PROJECT REPORT

ON

TYRE TRACKING

BY: AMEYA MANDAVGADE

Seat No: 11621

Certificate from Company

Techlead

Internship Certificate

11th April 2020

To Whom It May Concern

This letter is to certify that Mr. Ameya Milind Mandavgade has been offered a position of Intern under the guidance of Mr. Sagar Deshmukh (Head – Product Division). His internship program is of 12 months and tenure is from July 08, 2019 to July 08, 2020

He is actively & diligently involved in the projects and tasks assigned to him for the project named '**Tyre Tracking**'.

As per company policy, any kind of source code or executables cannot be shared with the Intern as its solely belongs to Techlead Software Engineering Pvt. Ltd.

Sagar Deshmukh
Head, Product Division
Techlead Software Engineering Pvt Ltd

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Certificate from Guide

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Director
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Ref. No.: MCA/Project/023/2020-21
Date : 14/09/2020

CERTIFICATE

This is to certify that the Project Report entitled ***"Tyre Tracking"*** is prepared by ***Mandavgade Ameya Milind ,*** a student of ***M.C.A.*** Course for the Academic Year 2019-20 at M.E.Society's Institute of Management & Career Courses (IMCC), Pune - 411 038. M.C.A Course is affiliated to Savitribai Phule Pune University.

To the best of our knowledge, this is original study done by the said student and important sources used by him have been duly acknowledged in this report.

The report is submitted in partial fulfillment of M.C.A. Course for the Academic Year 2019-20 as per the rules & prescribed guidelines of Savitribai Phule Pune University.

Dr. Ravindra Vaidya
HOD, Department of MCA, IMCC

Dr. Santosh Deshpande
Director, IMCC

Acknowledgement

I am glad to take this opportunity to acknowledge the help of all those who helped me in designing, developing and ensuring the successful execution of my project on ‘Tyre Tracking’.

I would like to express my sincere thanks to my project guide Mr Ravikant Zirmite and external guide Mr Saurabh Kumar for their valuable guidance and timely assistance which helped me to bring my project to a successful conclusion.

I would also like to extend my gratitude to ‘Techlead Software Engineering Pvt. Ltd.’ without whose support and guidance, this project would not have been possible.

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Chapter 1: INTRODUCTION

1.1 Company Profile

Techlead Software Engineering Pvt. Ltd. is an information technology and consulting company. By combining excellent technical skills with domain expertise, we have been able to deliver a wide range of cost-effective and innovative solutions to Governments as well as a number of organisations in Finance, Banking, Insurance, Retail, Transport, Education and Social sectors.

Techlead was founded in 1993 and initially provided software development and support services to Fujitsu-ICL Caribbean and their clients. Techlead later expanded to other territories and had offices in India, Jamaica, Singapore, UK and USA.

Techlead developed an innovative retail product which was then sold to Reflexis Systems. The Reflexis product is now being used by many of the largest retailers across the world.

1.2 Existing System and Need for System

Existing System:

Presently there is no method or system of tracking the tyres of vehicles.

Need for System:

There was a need to define a method and design a system to track the tyres for the performance and life of the tyres which can further ensures the safety of the passengers.

1.3 Scope of Work:-

This software is available for public use over the internet. This software will provide a graphical environment in which the users of the system will be able to perform various operations.

This system will capture, store, update and retrieve the information of tyres and to which vehicle it is associated in a fast and accurate way. This system provides assurance of proper accuracy and effectiveness thereby improving the existing services.

This system provides better management by providing desired flexibility, fast response ability, support changes and has the ability to maintain the quality of the service being provided.

This system will have stronger controls and various levels of user access options will be added. The Interface of this system has been made keeping in mind the end-user of the system. Hence it is easy to access and use. Any person with a basic technical knowledge can operate this system in an effective way.

The Basic idea behind designing this system is that the user of this system can login by filling the required information and check the information already present in the system.

Proper information can be obtained with the help of the details entered by the user. For all these reasons, A Computerized System is the best solution.

1.4 Operating Environment- Hardware and Software

1) Software Used:-

Front End:-Angular

Back End: - Java

IDE:- Visual Studio Code

2) System Requirement:-

Minimum RAM:-512 MB

Hard Disk:-80 GB

Minimum Processor:-Intel Pentium 4

Operating System:-Windows XP and above

1.5 Detailed Description of Technology Used

Technology	Description
Angular	Angular is an app-design framework and development platform for creating efficient and sophisticated apps. These Angular docs help you learn and use the Angular framework and development platform, from your first app to optimizing complex apps for enterprises. Angular is a Type-Script based open-source web application framework led by the Angular Team at Google and by a community of individuals and corporations.
MySQL	MySQL is a fast, easy-to-use RDBMS being used for many small and big businesses. MySQL is developed, marketed and supported by MySQL AB, which is a Swedish company. MySQL is becoming so popular because of many good reasons −> • MySQL is released under an open-source license. So you have nothing to pay to use it. • MySQL is a very powerful program in its own right. It handles a large subset of the functionality of the most expensive and powerful database packages. • MySQL uses a standard form of the well-known SQL data language. • MySQL works very quickly and works well even with large data sets. MySQL is very friendly to PHP, the most appreciated language for web development.
Java	Spring Framework is a Java platform that provides comprehensive infrastructure support for developing Java applications. Spring handles the infrastructure so you can focus on your application. Spring enables you to build applications from

	"plain old Java objects" (POJOs) and to apply enterprise services non-invasively to POJOs. This capability applies to the Java SE programming model and to full and partial Java EE. Examples of how you, as an application developer, can use the Spring platform advantage: • Make a Java method execute in a database transaction without having to deal with transaction APIs. • Make a local Java method a remote procedure without having to deal with remote APIs. • Make a local Java method a management operation without having to deal with JMX APIs. Make a local Java method a message handler without having to deal with JMS APIs

Chapter 2: PROPOSED SYSTEM

2.1 Proposed System

2.2 Objectives of System

2.3 User Requirements

2.1 Proposed System:-

This system has been built for the purpose of automating the process of increasing the tyre life. The user has to login into the system by using their unique ID and password. After entering the correct details, a list of options will be displayed.

The administrator of this system is allocated the work of adding, updating, deleting and retrieving the required data from the database according to the requirement. When the administrator logs in, he has various options out of which he can select any one according to his/her requirement.

Similarly, the administrator is responsible for all the details pertaining to the tyres, vehicles, organization, department and vendor.

2.2 Objective of System:-

The purpose of developing TYRE TRACKING is to allow users to save costs associated with buying and maintaining tyre quality. Also the user can track COST PER KILOMETER (CPK) associated to a particular tyre, CPK allows the user to identify whether they are getting maximum out of tyres life. Life cycle of each individual tyre is tracked on a particular position. Whenever a tyre is removed from one position and put on another position or sent for rethreading the life on that position will be monitored till it reaches scrap yard.

2.3 User Requirements:-

- Better and effective UI for interaction.
- Do analysis to identify tyre wear and tear.
- Predict the Kms the tyre can travel before swapping or scrapping.
- Report of tyre analysis.
- Graphical representation about tyre status and performance.

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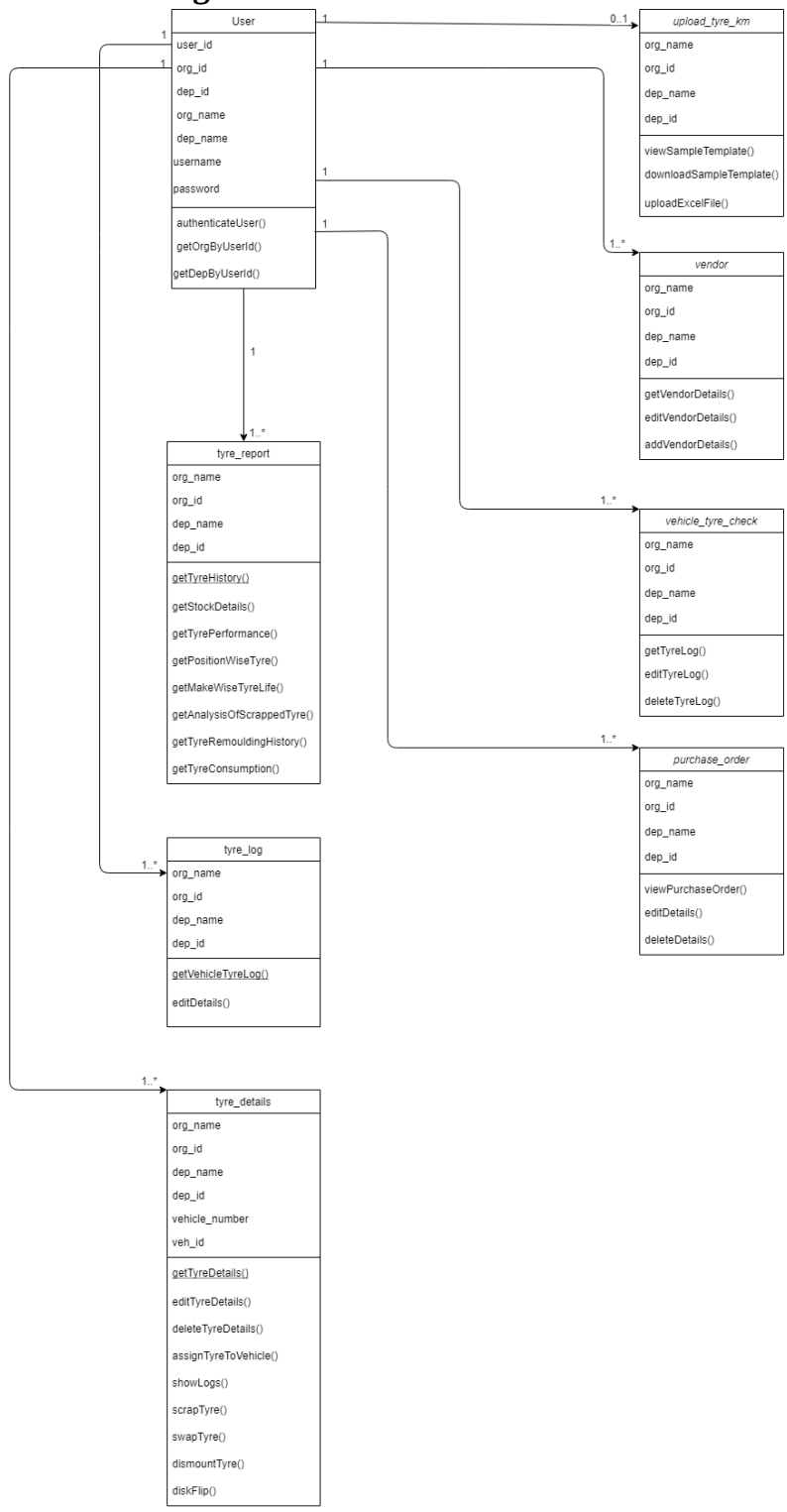
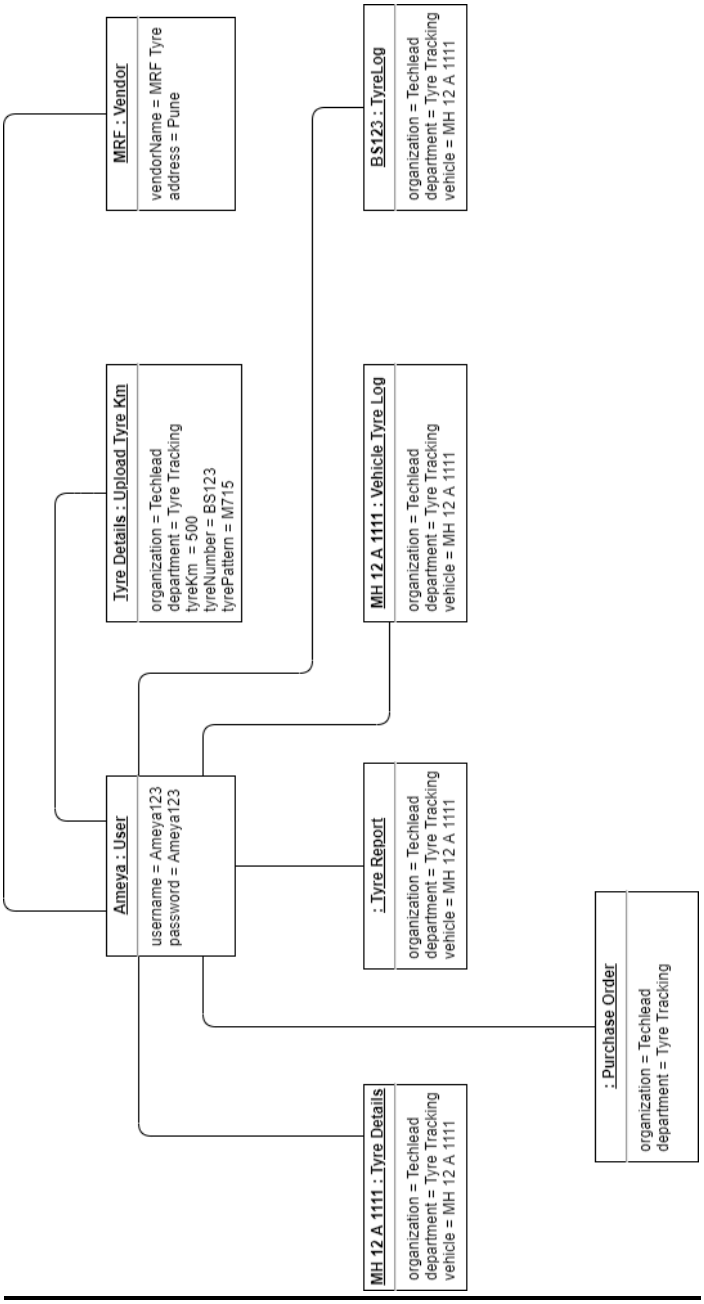
3.1 Class Diagram:-

