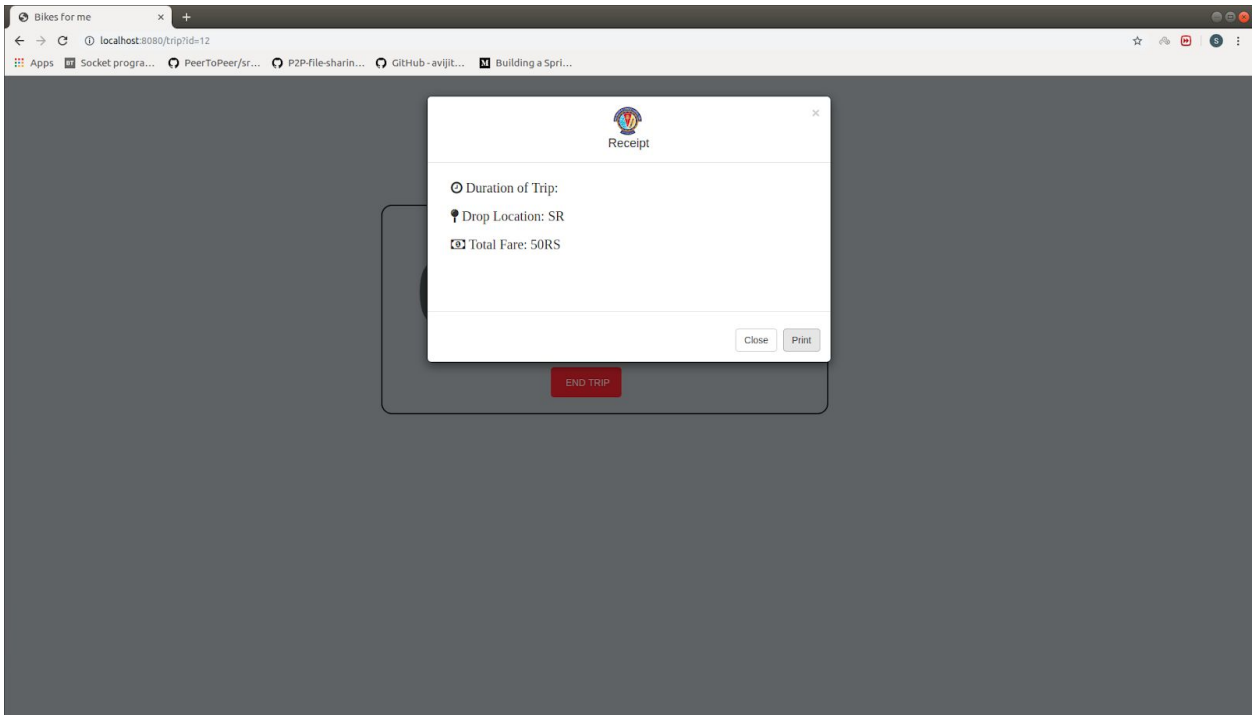
GENERATE OTP:



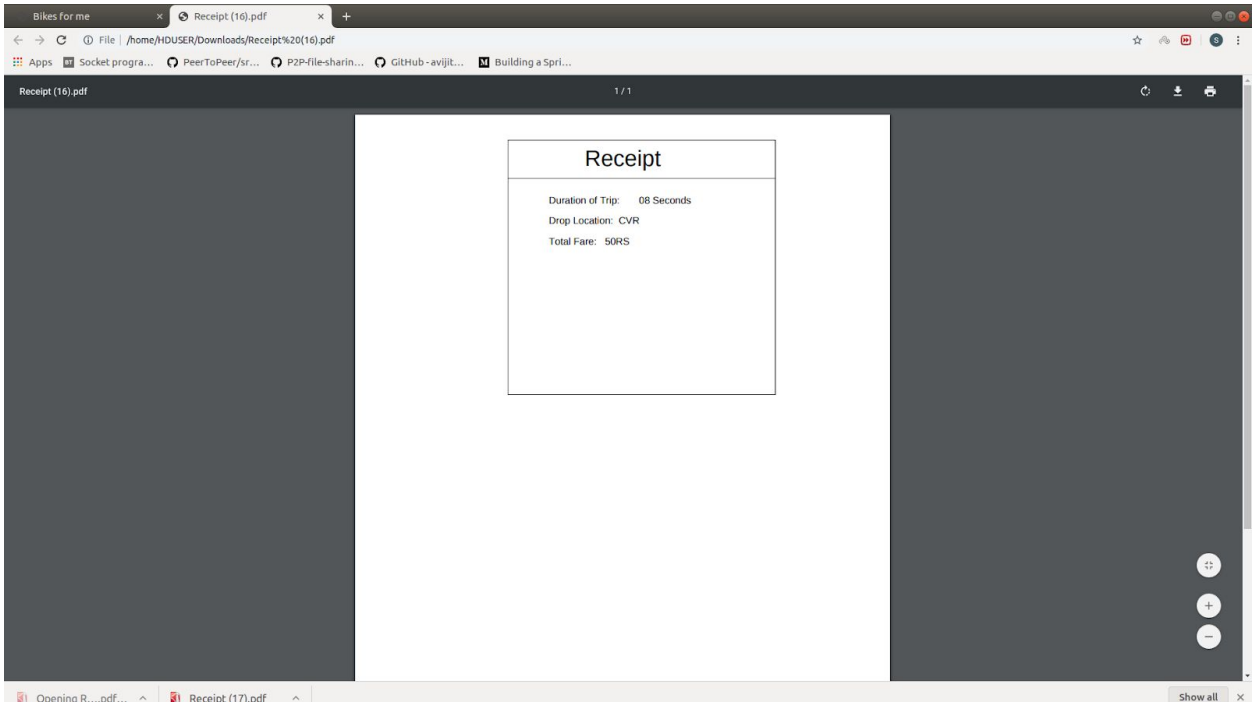
TRIP TIMER:



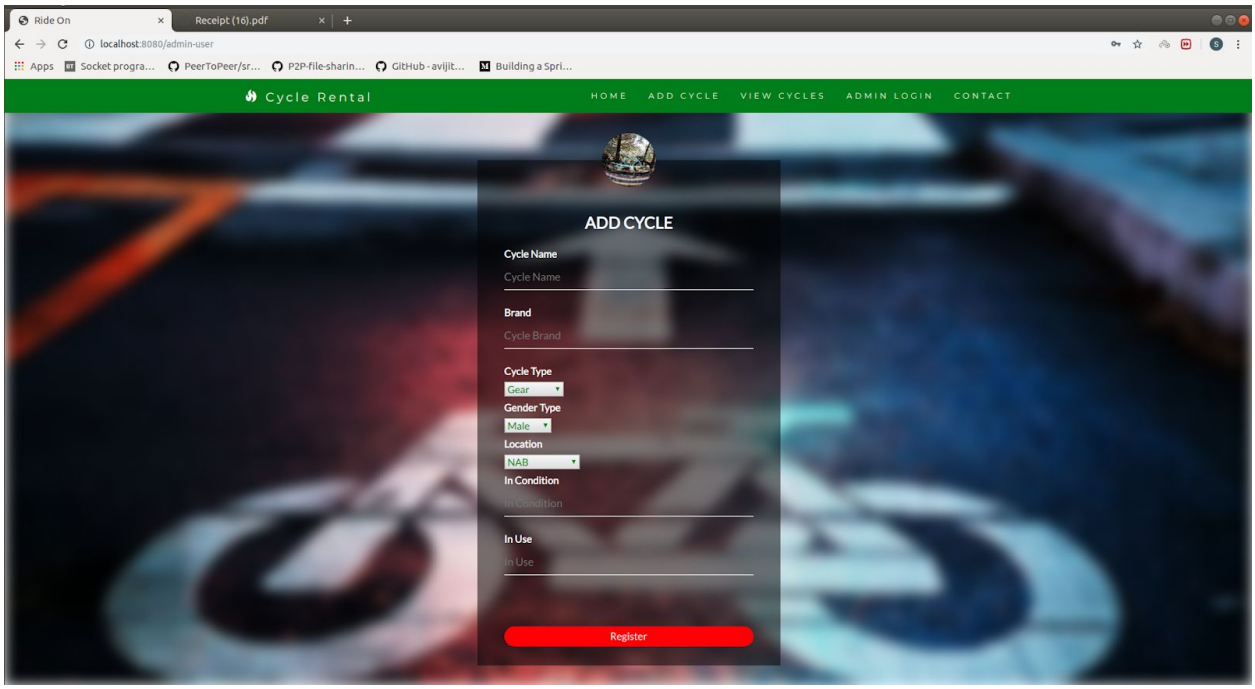
FARE GENERATION:

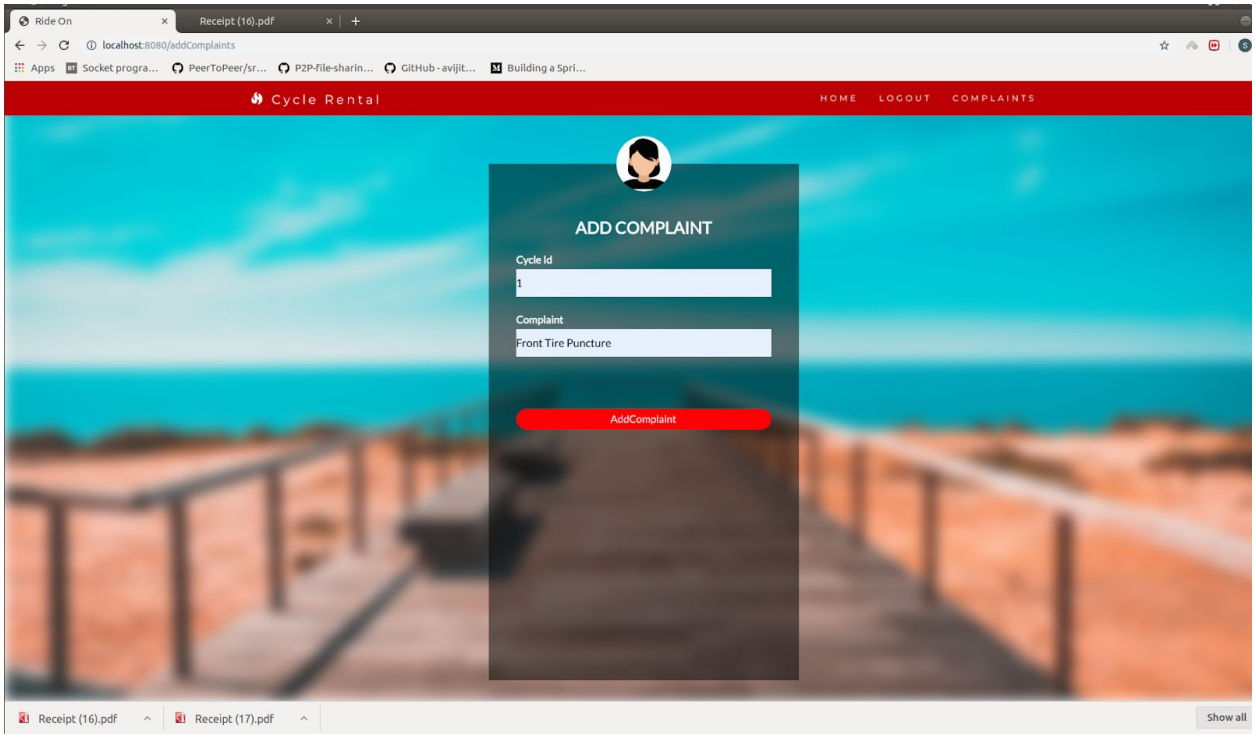


RECEIPT:



ADD CYCLE:





6. FUTURE SCOPE

If a lock can be implemented or can be bought in the future then it can be integrated with the system and this project - Cycle Rental Management System can be deployed in the campus for the use by the students and the faculties.