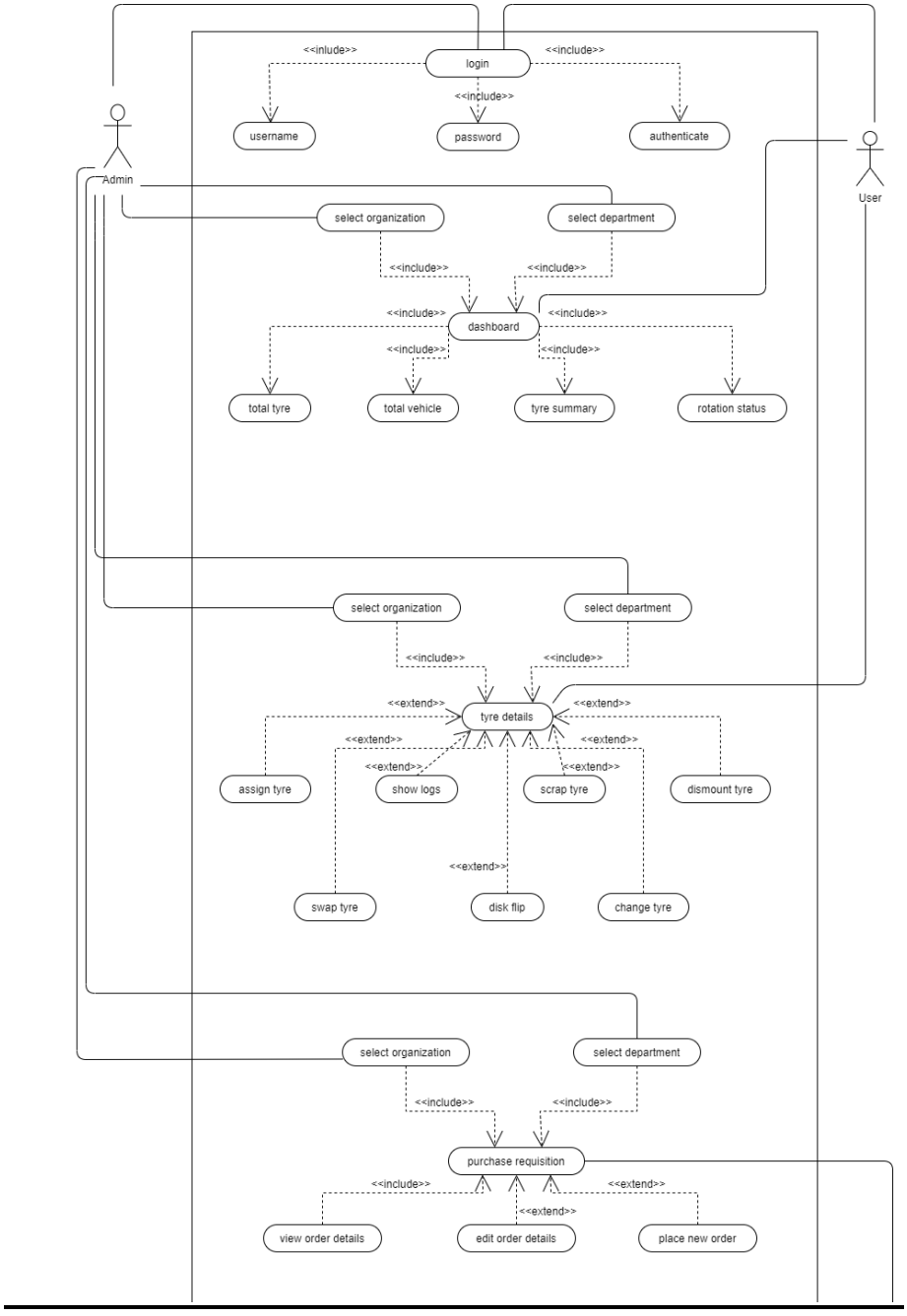


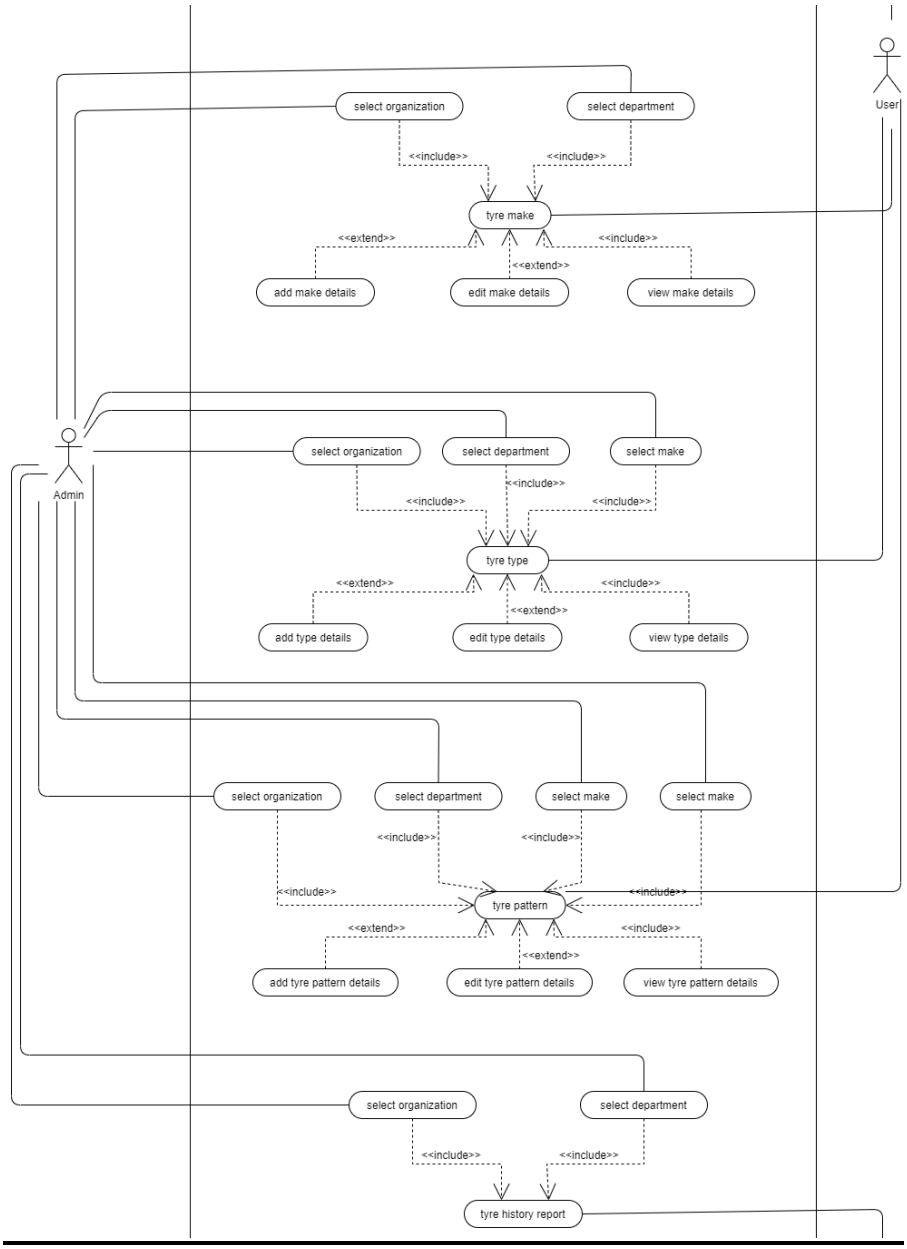
3.2 Object Diagram:-



3.3 Use Case:-

3.3.1 System Use Case:-

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select organization
select department
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<<include>>
tyre make
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add make details
edit make details
view make details
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select organization
select department
select make
<<include>>
<<include>>
<<include>>
tyre type
<<extend>>
<<include>>
<<extend>>
add type details
edit type details
view type details
select organization
select department
select make
select make
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<<include>>
<<include>>
<<include>>
tyre pattern
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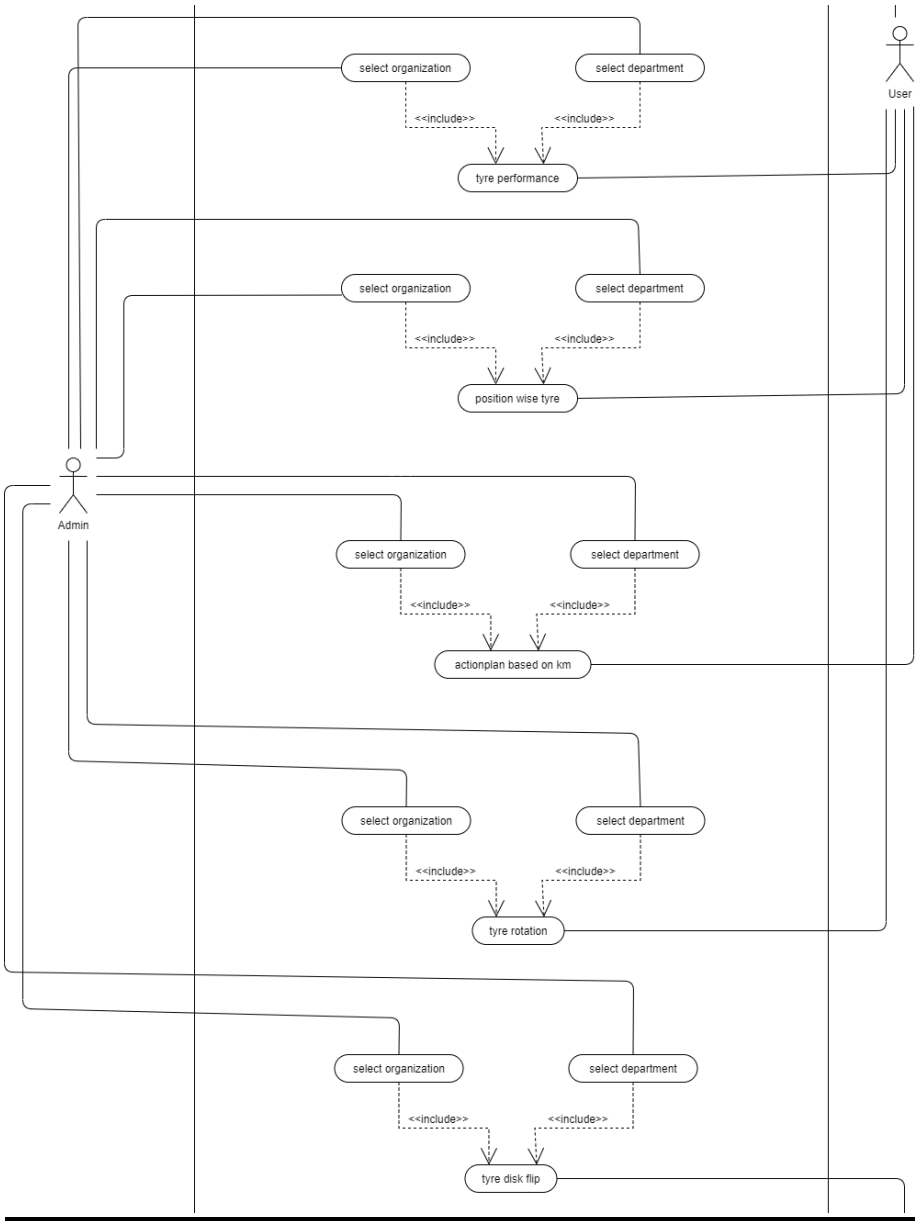
tyre history report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tyre performance
select organization
select department
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position wise tyre
Admin
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select department
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select organization
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tyre rotation
select organization
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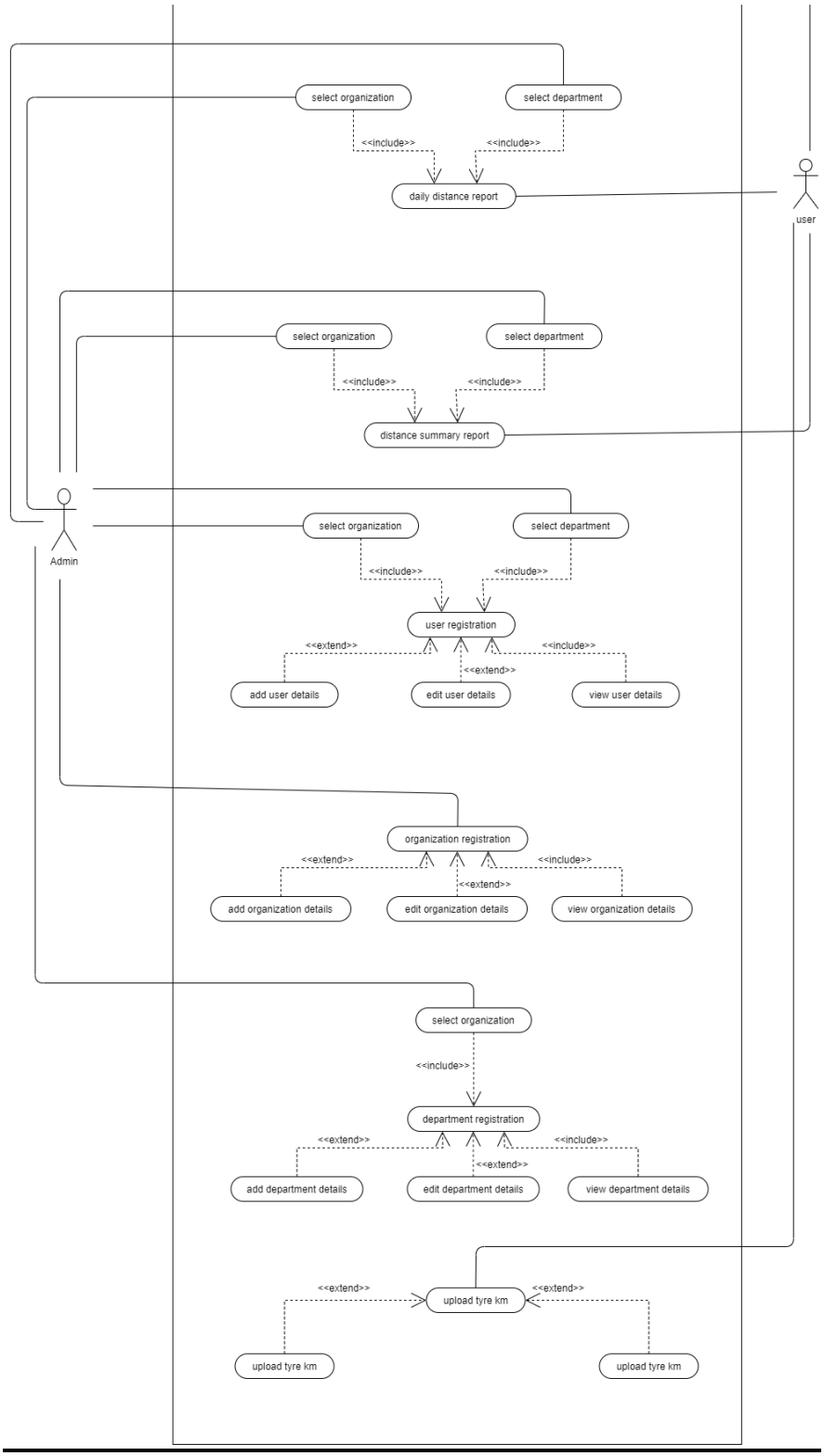
tyre disk flip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organization registration
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edit organization details
view organization details
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department registration
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edit department details
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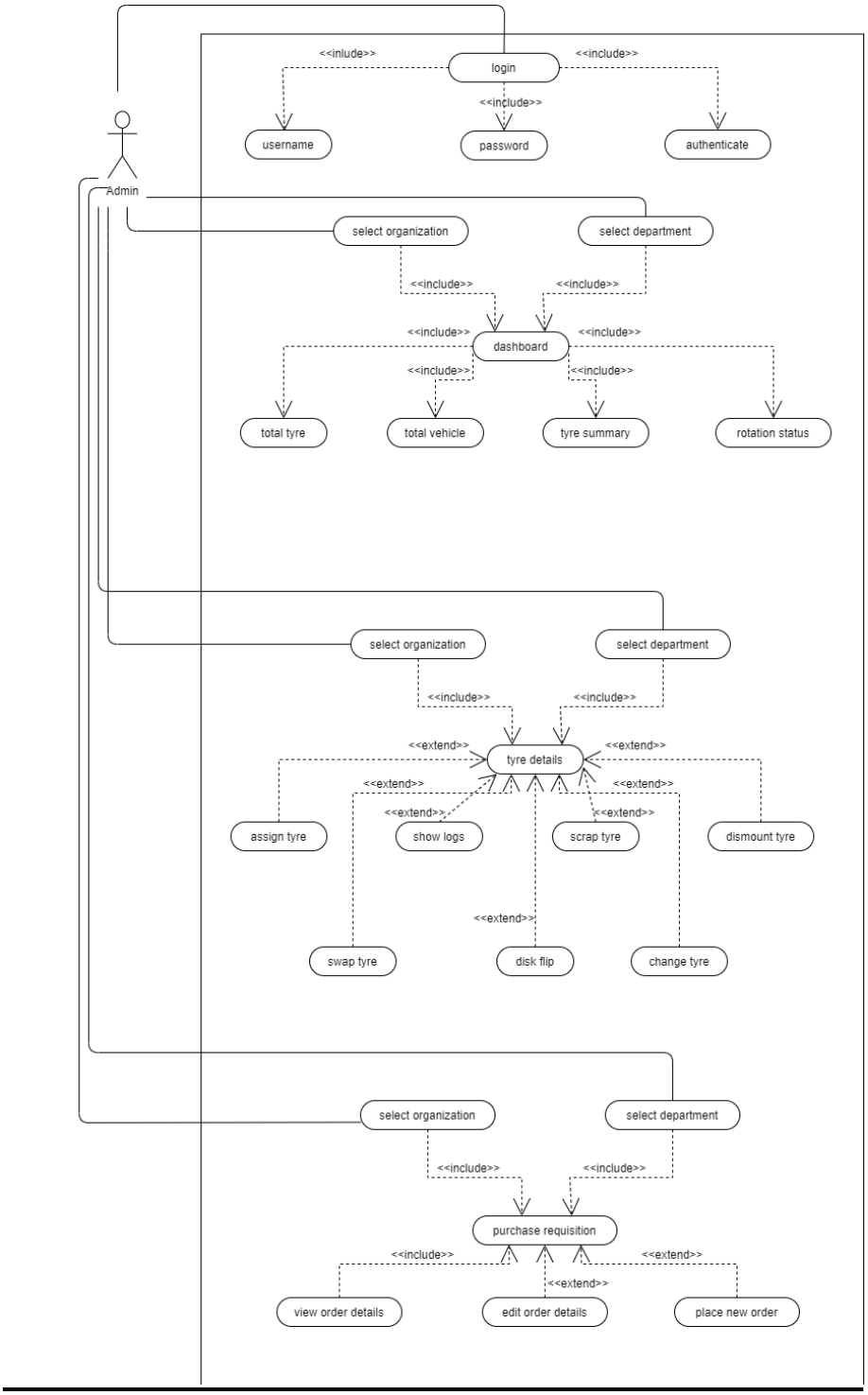
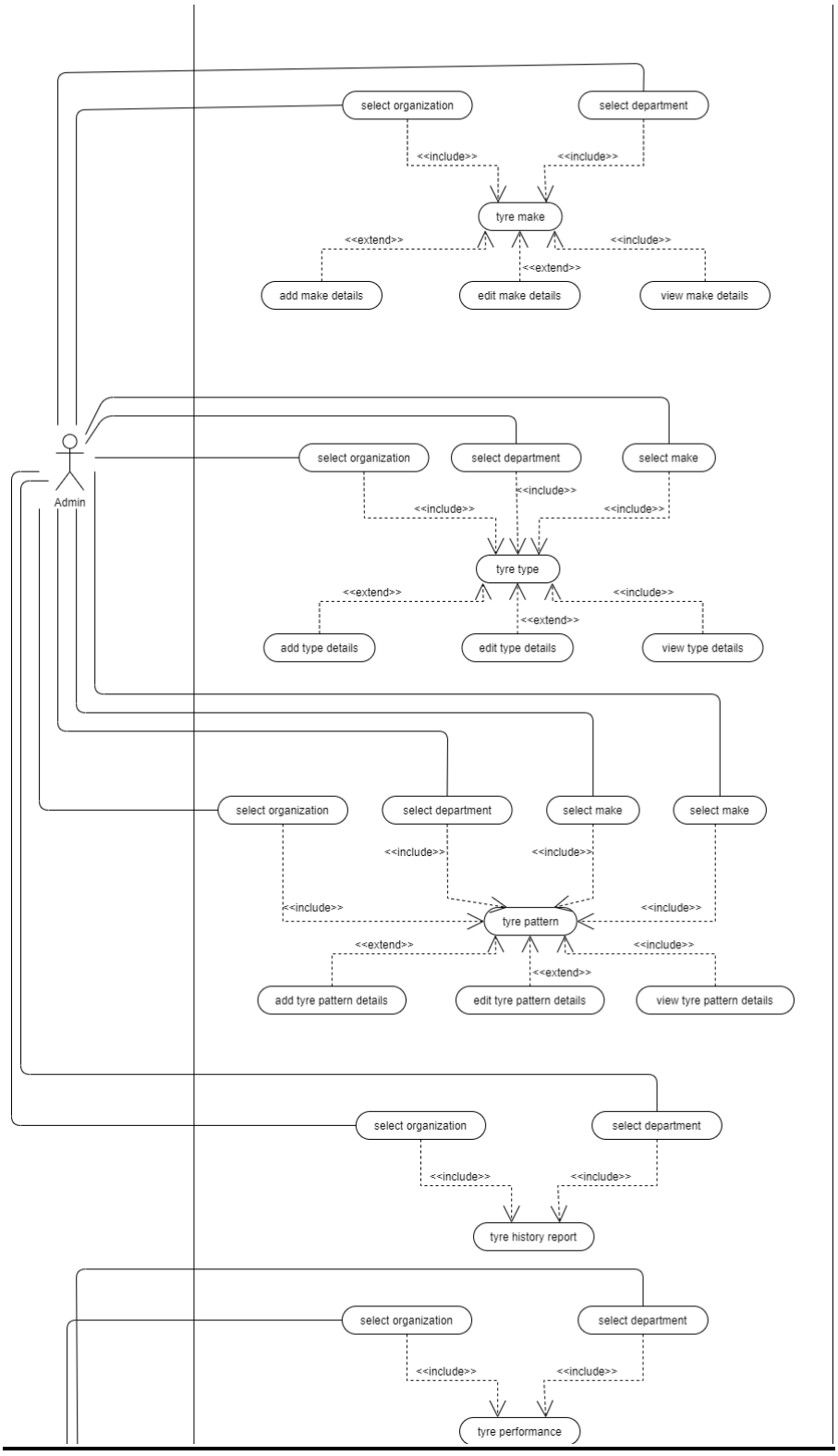
upload tyre km
upload tyre km

3.3.2 Admin Use Case:-

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tyre make
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add make details
edit make details
view make details
Admin
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select department
select make
<<include>>
<<include>>
<<include>>
tyre type
<<extend>>
<<include>>
<<extend>>
add type details
edit type details
view type details
select organization
select department
select make
select make
<<include>>
<<include>>
<<include>>
<<include>>
tyre pattern
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add tyre pattern details
edit tyre pattern details
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select department
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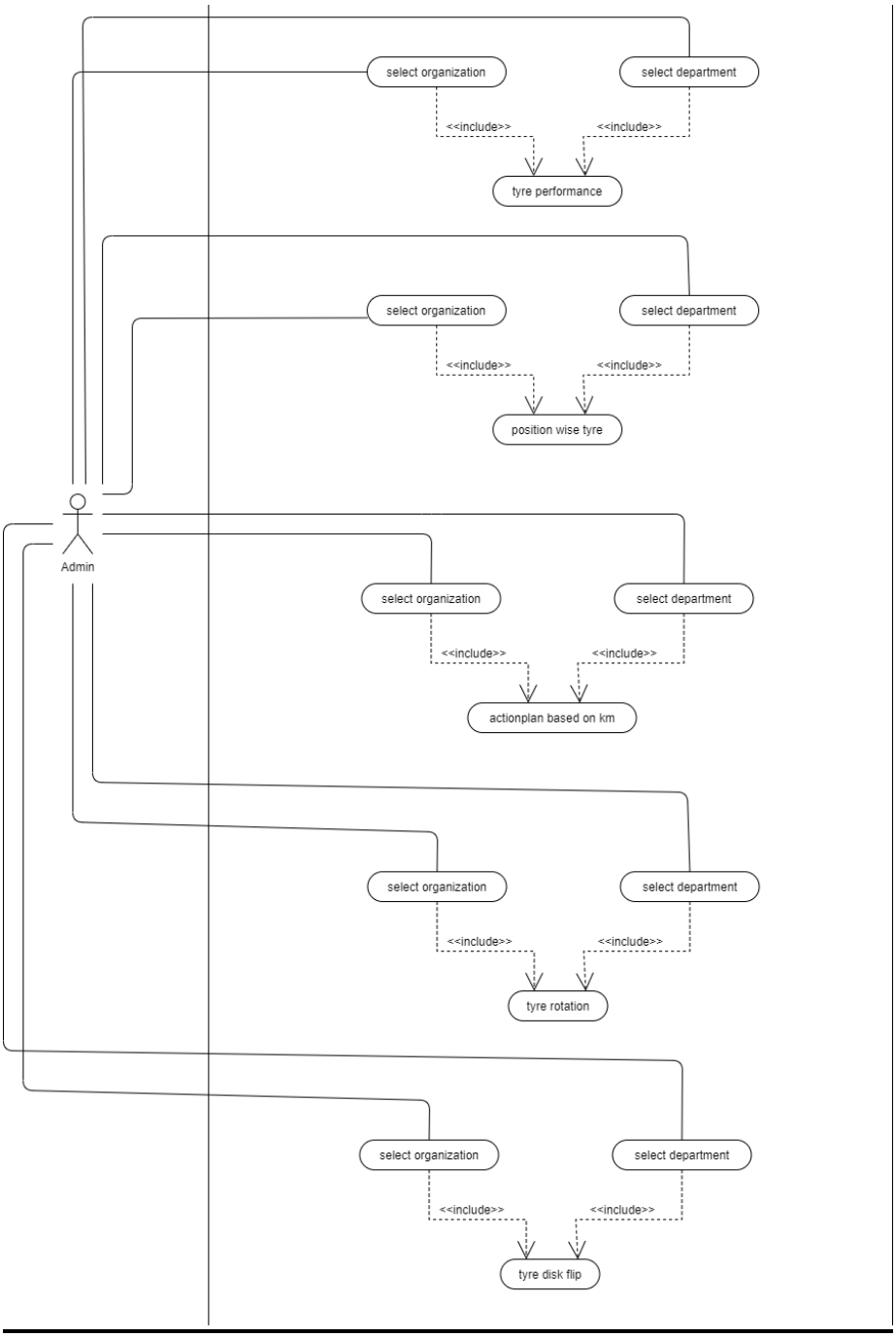
tyre performance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position wise tyre
Admin
select organization
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actionplan based on km
select organization
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tyre rotation
select organization
select department
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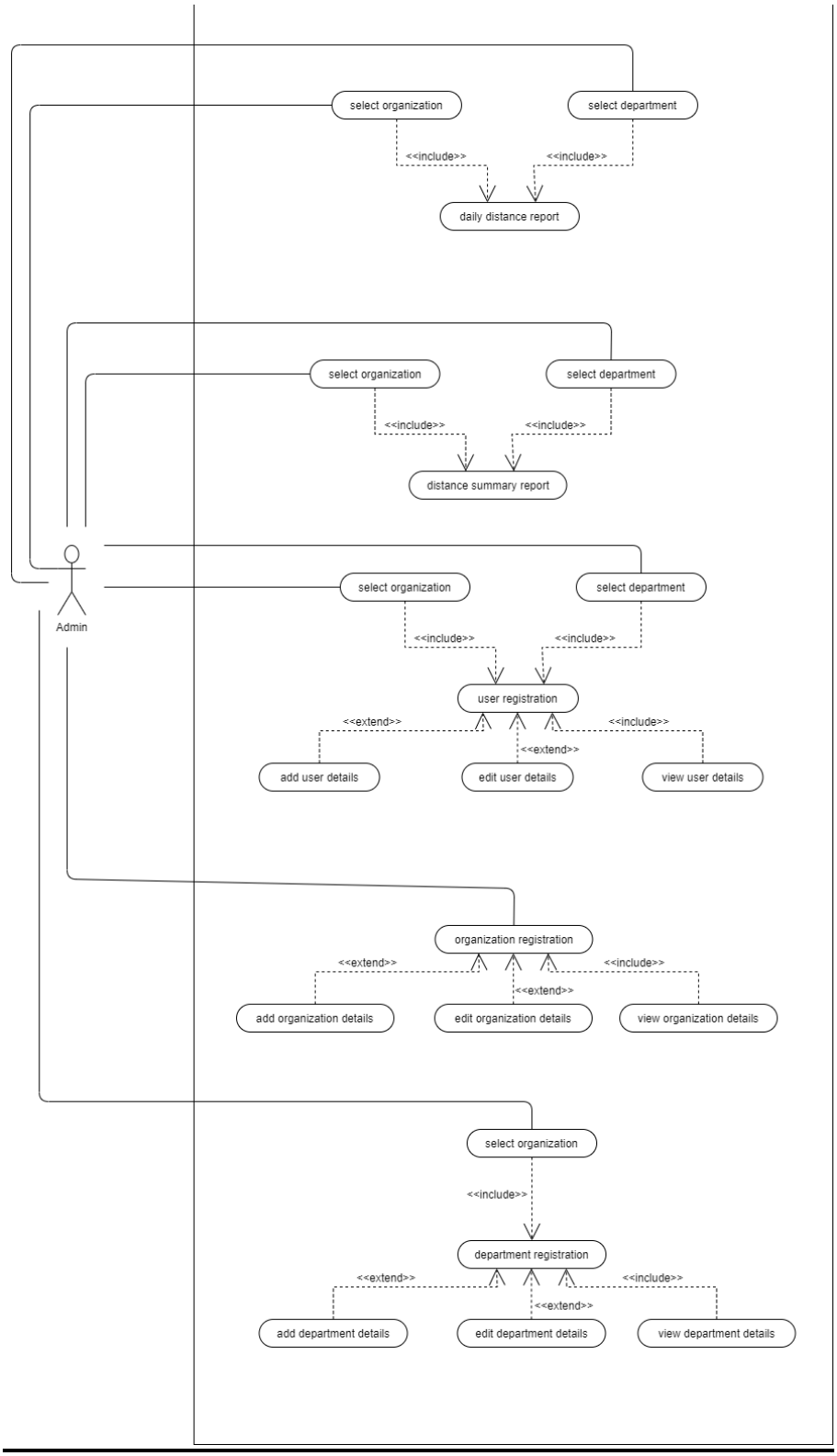
tyre disk flip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select department
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daily distance report
select organization
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distance summary report
Admin
select organization
select department
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user registration
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add user details
edit user details
view user details
organization registration
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add organization details
edit organization details
view organization details
select organization
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department registration
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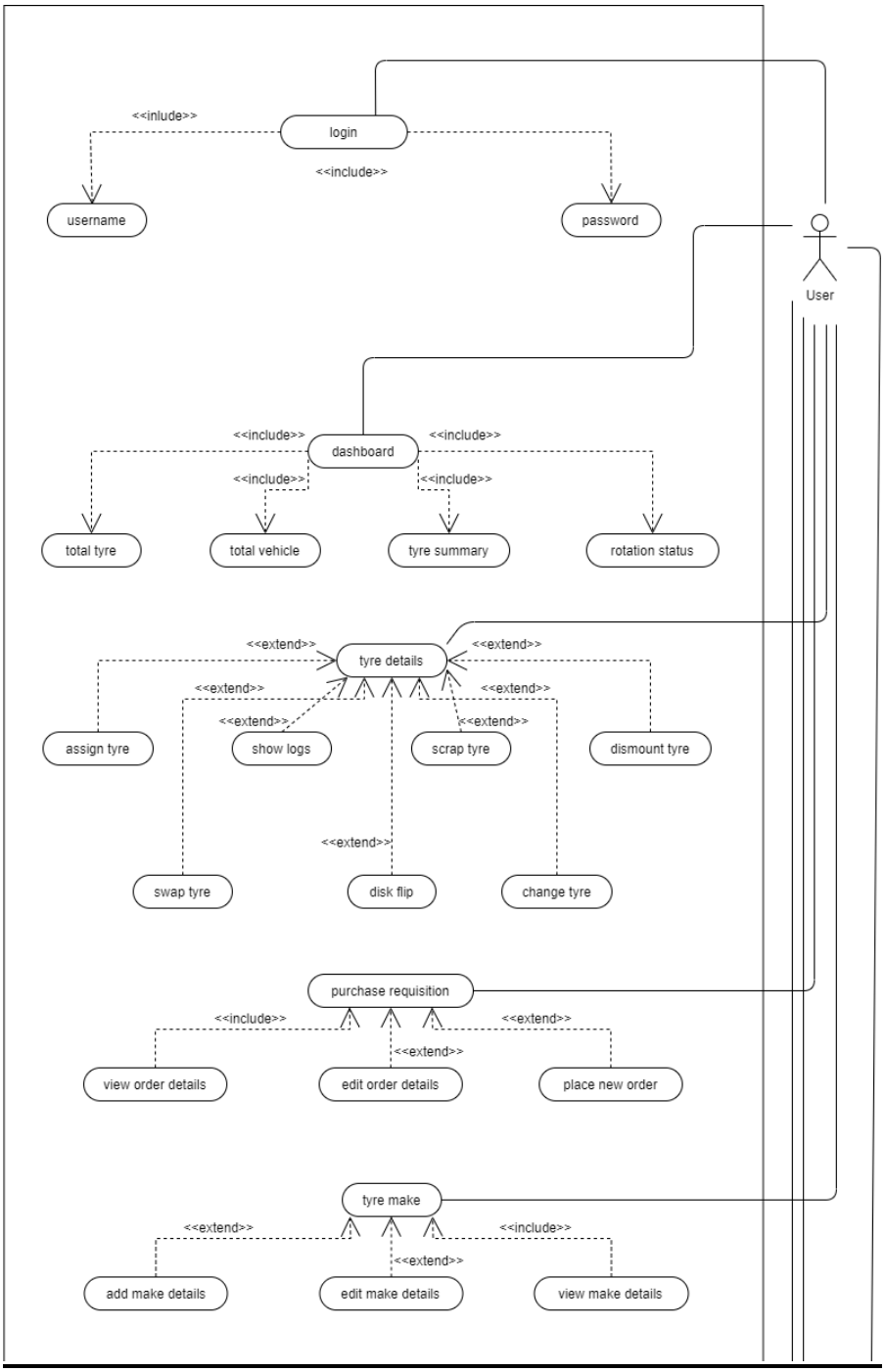
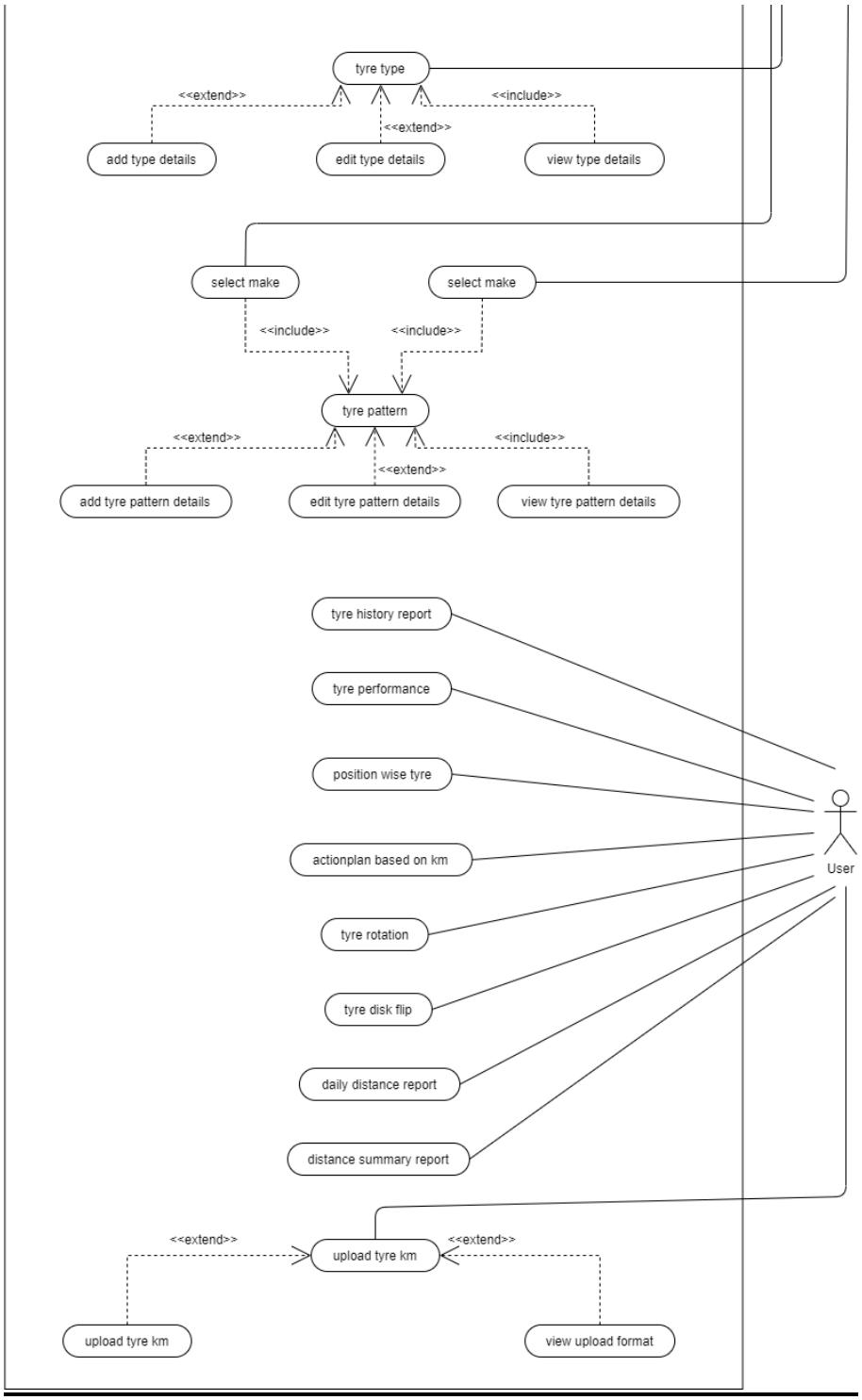
add department details
edit department details
view department details

3.3.3 User Use Case:-

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add type details
edit type details
view type details
select make
select make
<<include>>
<<include>>
tyre pattern
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<<include>>
<<extend>>
add tyre pattern details
edit tyre pattern details
view tyre pattern details
tyre history report
tyre performance
position wise tyre
actionplan based on km
tyre rotation
tyre disk flip
daily distance report
distance summary report
User
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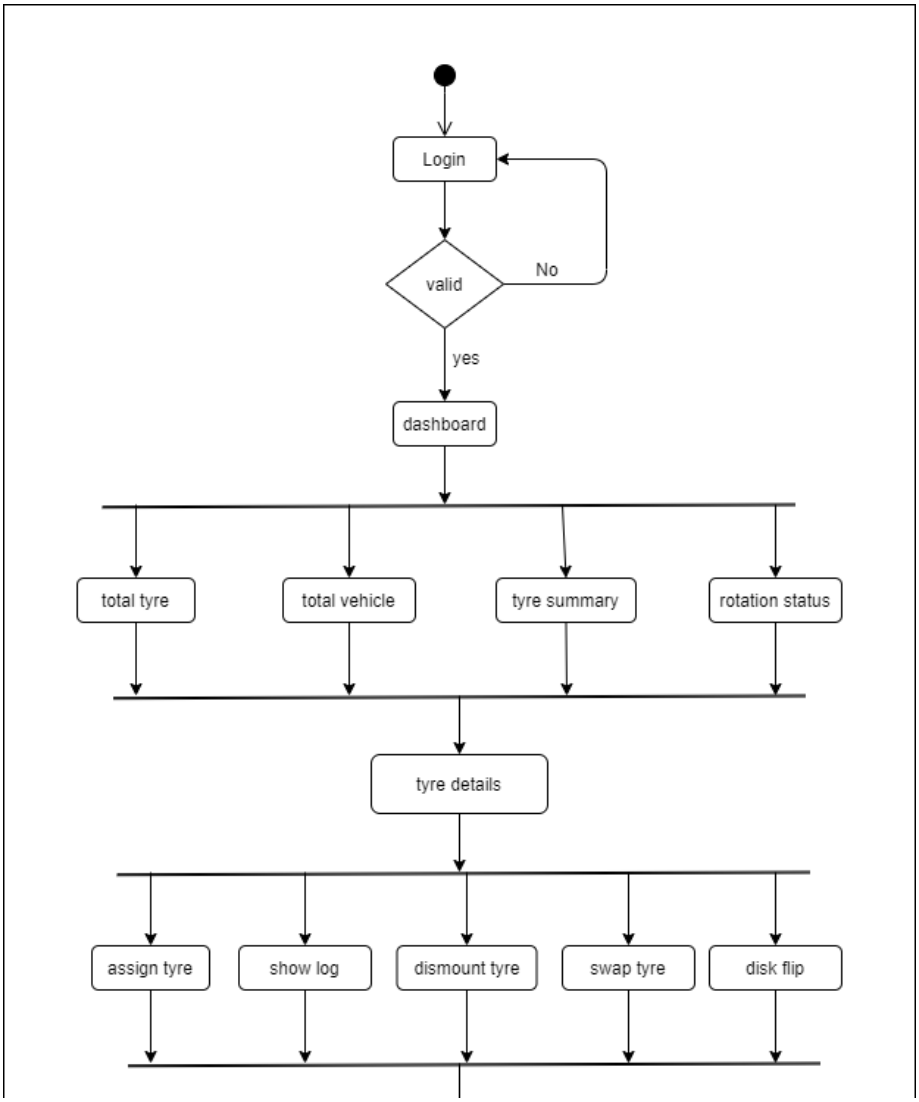
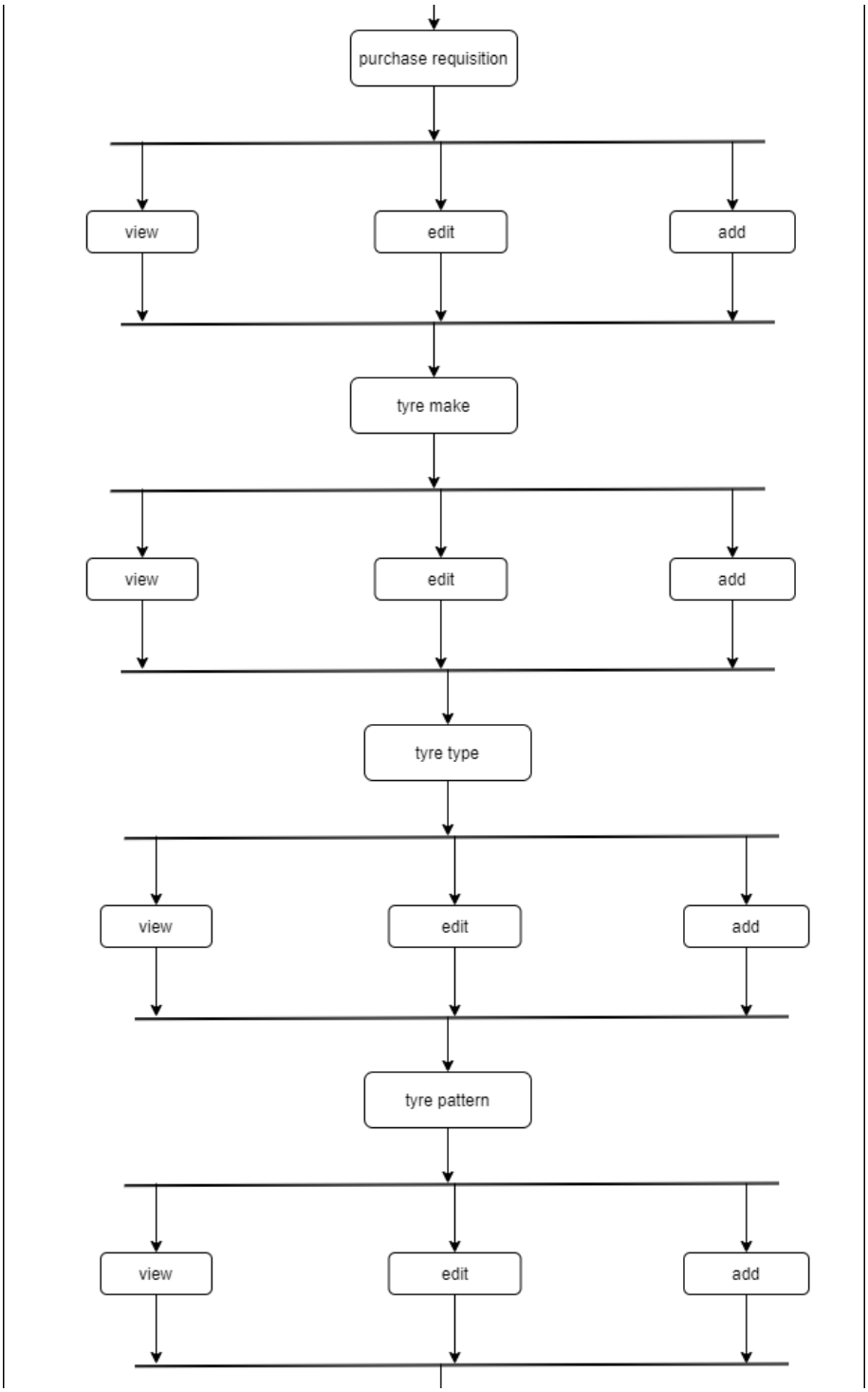
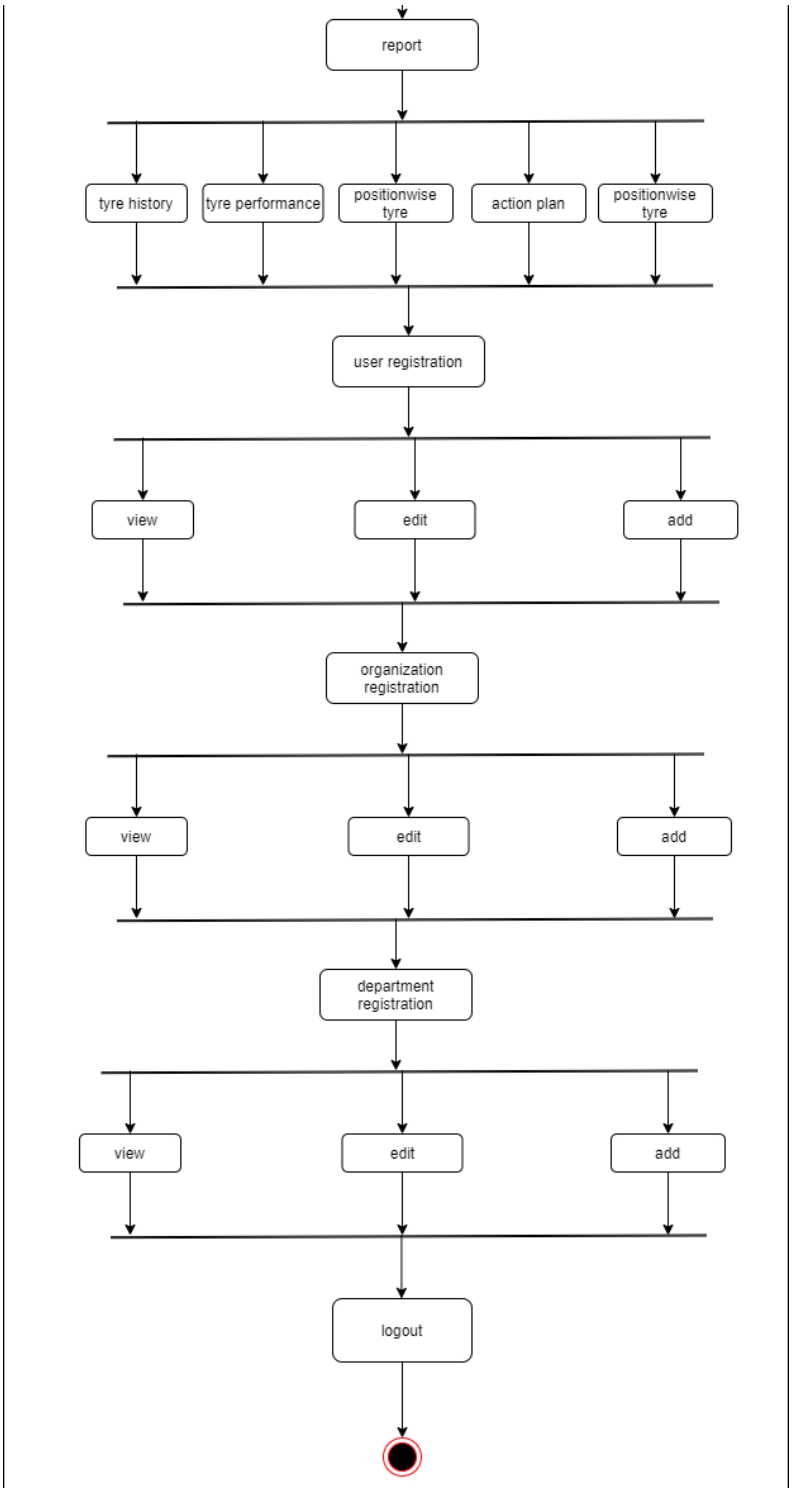
upload tyre km
<<extend>>
upload tyre km
view upload format

3.4 Activity Diagram

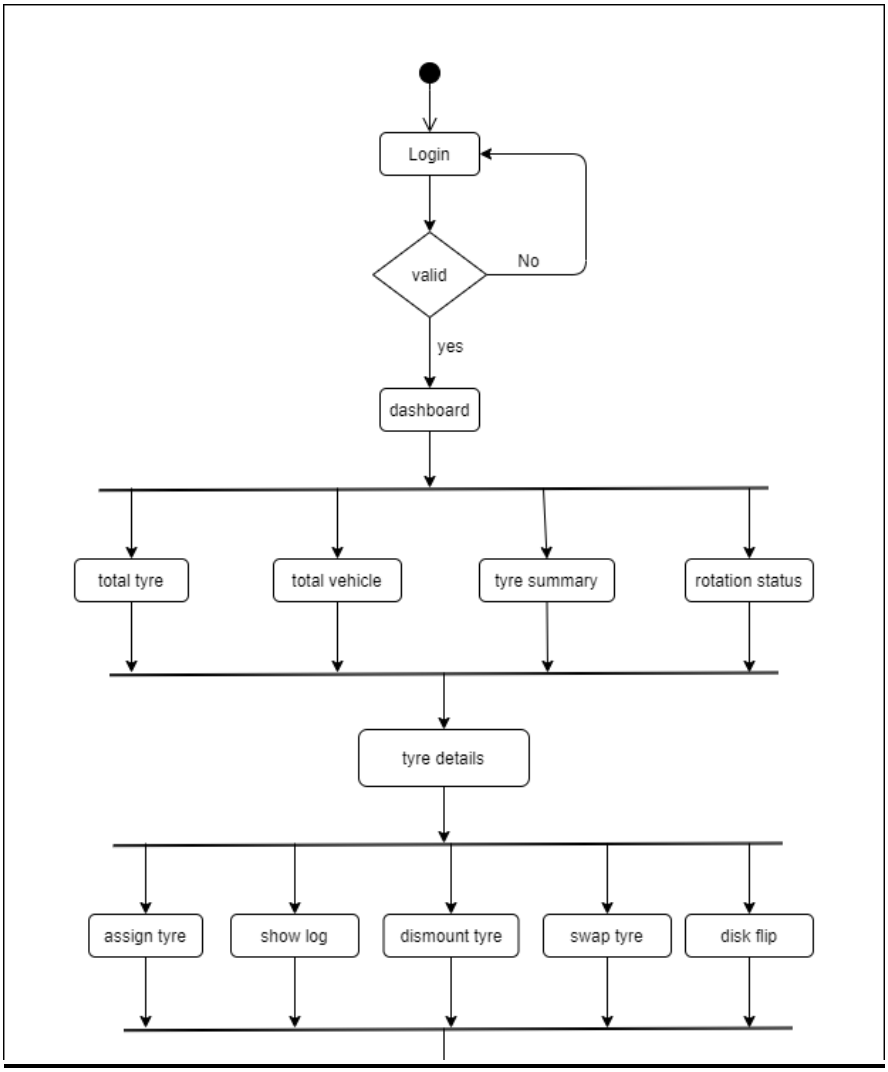
3.4.1 Admin Activity Diagram

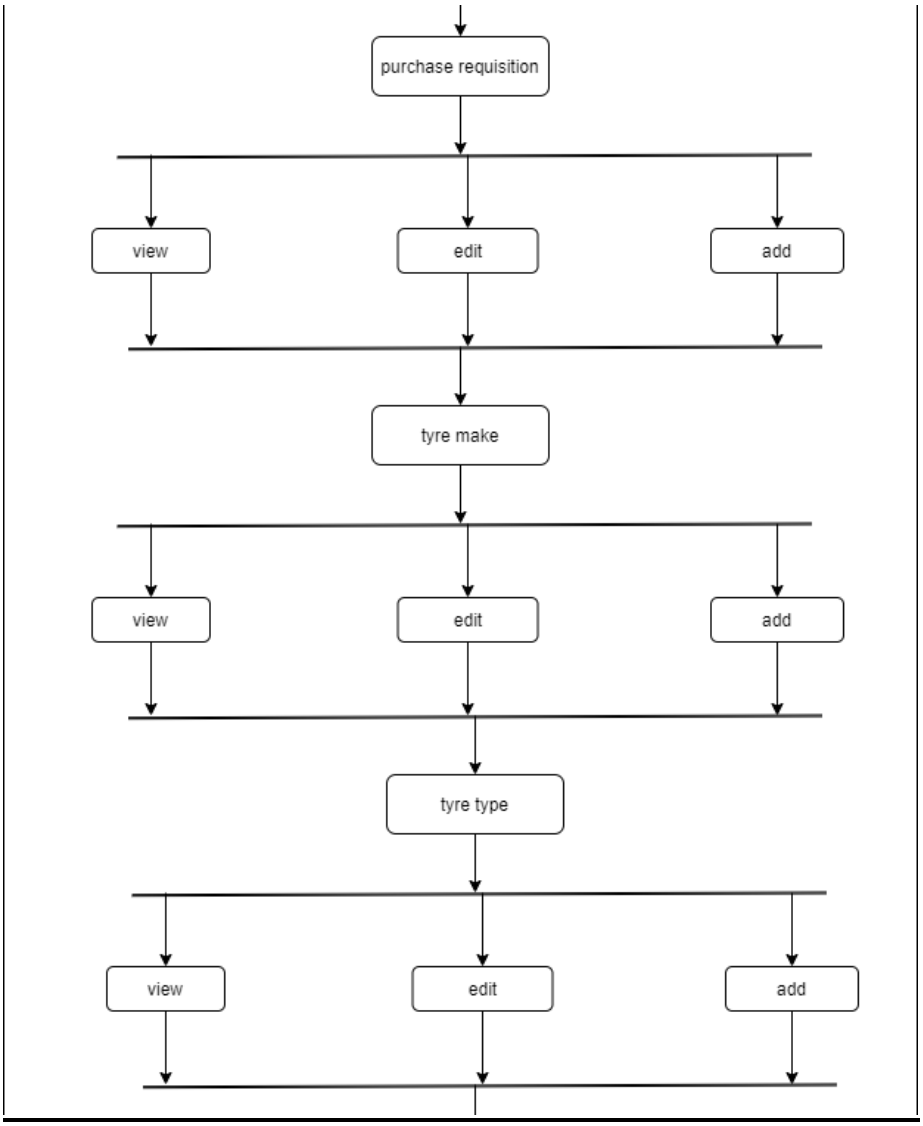



purchase requisition
view
edit
add
tyre make
view
edit
add
tyre type
view
edit
add
tyre pattern
view
edit
add


report
tyre history
tyre performance
positionwise tyre
action plan
positionwise tyre
user registration
view
edit
add
organization registration
view
edit
add
department registration
view
edit
add
logout

3.4.2 User Activity Diagram

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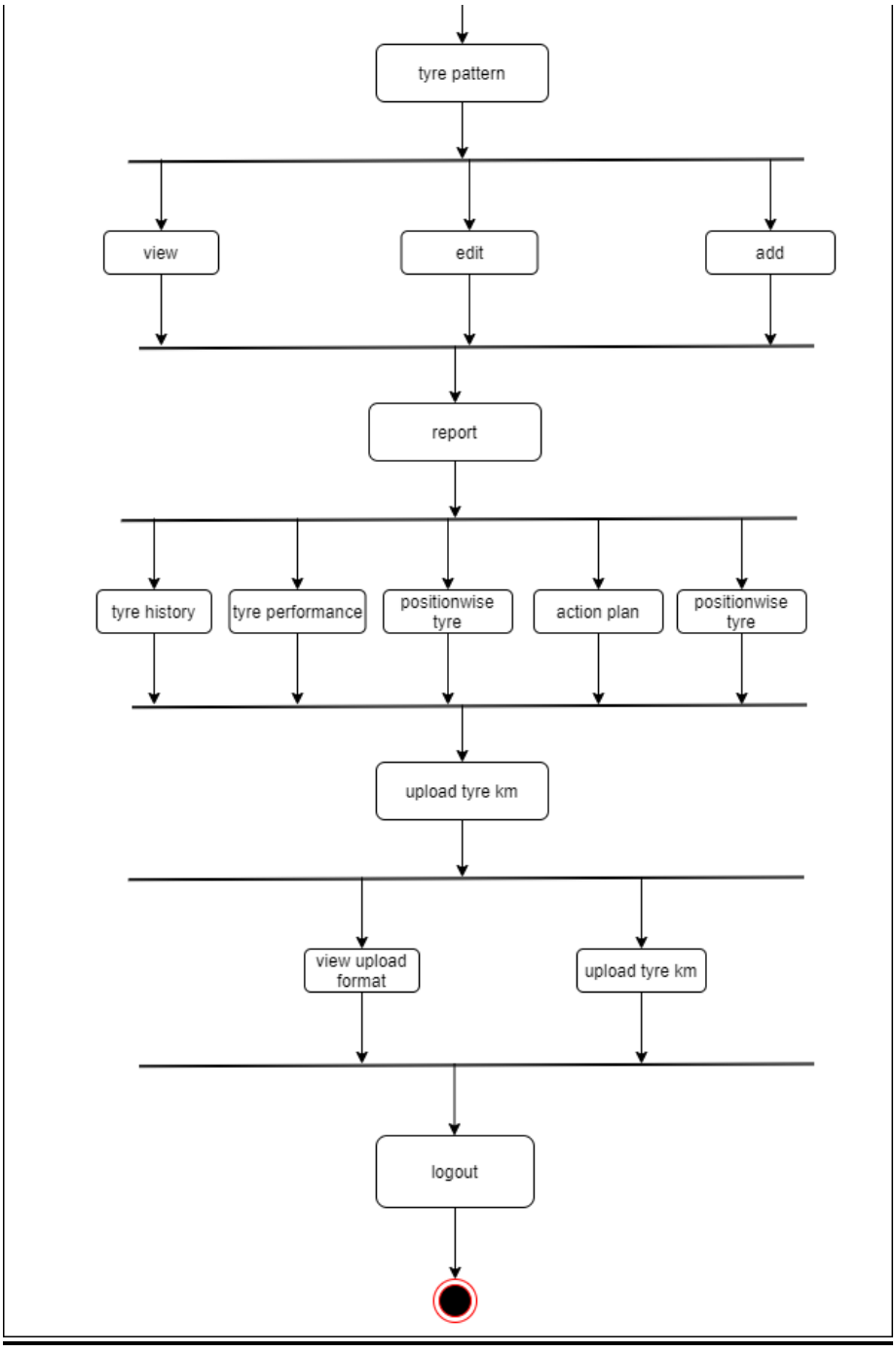
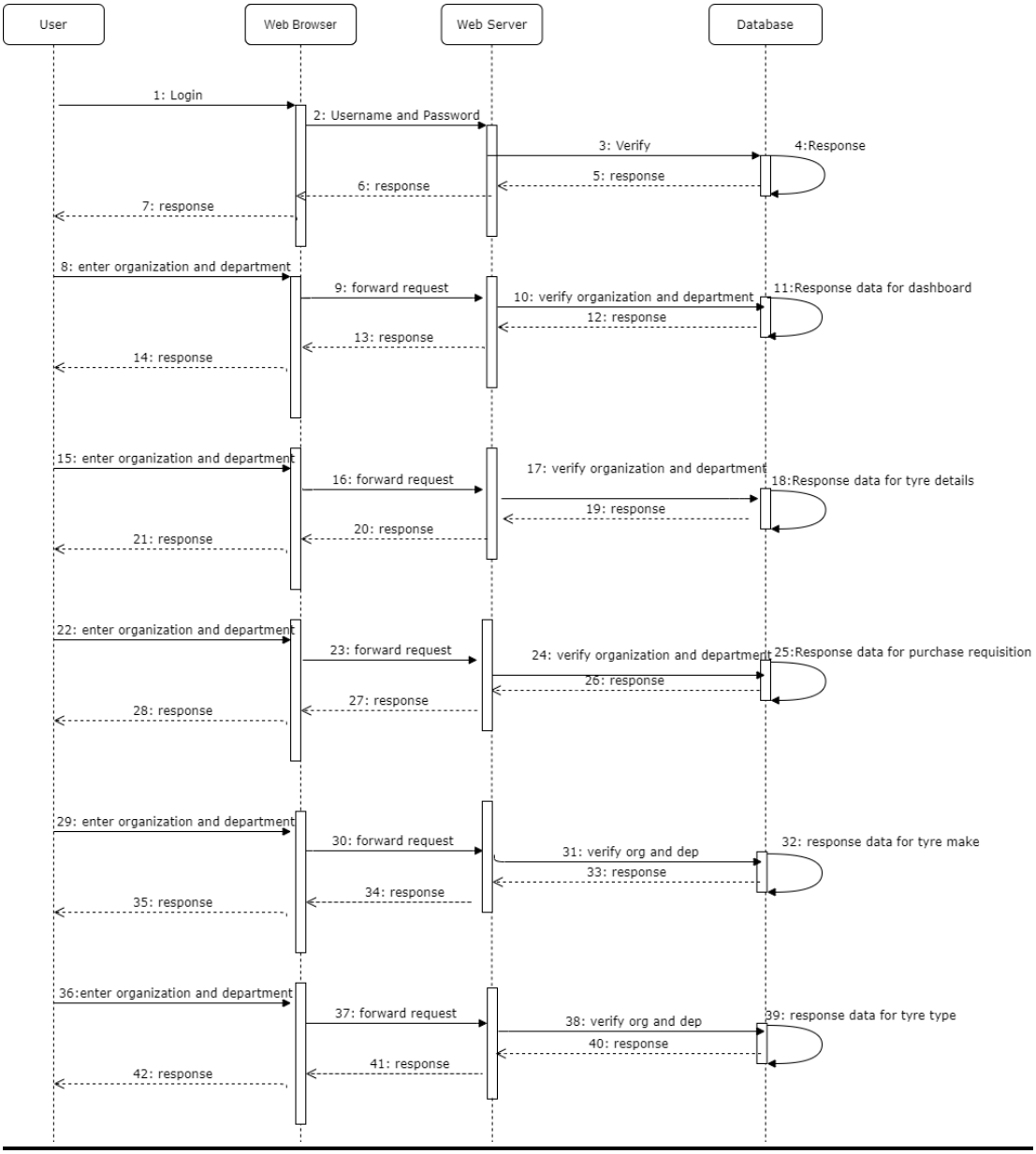
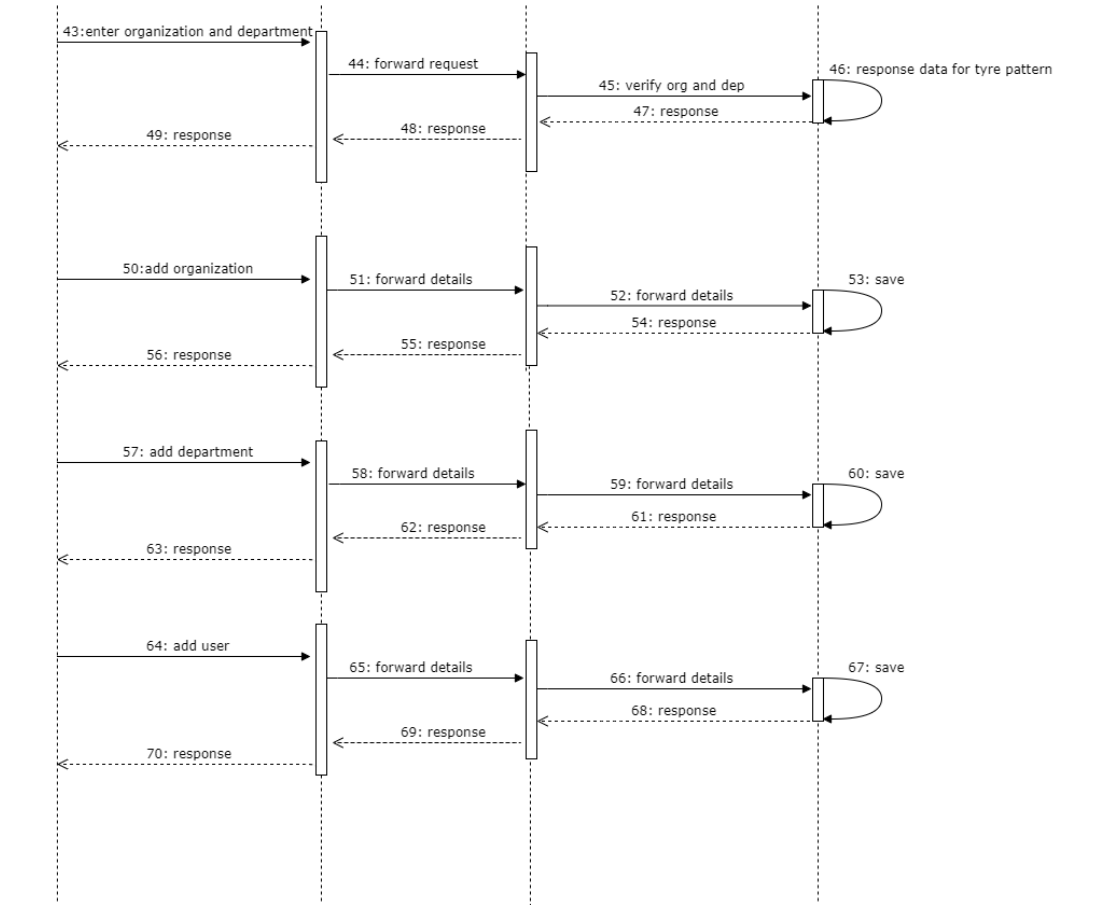
edit
add
tyre make
view
edit
add
tyre type
view
edit
add


tyre pattern
view
edit
add
report
tyre history
tyre performance
positionwise tyre
action plan
positionwise tyre
upload tyre km
view upload format
upload tyre km
logout

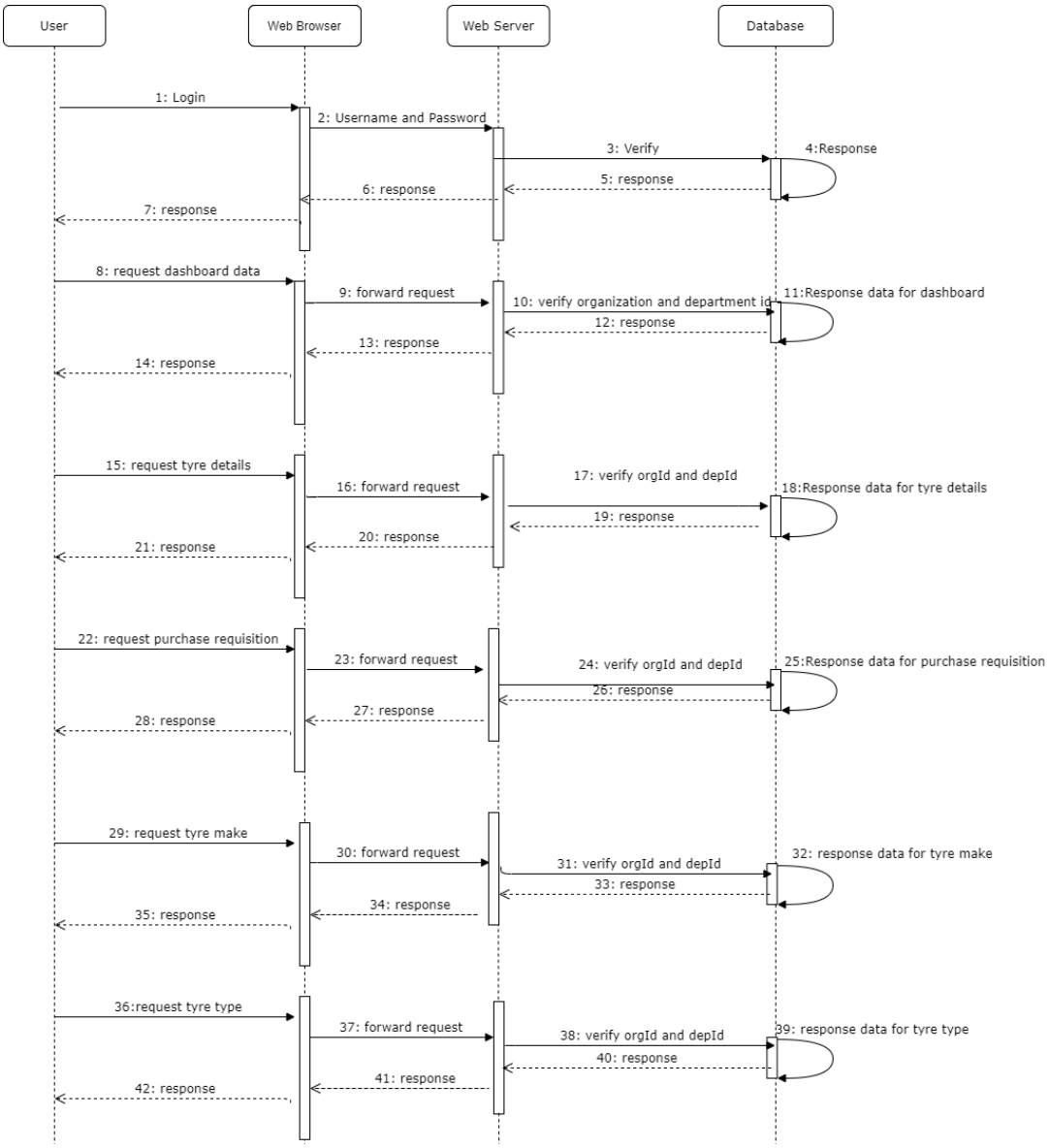
3.5 Sequence Diagram

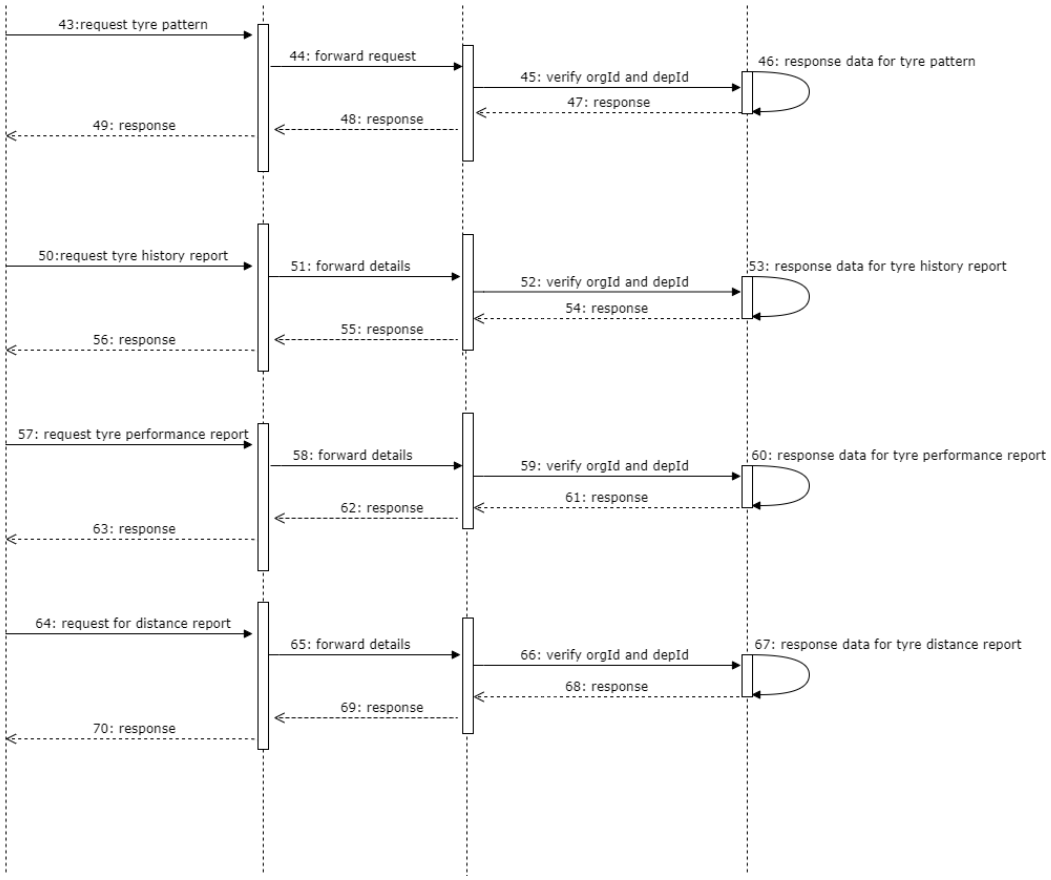
3.5.1 Admin Sequence Diagram



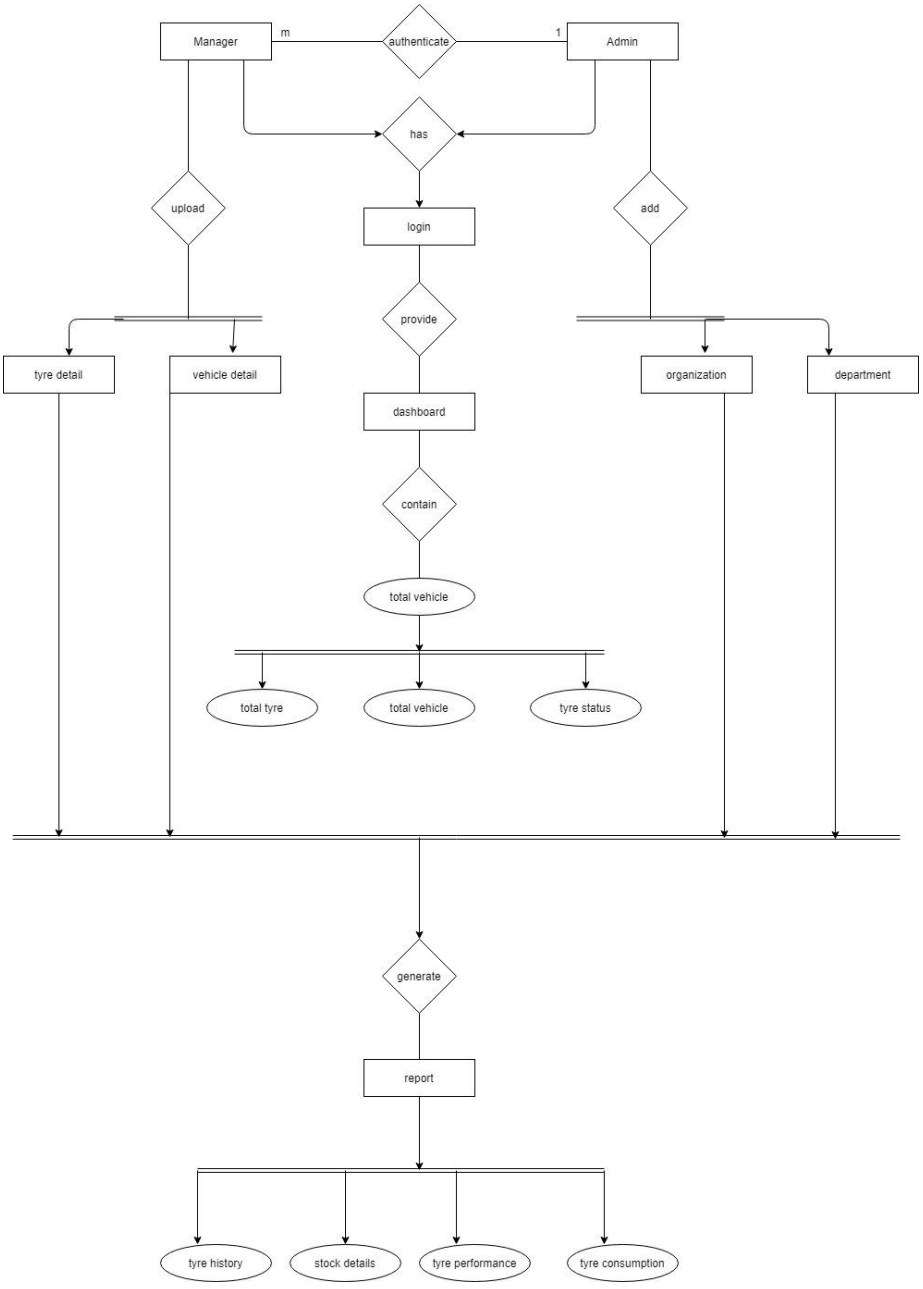

43:enter organization and department
44: forward request
45: verify org and dep
46: response data for tyre pattern
47: response
48: response
49: response
50:add organization
51: forward details
52: forward details
53: save
54: response
55: response
56: response
57: add department
58: forward details
59: forward details
60: save
61: response
62: response
63: response
64: add user
65: forward details
66: forward details
67: save
68: response
69: response
70: response

3.5.2 User Sequence Diagram

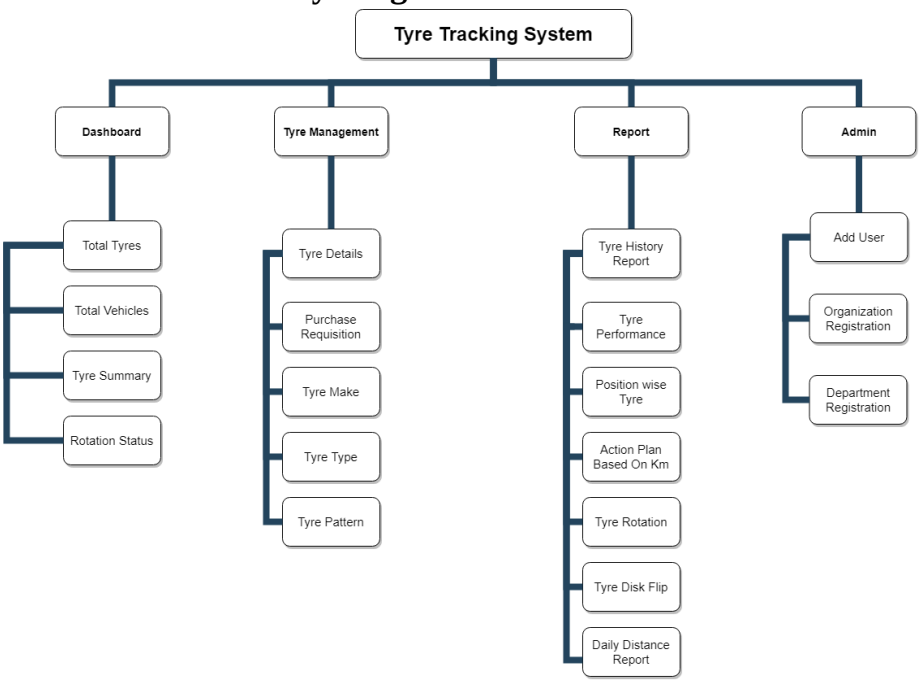



43:request tyre pattern
44: forward request
45: verify orgId and depId
46: response data for tyre pattern
47: response
48: response
49: response
50:request tyre history report
51: forward details
52: verify orgId and depId
53: response data for tyre history report
54: response
55: response
56: response
57: request tyre performance report
58: forward details
59: verify orgId and depId
60: response data for tyre performance report
61: response
62: response
63: response
64: request for distance report
65: forward details
66: verify orgId and depId
67: response data for tyre distance report
68: response
69: response
70: response

3.6 Entity Relationship Diagram



3.7 Module Hierarchy Diagram



3.10 Module Specification

Modules:

1) **Dashboard Module:**

In this module the user is presented with all the information regarding tyres such as total tyres, total vehicle, tyre status, tyre summary, rotation status in graphical format.

2) **Tyre Details Module:**

In tyre details module, the user is able to view all the tyres associated to his organization and its specific department by default. Optionally, the user can select specific vehicle corresponding to his organization and department to view only specific tyre information.

The user is presented with all the required information about tyre such as to which vehicle the tyre is associated, tyre number, tyre tag number, tyre position, tyre status, tyre type, tyre pattern, tyre make, etc.

The user is also presented multiple options to perform various operations on specific tyre from viewing

its history to changing its status, from adding new tyre to specific vehicle to dismounting the tyre, etc.

3) Tyre Management Module:

In tyre management module there are following 3 sub modules.

1) Tyre Make:

In this module the user can view the tyre make information of all the tyres that are used by the specific department of the organization.

The option for adding new tyre make, edit previous make data and delete make data is also available.

2) Tyre Type:

In this module the user can view the tyre type i.e. whether the tyre is tubeless or tube tyre on selecting the tyre make for his organization and department.

The option for adding new tyre type, edit previous type data and delete type data is also available.

3) Tyre Pattern:

In this module the user can view the tyre pattern which include tyre name, tyre size, tread pattern, benchmark Km specified by the manufacturer on selecting specific tyre type for specific tyre make for specific organization and department.

The option for adding new tyre pattern, edit previous pattern data and delete pattern data is also available.

4) Reports Module:

The user is presented with multiple reports for his organization and department which are as follows:

1) Tyre History:

In tyre history report, the user is presented with all the previous and current life status of tyre, tyre performance in various tyre phases and when was the last change updated.

2) Tyre Performance:

In this report the user is presented with average number of Kms travelled by specific tyre of the given make in various phases.

3) Action Plan Based On Km:

Based on the Kms travelled by the tyre in various tyre phases, the user then gets a notification when the tyre is near the end of its given phase to either change the tyre phase or perform tyre rotation.

4) Tyre Rotation:

Tyre rotation report specifies which tyre is on which vehicle and at what position and how many Kms the tyre travelled at that position.

5) Tyre Disk Flip:

Tyre disk flip report specifies which tyre is on which vehicle and at what position and how many Kms the tyre travelled at that position after disk flip.

6) Daily Distance Report:

Daily distance report specifies which tyre on which vehicle from what day to what date has travelled how much Kms.

7) Distance Summary Report:

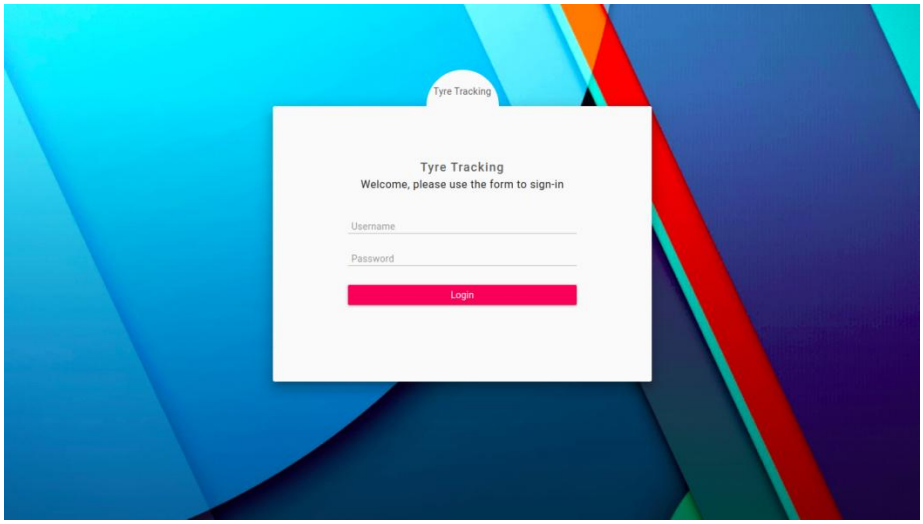
Distance summary report specifies which vehicle on what day has travelled how much Kms.

5) **Administration Module:**

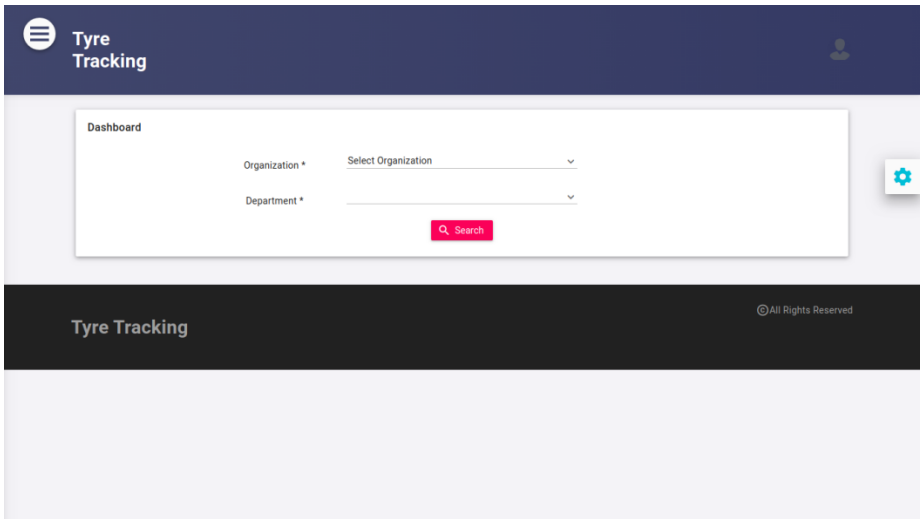
Admin handles and manages users, organizations and departments. He has the authority to add, update, and delete users, organizations and departments.

3.13 User Interface Design

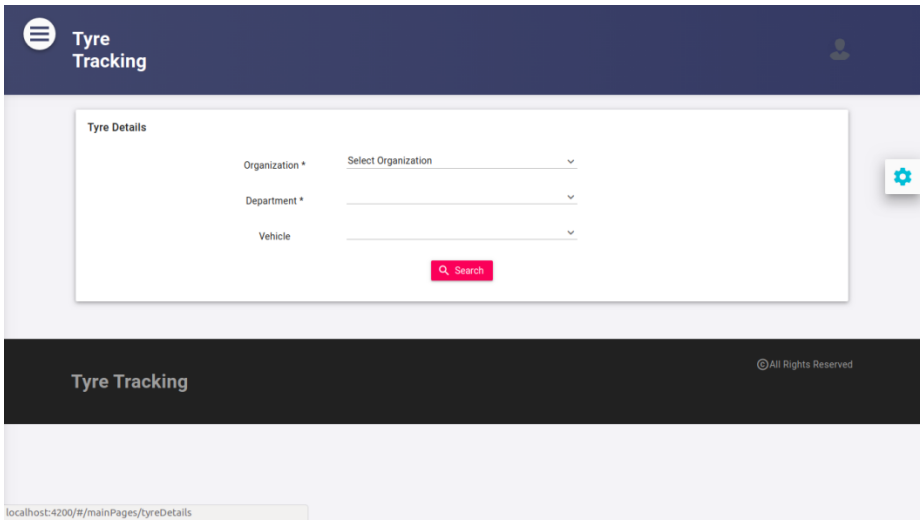
1. Login



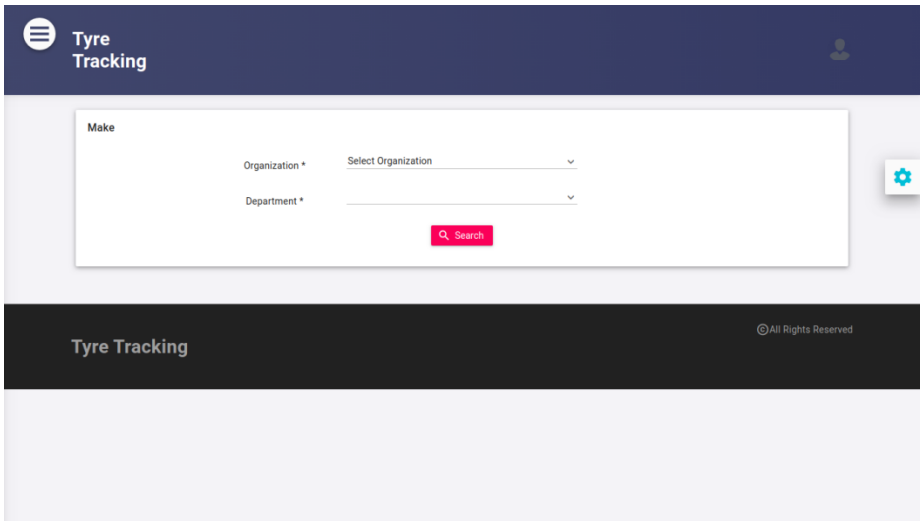
2. Dashboard



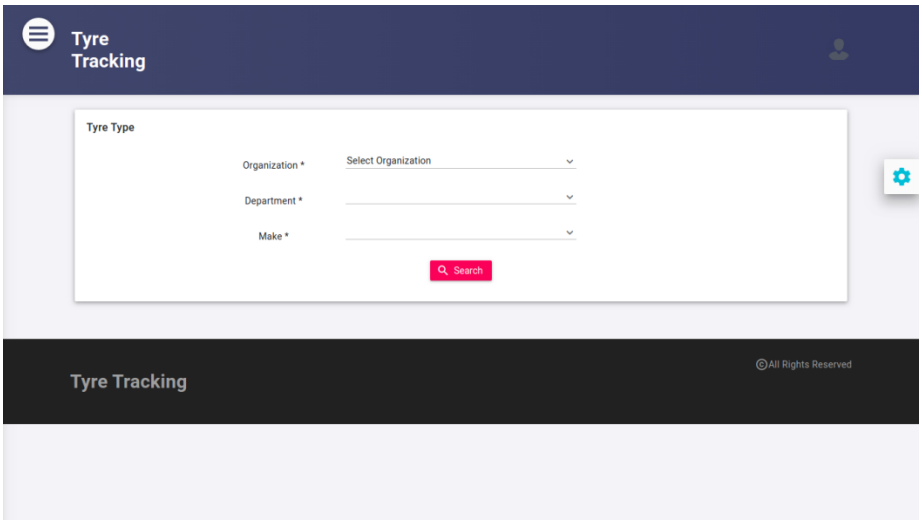
3. Tyre Details



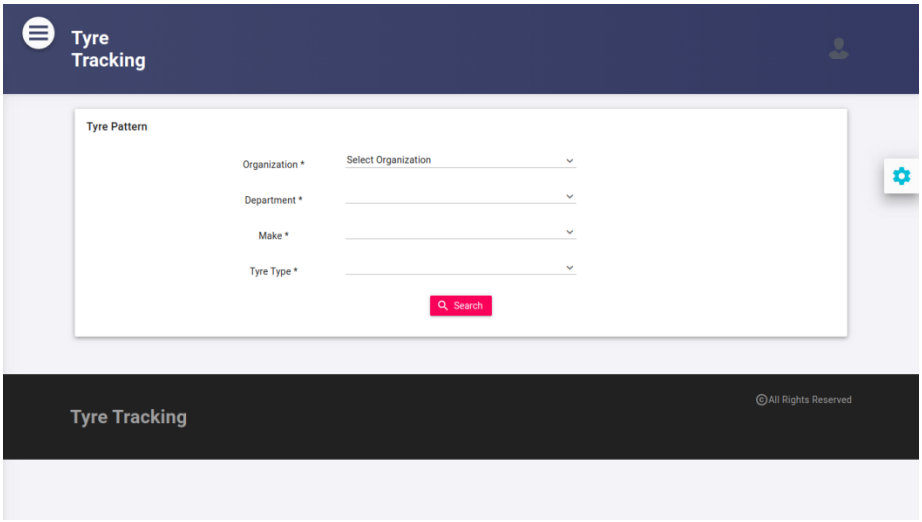
4. Tyre Make



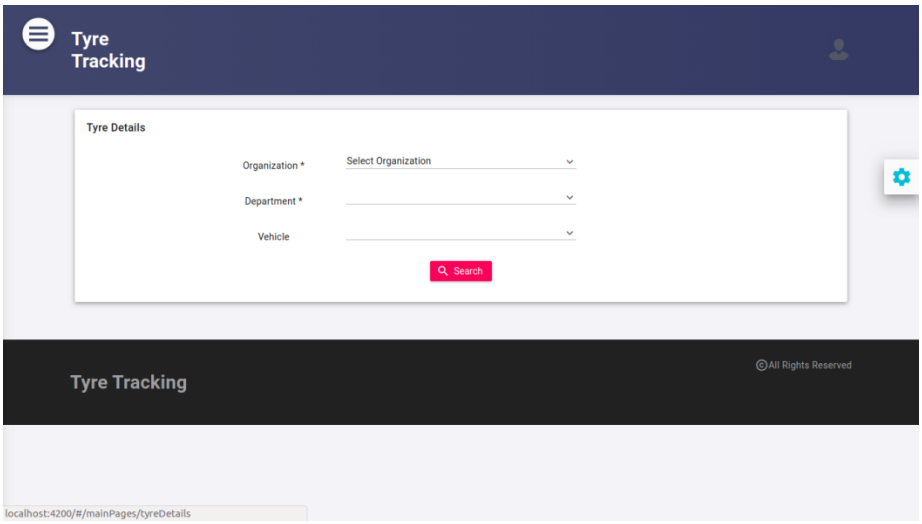
5. Tyre Type



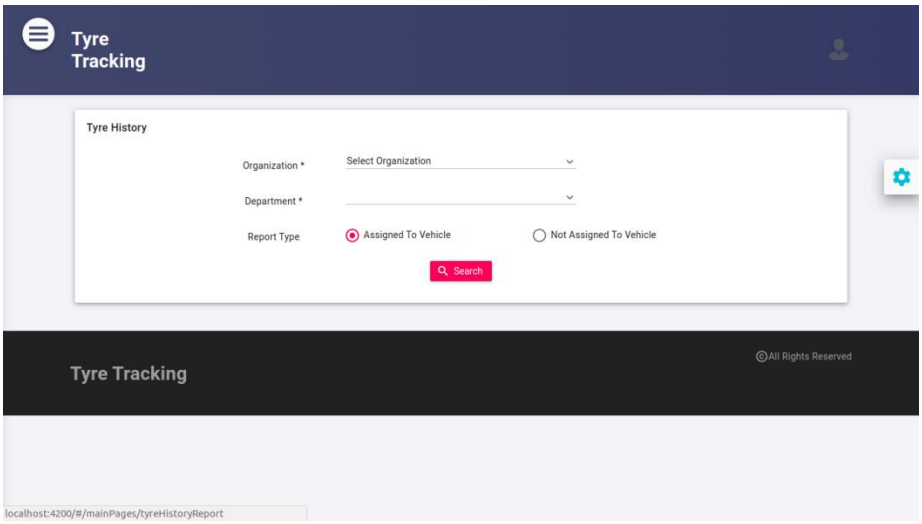
6. Tyre Pattern



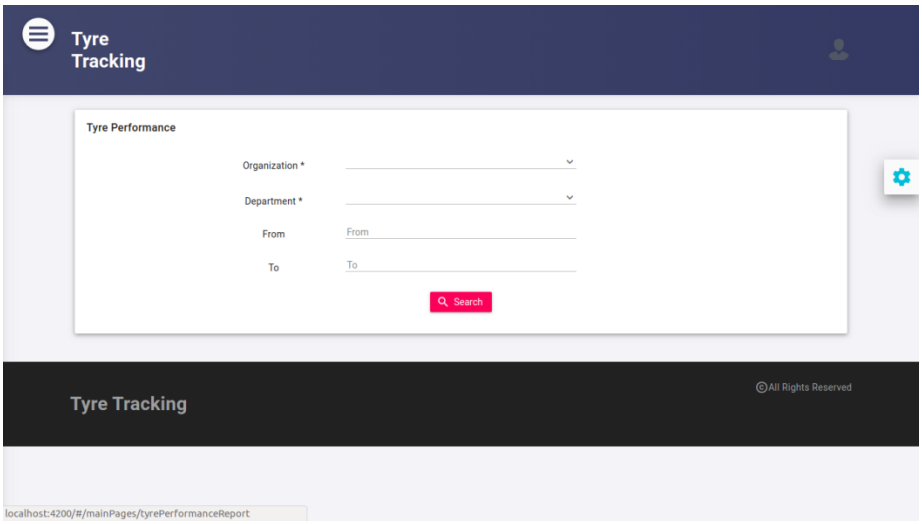
7. Tyre Details



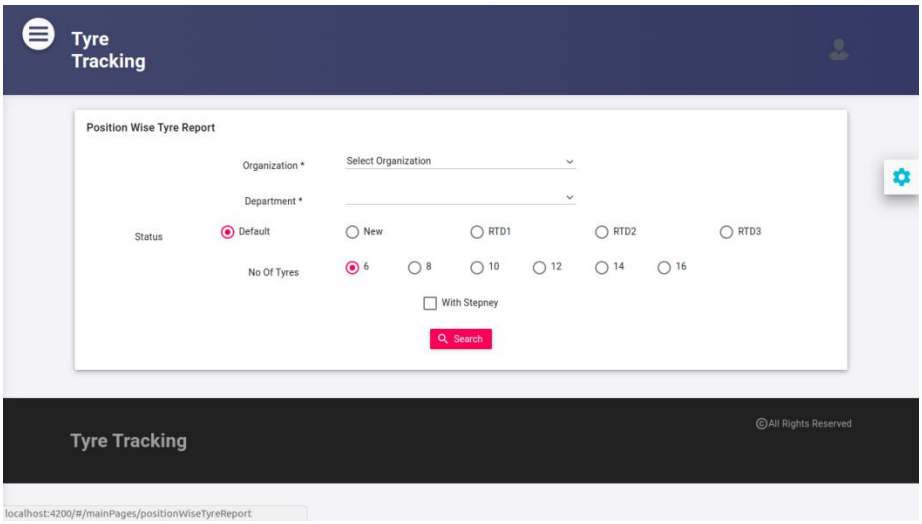
8. Tyre History



9. Tyre Performance



10. Position wise Tyre



3.14 Data Dictionary

Fields	Type	Size	Constraints	Description
ORG_ID	Smallint	5	Primary Key	Organization ID
ORG_NAME	Char	60	Not Null	Organization Name
ORG_ADDRESS	Varchar	100	Not Null	Organization Address
DEP_ID	Tinyint	3	Primary Key	Department ID
DEP_NAME	Varchar	100	Not Null	Department Name
DEP_ADDRESS	Varchar	100	Not Null	Department Address
DEP_CONTACT_NO	Char	15	Not Null	Department Contact Number
DEP_EMAIL_ID	Varchar	100	Not Null	Department Email
MAK_ID	Smallint	5	Primary Key	Tyre Make ID
MAK_NAME	Varchar	60	Not Null	Tyre Make Name
TTY_ID	Smallint	5	Primary Key	Tyre Type ID
TTY_NAME	Varchar	60	Not Null	Tyre Type Name
TPA_ID	Smallint	5	Primary Key	Tyre Pattern ID
TPA_NAME	Varchar	60	Not Null	Tyre Pattern

				Name
USR_ID	Smallint	5	Primary Key	User ID
UGP_ID	Tinyint	3	Not Null	User Group ID
USR_NAME	Char	20	Not Null	User Name
USR_PASSWORD	Char	40	Not Null	User Password
USR_FULL_NAME	Varchar	100	Not Null	User Name
TYR_ID	Smallint	5	Primary Key	Tyre ID
VEH_ID	Smallint	5	Primary Key	Vehicle ID
TYR_NO	Varchar	50	Not Null	Tyre Number
TYR_TAG_NO	Varchar	30	Not Null	Tyre Tag Number
TYR_POSITION	Varchar	30	Not Null	Tyre Position
TYR_LIFE_STATUS	Char	1	Not Null	Tyre Life Status (N = New , 1 = RTD1 , 2 = RTD2 , 3 = RTD3)
TYR_REMOULD_YN	Char	1	Not Null	Tyre Remould (Y= Yes , N = No)
TYR_SIZE	Varchar	20	Not Null	Tyre Size
TYR_NSD	Varchar	20	Not Null	Tyre NSD
TYR_BRAND	Varchar	50	Not Null	Tyre Brand

TYR_MAKE	Varchar	40	Not Null	Tyre Make
TYR_WORK_FLOW_STATUS	Char	1	Not Null	U = Usable , P = Punctured , R = Repair
TYR_NEW_RUNNING_KMS	float		Not Null	New Tyre Km
TYR_RTD1_RUNNING_KMS	float		Not Null	RTD1 Tyre Km
TYR_RTD2_RUNNING_KMS	float		Not Null	RTD2 Tyre Km
TYR_RTD3_RUNNING_KMS	float		Not Null	RTD3 Tyre Km
TYR_NEW_BENCHMARK_KMS	float		Not Null	New Tyre Benchmark Km
TYR_RTD1_BENCHMARK_KMS	float		Not Null	RTD1 Benchmark Tyre Km
TYR_RTD2_BENCHMARK_KMS	float		Not Null	RTD2 Benchmark Tyre Km
TYR_RTD3_BENCHMARK_KMS	float		Not Null	RTD3 Benchmark Tyre Km
TYR_ACTIVE_YN	Char	1	Not Null	Y = yes, N = No

3.15 Table Specification

1. Tyre

Fields	Type	Size	Constraints	Description
TYR_ID	Smallint	5	Primary Key	Tyre ID
VEH_ID	Smallint	5	Primary Key	Vehicle ID
TYR_NO	Varchar	50	Not Null	Tyre Number
TYR_TAG_NO	Varchar	30	Not Null	Tyre Tag Number
TYR_POSITION	Varchar	30	Not Null	Tyre Position
TYR_LIFE_STATUS	Char	1	Not Null	Tyre Life Status (N = New , 1 = RTD1 , 2 = RTD2 , 3 = RTD3)
TYR_REMOULD_YN	Char	1	Not Null	Tyre Remould (Y= Yes , N = No)
TYR_SIZE	Varchar	20	Not Null	Tyre Size
TYR_NSD	Varchar	20	Not Null	Tyre NSD
TYR_BRAND	Varchar	50	Not Null	Tyre Brand
TYR_MAKE	Varchar	40	Not Null	Tyre Make

TYR_WORK_FLOW_STATUS	Char	1	Not Null	U = Usable , P = Punctured , R = Repair
TYR_NEW_RUNNING_KMS	float		Not Null	New Tyre Km
TYR_RTD1_RUNNING_KMS	float		Not Null	RTD1 Tyre Km
TYR_RTD2_RUNNING_KMS	float		Not Null	RTD2 Tyre Km
TYR_RTD3_RUNNING_KMS	float		Not Null	RTD3 Tyre Km
TYR_NEW_BENCHMARK_KMS	float		Not Null	New Tyre Benchmark Km
TYR_RTD1_BENCHMARK_KMS	float		Not Null	RTD1 Benchmark Tyre Km
TYR_RTD2_BENCHMARK_KMS	float		Not Null	RTD2 Benchmark Tyre Km
TYR_RTD3_BENCHMARK_KMS	float		Not Null	RTD3 Benchmark Tyre Km
TYR_ACTIVE_YN	Char	1	Not Null	Y = yes, N = No

2. Organization

Fields	Type	Size	Constraints	Description
ORG_ID	Smallint	5	Primary Key	Organization ID
ORG_NAME	Char	60	Not Null	Organization Name
ORG_ADDRESS	Varchar	100	Not Null	Organization Address

3. Department

Fields	Type	Size	Constraints	Description
DEP_ID	Tinyint	3	Primary Key	Department ID
DEP_NAME	Varchar	100	Not Null	Department Name
DEP_ADDRESS	Varchar	100	Not Null	Department Address
DEP_CONTACT_NO	Char	15	Not Null	Department Contact Number
DEP_EMAIL_ID	Varchar	100	Not Null	Department Email

4. Make

Fields	Type	Size	Constraints	Description
MAK_ID	Smallint	5	Primary Key	Tyre Make ID
MAK_NAME	Varchar	60	Not Null	Tyre Make Name

5. Tyre Type

Fields	Type	Size	Constraints	Description
TTY_ID	Smallint	5	Primary Key	Tyre Type ID
TTY_NAME	Varchar	60	Not Null	Tyre Type Name

6. Tyre pattern

Fields	Type	Size	Constraints	Description
TPA_ID	Smallint	5	Primary Key	Tyre Pattern ID
TPA_NAME	Varchar	60	Not Null	Tyre Pattern Name

7. User

Fields	Type	Size	Constraints	Description
USR_ID	Smallint	5	Primary Key	User ID
UGP_ID	Tinyint	3	Not Null	User Group ID
USR_NAME	Char	20	Not Null	User Name
USR_PASSWORD	Char	40	Not Null	User Password
USR_FULL_NAME	Varchar	100	Not Null	User Name

3.16 Test Procedures and Implementation

ID	Objective	Action	Expected Result	Actual Result	Status
1	Incorrect Username and Password	Display Error Message	Error at Sign in for Wrong Username and Password Message Display	Error message gets displayed	Pass
2	Correct Username and Password	Redirect	Redirect to dashboard Screen.	Redirected to Dashboard Home Screen.	Pass
3	Click on search button without selecting organization and department	Display warning message	Warning to select all required fields	Warning message to select required fields	Pass
4	Select organization and click search	Display warning message to select department	Warning to select department	Warning message to select department	Pass
5	Select organization and department and click search for no available data	Display informative message to inform user about no available data	Message about no data	Message about no data available	Pass

6	Select organization and department and click search for data	Display appropriate data inside table	Display data in table	Display data in table	Pass
7	Select from date greater than to date	Display error message	Display from date should be less than to date and clear both fields	Display from date should be less than to date and clear both fields	Pass
8	Select from date less than to date	Proceed for further input	Focus on next input	Focus on next input	Pass
9	Enter text for mobile number	Display error message while entering text	Display invalid format error while entering text	Display invalid format error while entering text	Pass
10	Hide button based on table column data	Hide specific button for specific record if column is blank	Hide button	Hide Button	Pass
11	Click on add record without entering data	Display error message to notify user about blank fields	Display error message	Display error message	Pass
12	Without entering required	Disable save button until all required	Disable save button	Disable save button	Pass

	fields disable save button	fields are entered			
13	On cancel button click clear all input values	Clear all input values on cancel button click	Clear input values	Clear input values	Pass
14	Redirect user to access denied page when accessing administrative forms	Redirect to access denied form for administrative privileges	Redirect to access denied form	Redirect to access denied form	Pass
15	Display reports to user based on his orgId and depId and hide organization and department selection	Hide organization and department selection for user and display reports based on his orgId and depId	Hide selection and display report	Hide selection and display report	Pass

Chapter 4: USER MANUAL

4.1 User manual

4.2 Menu Explanation

4.3 Program Specification

4.1 User Manual

Login:-

1. User enters valid username and password.
2. Click onto Login Button.

Dashboard:-

1. Display data in graphical format for his organization and department.

Tyre Details:-

1. Display entire tyre related data in table.
2. Provides user with various options to view logs, dismount tyre, assign tyre, swap tyre, etc.
3. Allows user to download data CSV.

Tyre Make:-

1. Display tyres make related data in table.
2. Provides user to add, update, delete make data.
3. Allows user to download data CSV.

Tyre Type:-

1. Display tyres type related data in table.
2. Provides user to add, update, delete make data.
3. Allows user to download data CSV.

Tyre Pattern:-

1. Display tyres pattern related data in table.
2. Provides user to add, update, delete make data.
3. Allows user to download data CSV.

Tyre History:-

1. Display tyres history in table for his organization and department.
2. Allows user to download data CSV.

Tyre Performance:-

1. Display tyres performance in table for his organization and department.
2. Allows user to download data CSV.

Position wise Tyre:-

1. Display position wise tyre in table for his organization and department.
2. Allows user to download data CSV.

Action Plan Based on Km:-

1. Display action plan in table for his organization and department.
2. Allows user to download data CSV.

Tyre Rotation:-

1. Display tyre rotation information in table for his organization and department.
2. Allows user to download data CSV.

Tyre Disk Flip:-

1. Display tyre disk flip information in table for his organization and department.
2. Allows user to download data CSV.

Daily Distance Report:-

1. Display daily Kms travelled by tyre on selection on date in table for his organization and department.
2. Also data is shown in bar graph.
3. Allows user to download data CSV.

Distance Summary Report:-

1. Display distance summary information for selected date of vehicle in table for his organization and department.
2. Allows user to download data CSV.

4.2 Menu Explanation

1. User logs into Tyre Tracking.
2. User is presented with dashboard with all the required information about tyres related to his organization and department.
3. Click on the menu icon to view all available menus.
4. User clicks on tyre details menu-
    4.1. User is presented with all tyres associated with his organization and department and their corresponding information.
    4.2. Option to download CSV file is available.
    4.3. Multiple options are provided to perform various operations on tyres inside the table.
5. User clicks on tyre make-
    5.1. User is presented with tyre make data.
    5.2. He can also perform various tasks such as add, update or delete any tyre make.
    5.3. CSV file download is also available.

6. User clicks on tyre type-
    6.1. User needs to select any tyre make and data based on that make is presented to user.
    6.2. He can also perform various tasks such as add, update or delete any tyre type.
    6.3. CSV file download is also available.

7. User clicks on tyre pattern-
    7.1. User needs to select tyre make based on which tyre types need to be selected and data based on those selections is presented to user.
    7.2. He can also perform various tasks such as add, update or delete any tyre pattern.
    7.3. CSV file download is also available.

8. User clicks on tyre history report-
    8.1. User needs to select either from the two options and click search to see data.
    8.2. CSV file download is also available.

9. User clicks on tyre performance report-
    9.1. User is presented tyre performance report.
    9.2. Optionally he can select from date and to date for viewing result. By default all information is loaded
    9.3. CSV file download is also available.

10. User clicks on position wise tyre report-
    10.1. User needs to select any one of status, any one of no of tyres, and optionally can select with Stepney based on which data is presented to user.
    10.2. CSV file download is also available.

11. User clicks on action plan based on Km report-
    11.1. User needs to select any one of the status based on which data is presented to user.
    11.2. CSV file download is also available.

12. User clicks on tyre rotation report-
    12.1. User is presented tyre rotation report.
    12.2. CSV file download is also available.

13. User clicks on tyre disk flip report-

    13.1. User is presented tyre disk flip report.

    13.2. CSV file download is also available.

14. User clicks on daily distance report-

    14.1. User needs to select vehicle, from date and to date to view report.

    14.2. CSV file download is also available.

15. User clicks on distance summary report-

    15.1. User needs to select date to view report.

    15.2. CSV file download is also available.

4.3 Program Specification

Program Name	Constraint	Description
Login	Enter correct username and password.	Login details get checked against database.
Dashboard	Access is based on user login.	Only data related to that specific user is accessible.
Tyre Details	By default information about all vehicles is available. Optionally user can select a specific vehicle to view only its details.	Further actions can be performed against each tyre.
Tyre Make	By default user is presented with data. Further he can perform operations like add, update or delete with all required parameters.	Any updated details gets stored in database and reflected as soon as status becomes success.
Tyre Type	User needs to select tyre make to view data. Further he can perform operations like add, update or delete with all required parameters.	Any updated details gets stored in database and reflected as soon as status becomes success.

Tyre Pattern	User needs to select tyre make and tyre type to view data. Further he can perform operations like add, update or delete with all required parameters.	Any updated details gets stored in database and reflected as soon as status becomes success.
Tyre History Report	User needs to select any one of the parameter to view report.	Only data related to that specific parameter is displayed.
Tyre Performance Report	By default user is presented with data. Optionally he can select from what date to what date he needs to view data.	By default every record specific to user is displayed. For selected date only records for those dates are displayed.
Position wise tyre	User needs to select any one from the status and no of tyres. Optionally he can choose whether he wants to view Stepney data as well.	Data related to selected parameters is displayed.
Action plan based on Km	User needs to select any one from the status.	Data related to selected parameter is displayed.

Tyre disk flip report	By default user is presented with data associated to his organization and department.	Every record specific to user is displayed.
Tyre rotation report	By default user is presented with data associated to his organization and department.	Every record specific to user is displayed.
Daily distance report	User needs to select a vehicle and specify from date and to date to view data.	Data based on selected parameters is displayed to user.
Distance summary report	User needs to select date to view data.	Data based on selected parameters is displayed to user.

Drawbacks and Limitations

- Manual entry is required since the instrument has got limitation to connect to database.

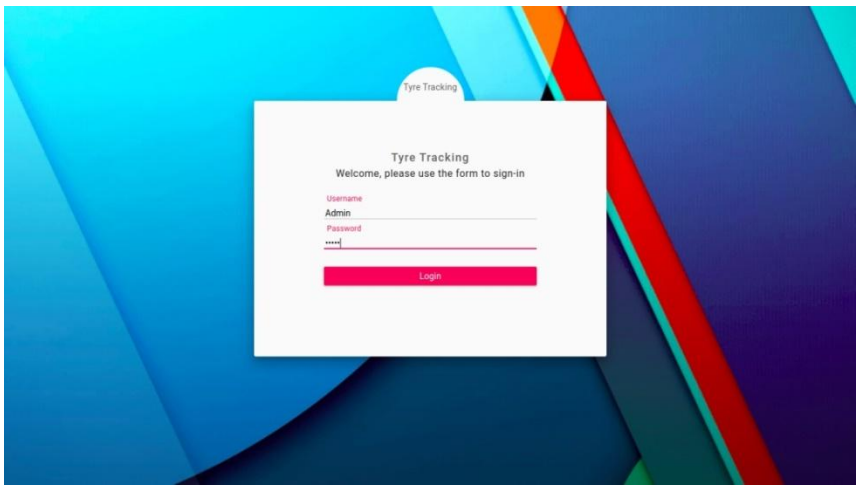
Proposed Enhancements

- The project can be further enhanced for studying life of remoulded tyres.

Annexures

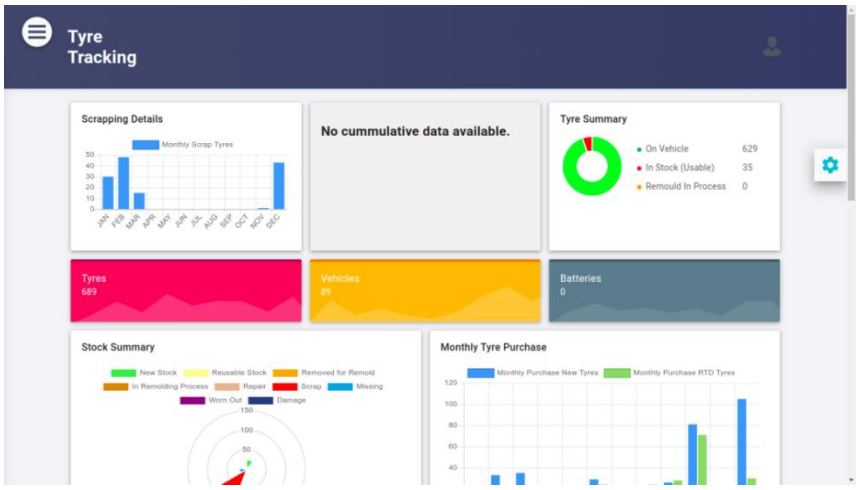
Annexure 1

1. Login

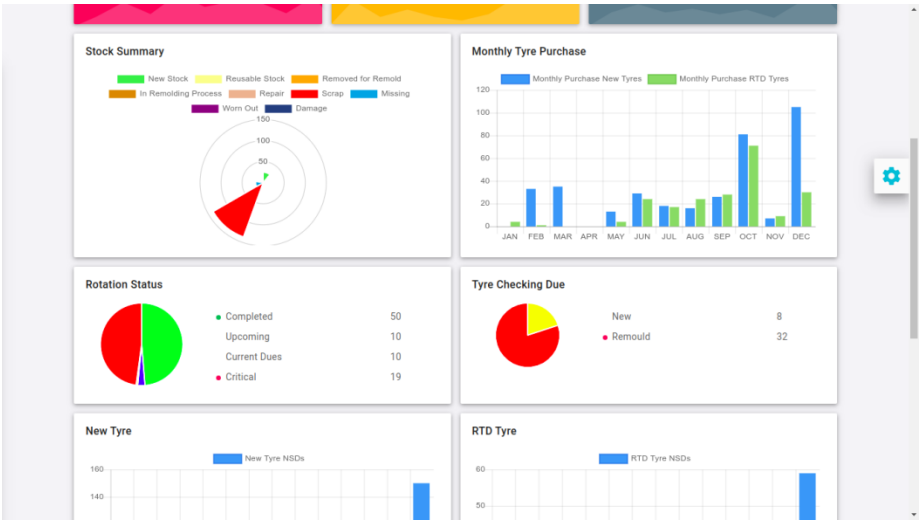


2. Dashboard

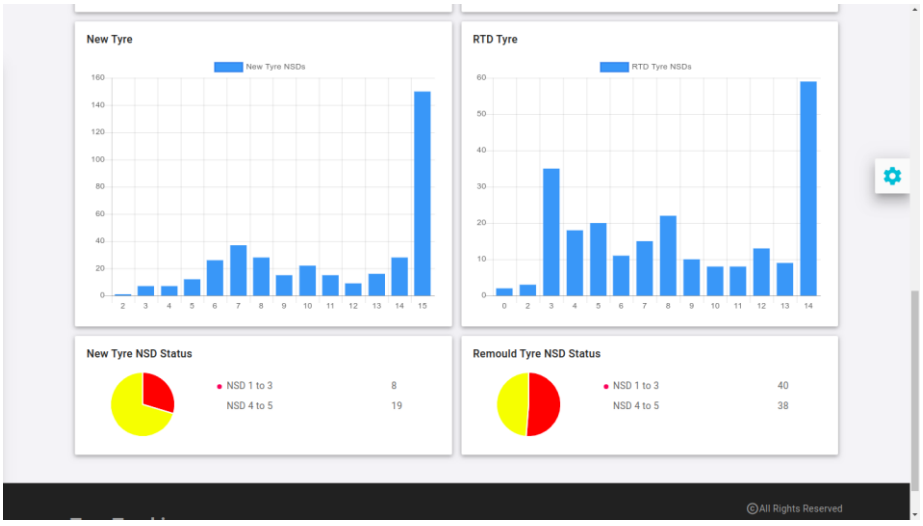
2.1.



2.2.

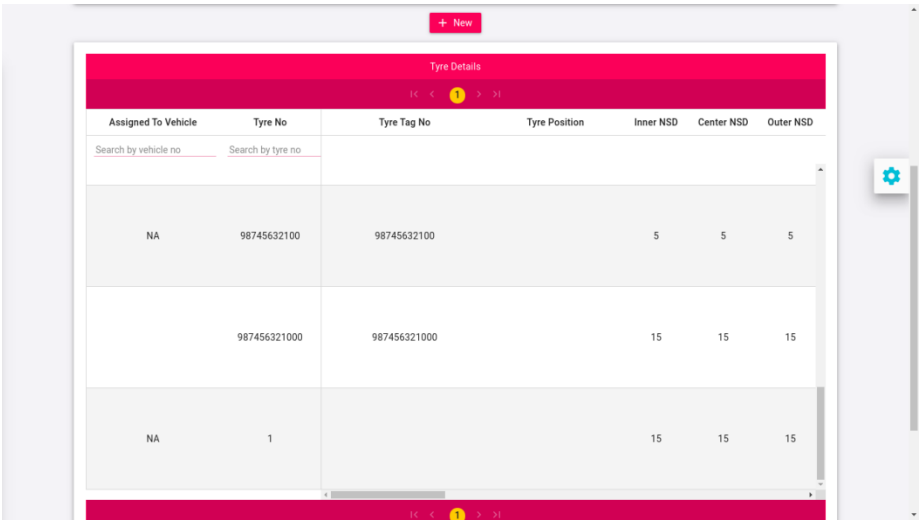


2.3.

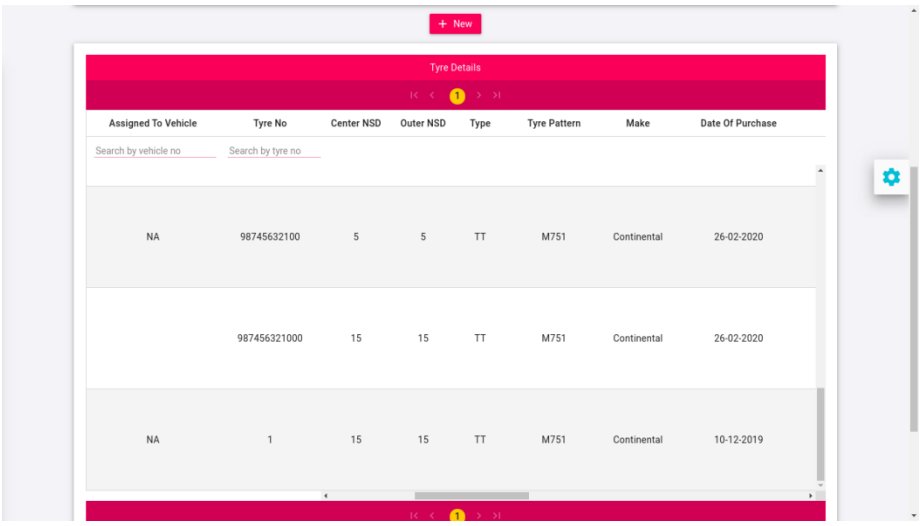


3. Tyre Details

3.1.


+ New
Tyre Details
Assigned To Vehicle
Tyre No
Tyre Tag No
Tyre Position
Inner NSD
Center NSD
Outer NSD
Search by vehicle no
Search by tyre no
NA
98745632100
98745632100
5
5
5
987456321000
987456321000
15
15
15
NA
1
15
15
15

3.2.


+ New
Tyre Details
Assigned To Vehicle
Tyre No
Center NSD
Outer NSD
Type
Tyre Pattern
Make
Date Of Purchase
Search by vehicle no
Search by tyre no
NA
98745632100
5
5
TT
M751
Continental
26-02-2020
987456321000
15
15
TT
M751
Continental
26-02-2020
NA
1
15
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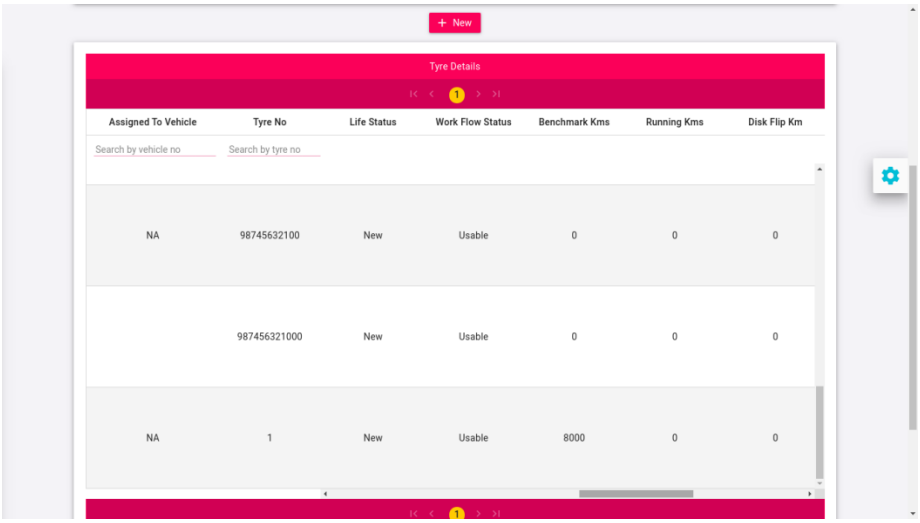
TT
M751
Continental
10-12-2019

3.3.


New
Tyre Details
Assigned To Vehicle
Tyre No
Life Status
Work Flow Status
Benchmark Kms
Running Kms
Disk Flip Km
Search by vehicle no
Search by tyre no
NA
98745632100
New
Usable
0
0
0
98745632100
New
Usable
0
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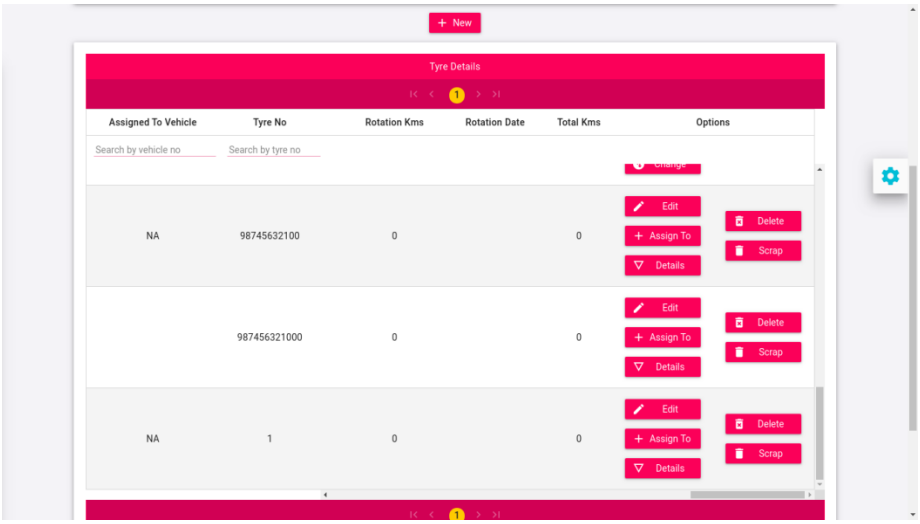
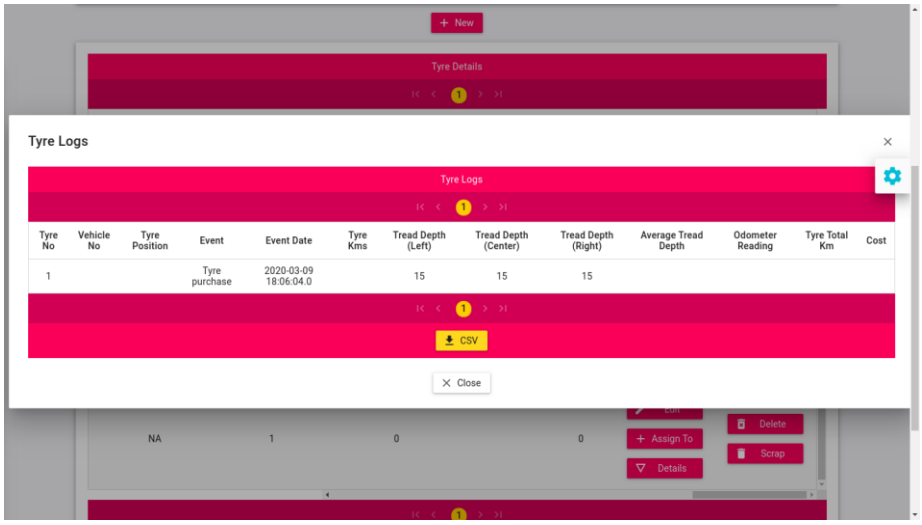
0
NA
1
New
Usable
8000
0
0

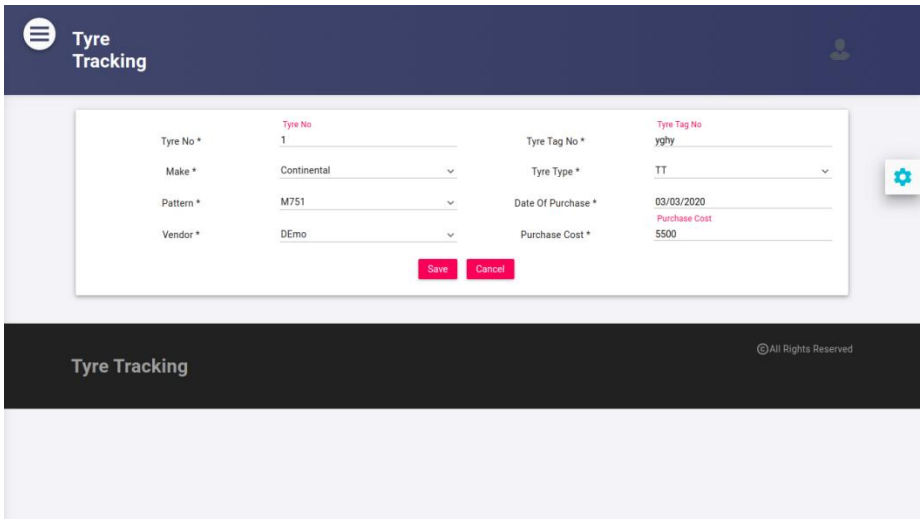
3.4.


New
Tyre Details
Assigned To Vehicle
Tyre No
Rotation Kms
Rotation Date
Total Kms
Options
Search by vehicle no
Search by tyre no
Edit
Assign To
Details
Delete
Scrap
NA
98745632100
0
0
98745632100
0
0
NA
1
0
0

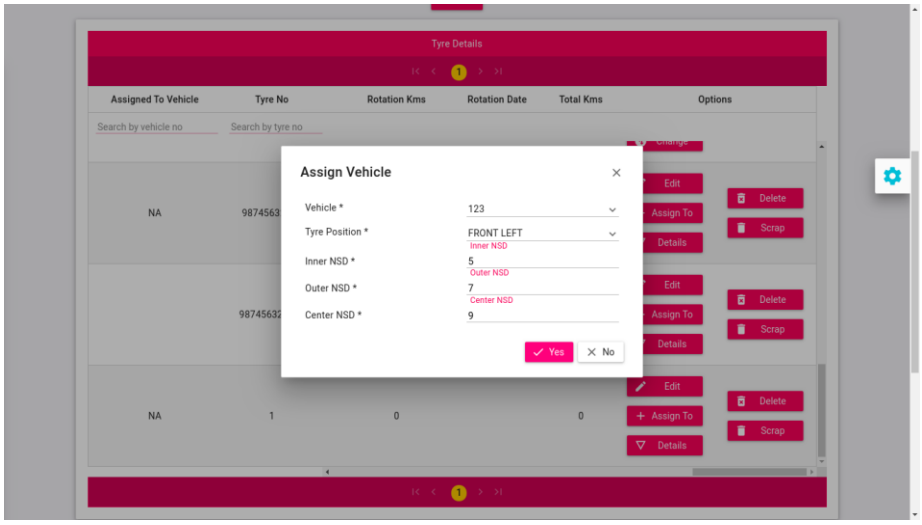
3.5.


New
Tyre Details
Tyre Logs
Tyre Logs
Tyre No
Vehicle No
Tyre Position
Event
Event Date
Tyre Kms
Tread Depth (Left)
Tread Depth (Center)
Tread Depth (Right)
Average Tread Depth
Odometer Reading
Tyre Total Km
Cost
1
Tyre purchase
2020-03-09 18:06:04.0
15
15
15
CSV
Close
NA
1
0
0
Assign To
Delete
Scrap
Details

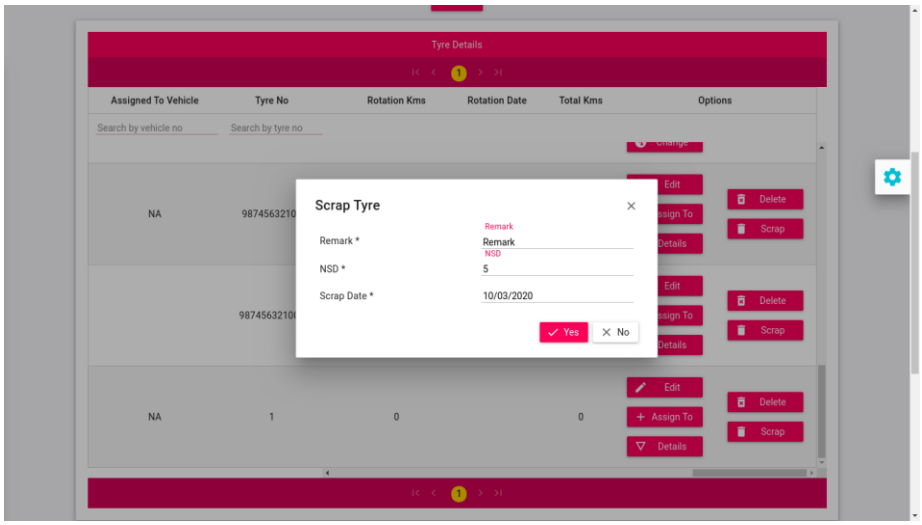
3.6.


Tyre Tracking
Tyre No *
Tyre No
1
Tyre Tag No *
Tyre Tag No
yghy
Make *
Continental
Tyre Type *
TT
Pattern *
M751
Date Of Purchase *
03/03/2020
Vendor *
DEmo
Purchase Cost *
Purchase Cost
5500
Save
Cancel
Tyre Tracking
©All Rights Reserved

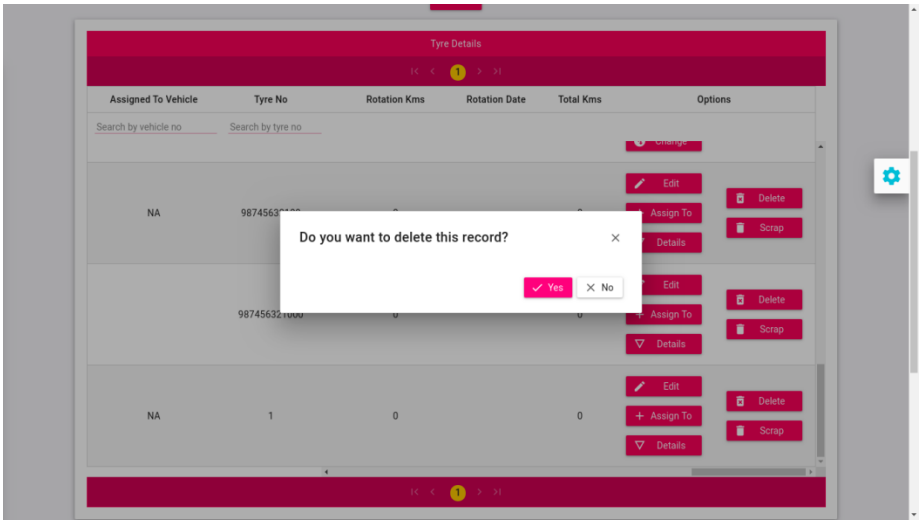
3.7.


Tyre Details
Assigned To Vehicle
Tyre No
Rotation Kms
Rotation Date
Total Kms
Options
Search by vehicle no
Search by tyre no
Assign Vehicle
Vehicle *
123
Tyre Position *
FRONT LEFT
Inner NSD
Inner NSD *
5
Outer NSD
Outer NSD *
7
Center NSD
Center NSD *
9
Yes
No
NA
Edit
Assign To
Details
Delete
Scrap

3.8.

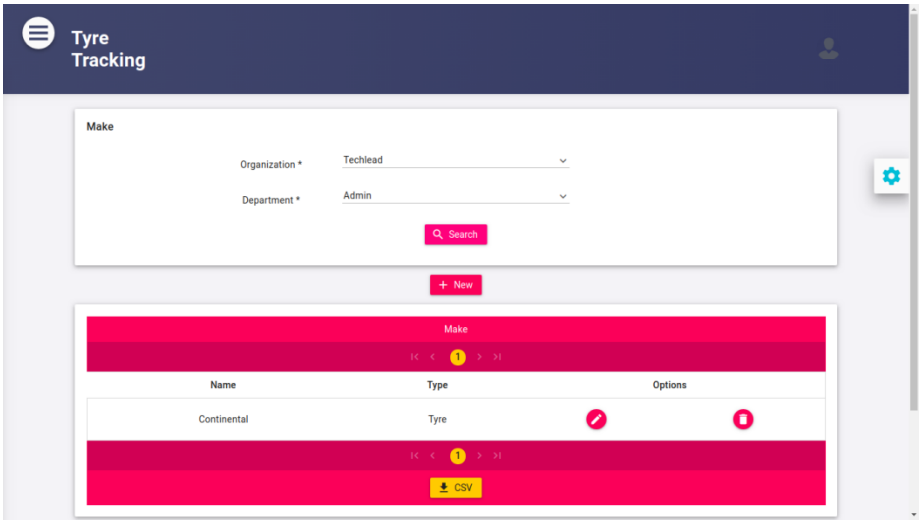

Tyre Details
Assigned To Vehicle
Tyre No
Rotation Kms
Rotation Date
Total Kms
Options
Search by vehicle no
Search by tyre no
Scrap Tyre
Remark
Remark *
Remark
NSD
NSD *
5
Scrap Date *
10/03/2020
Yes
No
NA
Edit
Assign To
Details
Delete
Scrap

3.9.

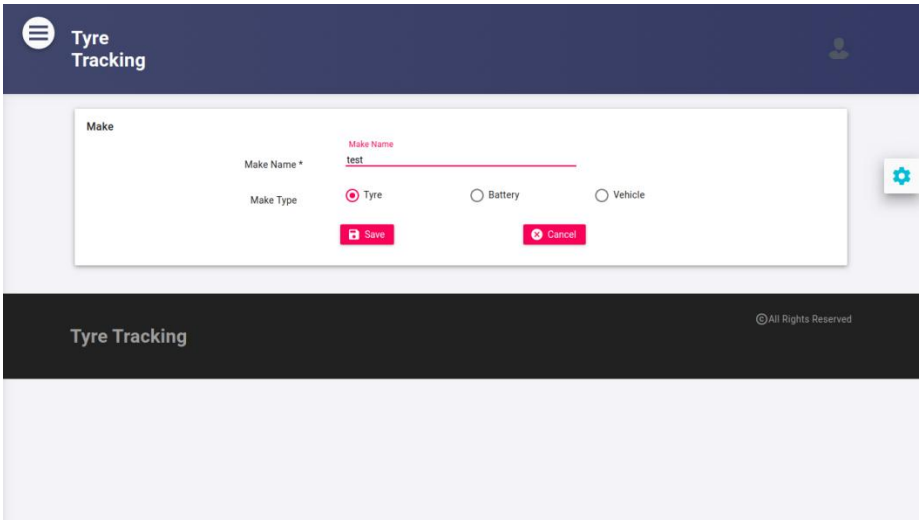


4. Tyre Make

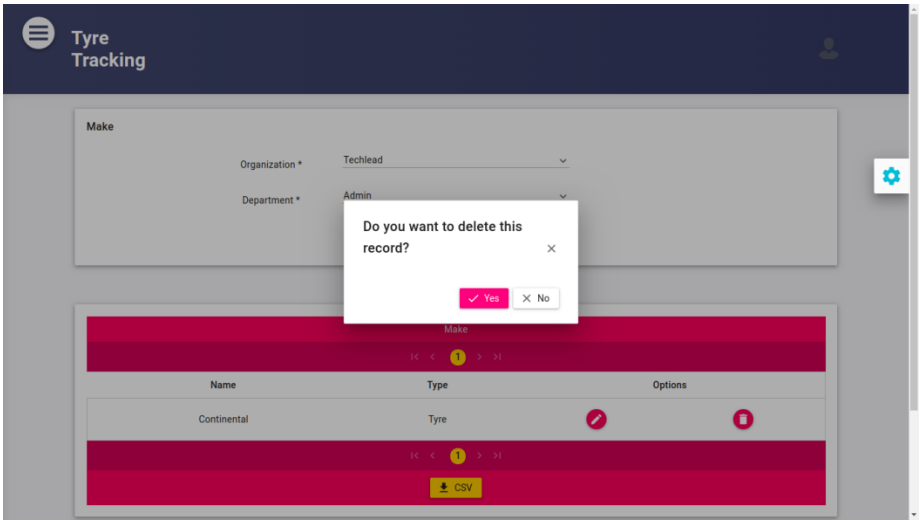
4.1.



4.2.

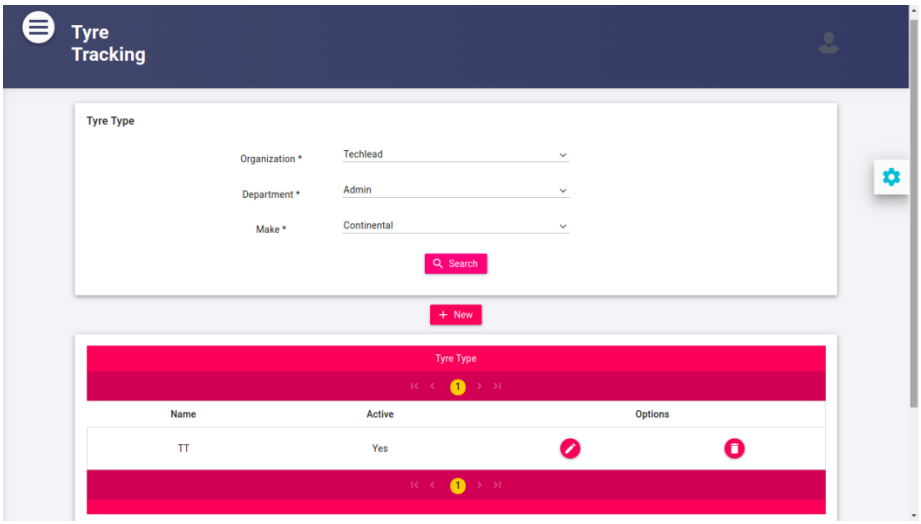

Tyre
Tracking
Make
Make Name *
Make Name
test
Make Type
Tyre
Battery
Vehicle
Save
Cancel
Tyre Tracking
©All Rights Reserved

4.3.

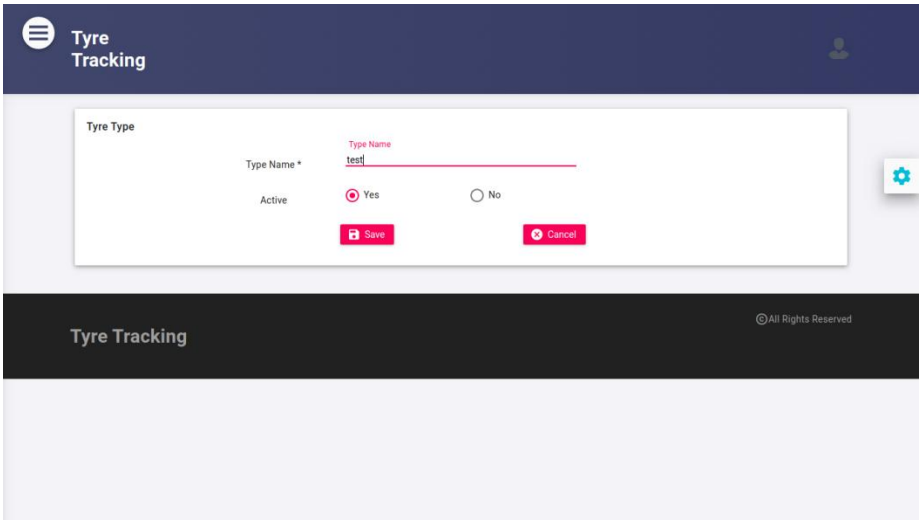

Tyre
Tracking
Make
Organization *
Techlead
Department *
Admin
Do you want to delete this record?
Yes
No
Make
Name
Type
Options
Continental
Tyre
CSV

5. Tyre Type

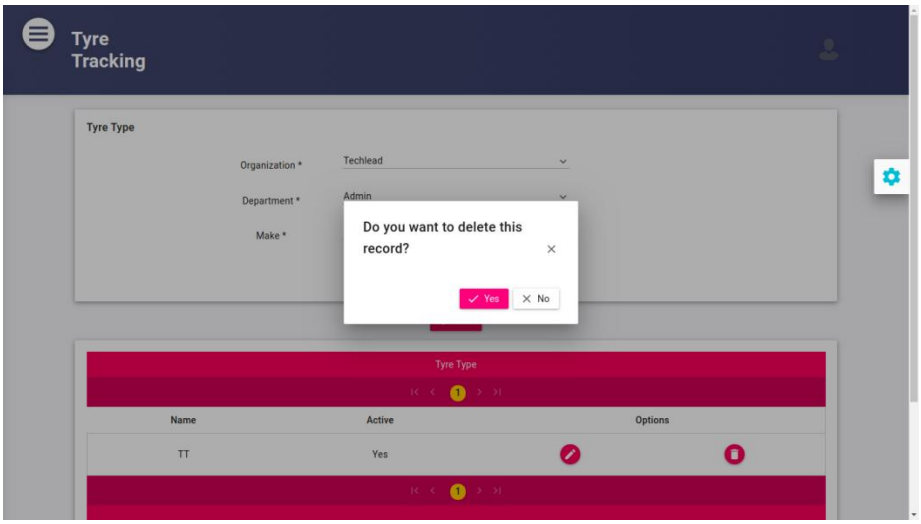
5.1.



5.2.

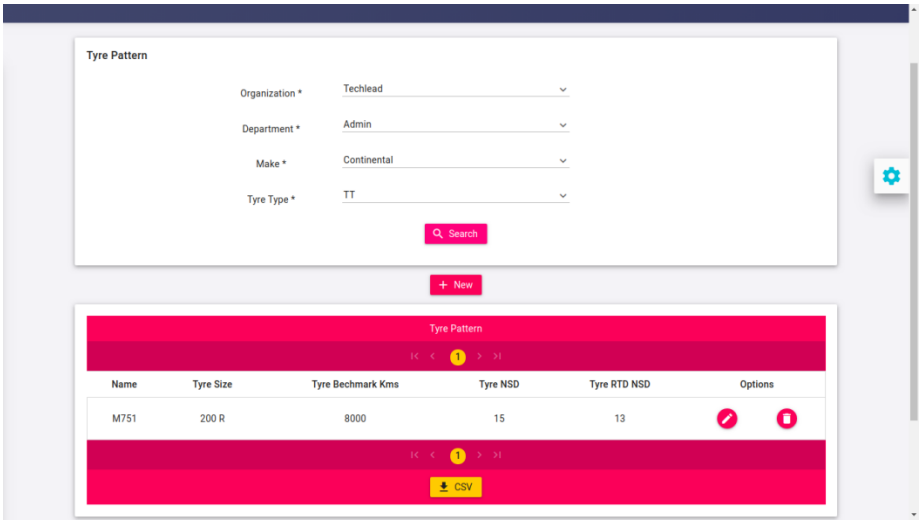


5.3.

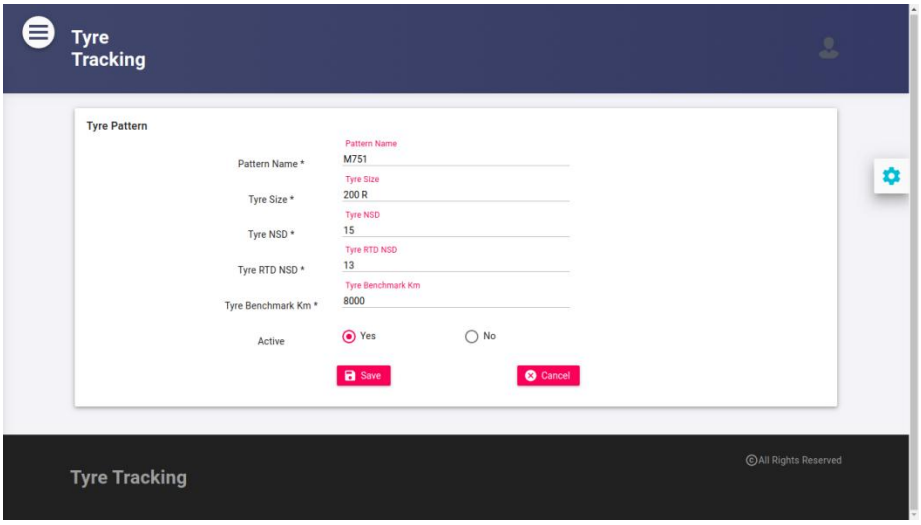


6. Tyre Pattern

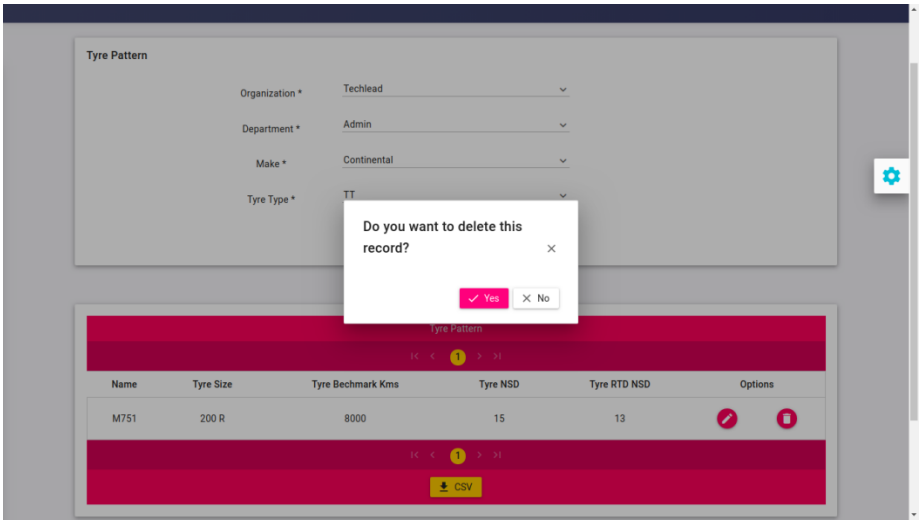
6.1.



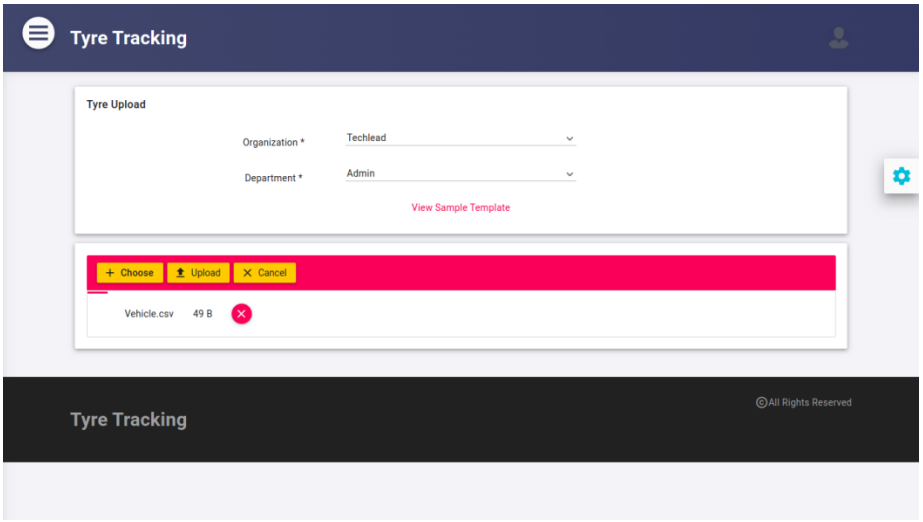
6.2.


Tyre
Tracking
Tyre Pattern
Pattern Name *
Pattern Name
M751
Tyre Size *
Tyre Size
200 R
Tyre NSD *
Tyre NSD
15
Tyre RTD NSD *
Tyre RTD NSD
13
Tyre Benchmark Km *
Tyre Benchmark Km
8000
Active
Yes
No
Save
Cancel
Tyre Tracking
All Rights Reserved

6.3.


Tyre Pattern
Organization *
Techlead
Department *
Admin
Make *
Continental
Tyre Type *
TT
Do you want to delete this record?
Yes
No
Tyre Pattern
Name
Tyre Size
Tyre Bechmark Kms
Tyre NSD
Tyre RTD NSD
Options
M751
200 R
8000
15
13
CSV

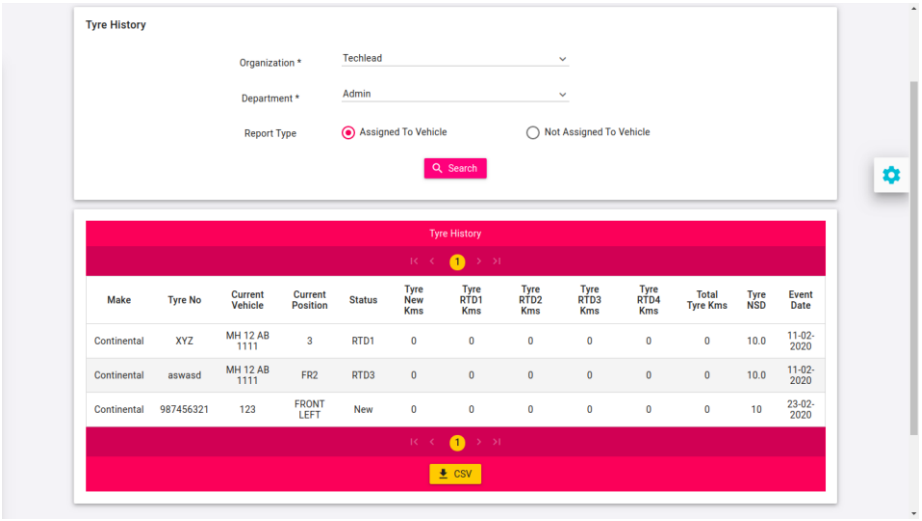
Upload Tyre Km



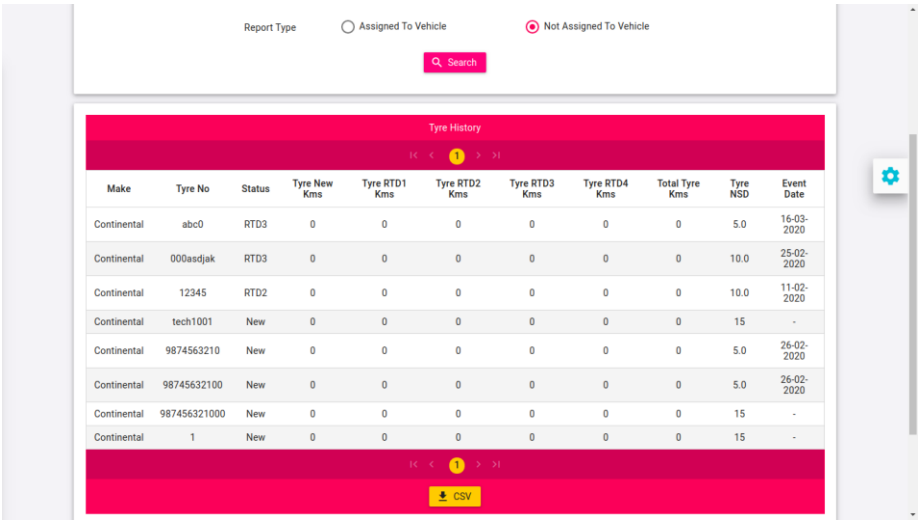
Annexure 2 – (Reports)

7. Tyre History

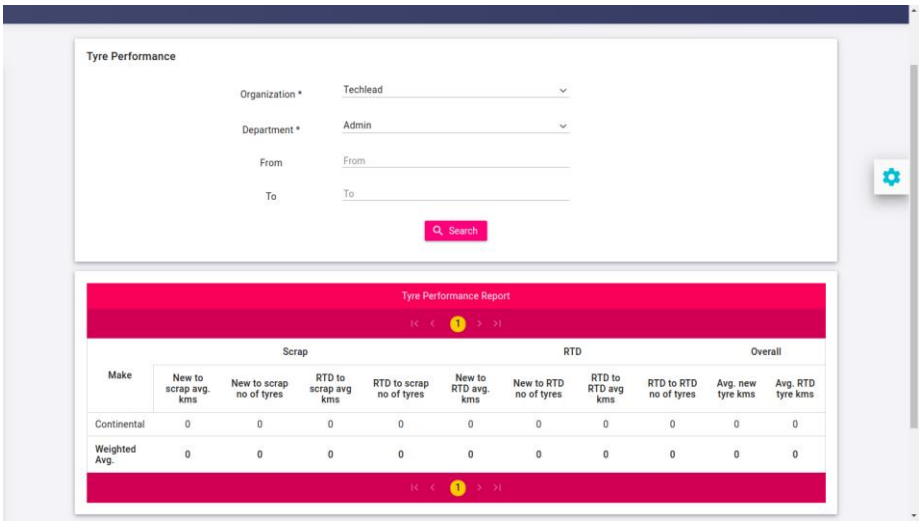
7.1.



7.2.

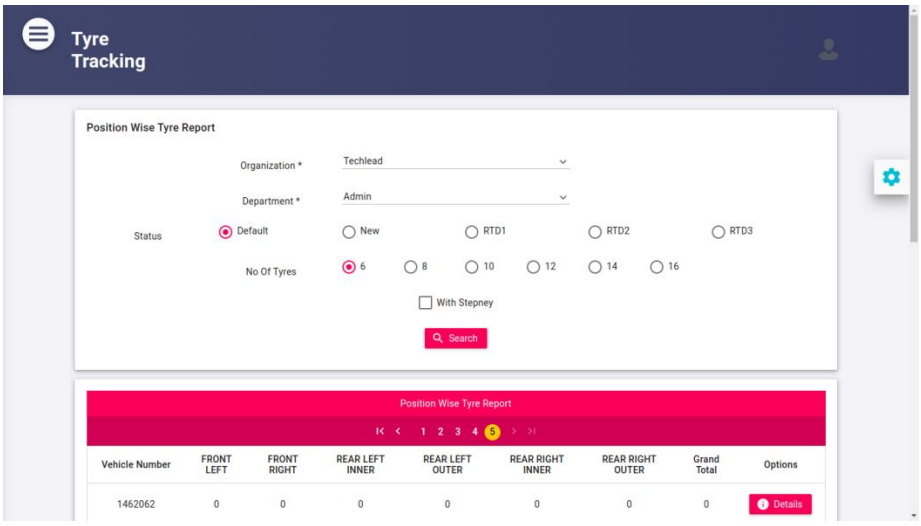


8. Tyre Performance



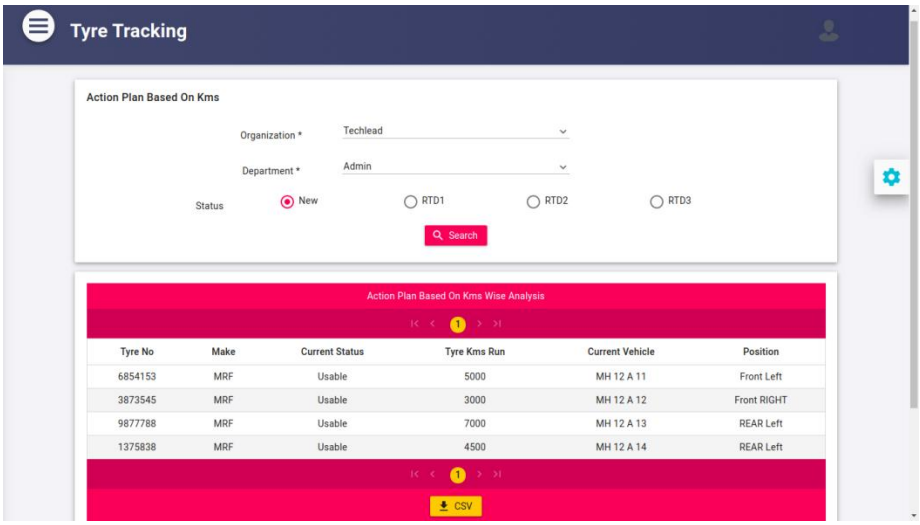
9. Position wise Tyre Report

9.1.

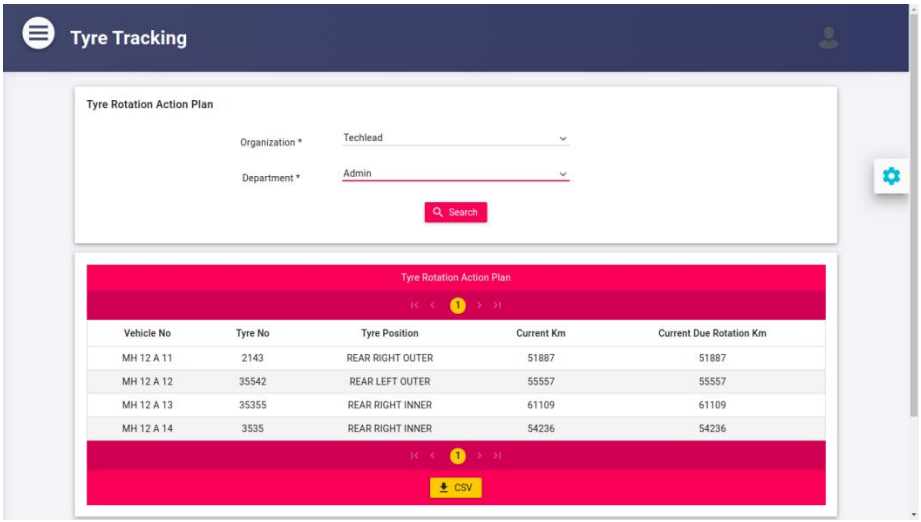


9.2.

10. Action Plan Report

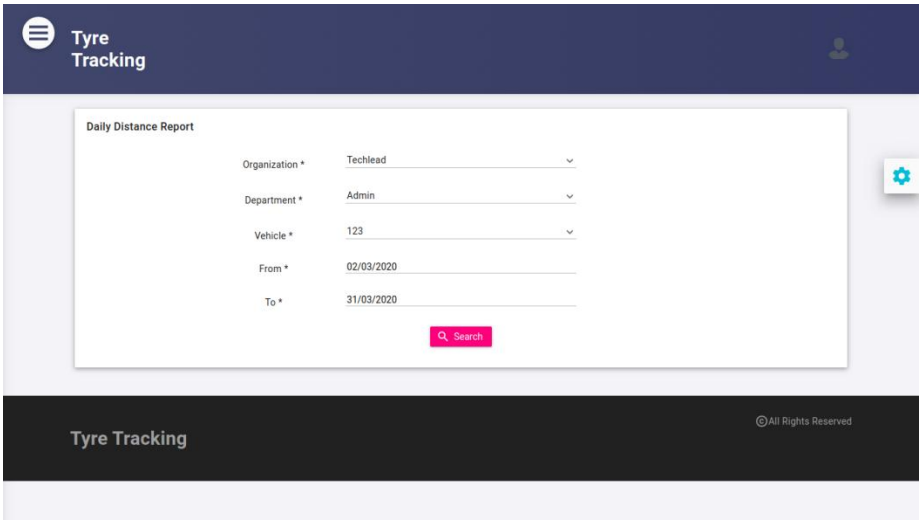


11. Tyre Rotation Report

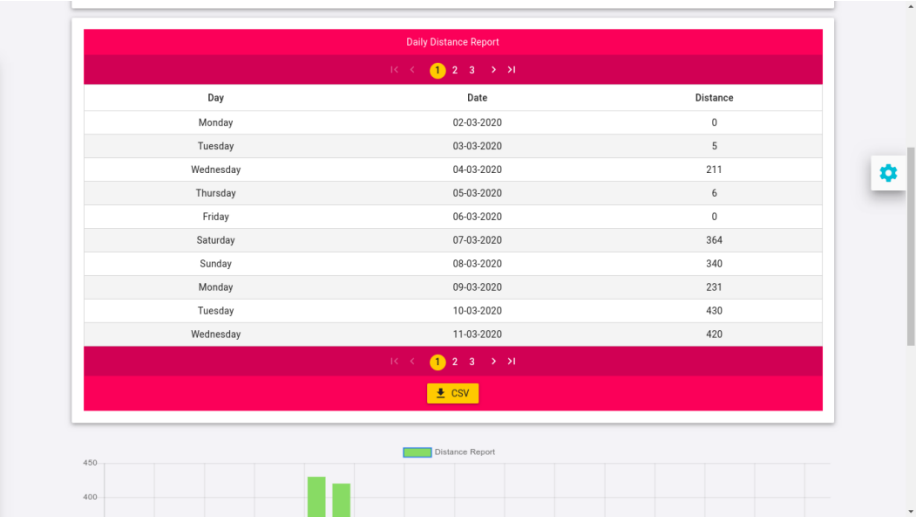


12. Daily Distance Report

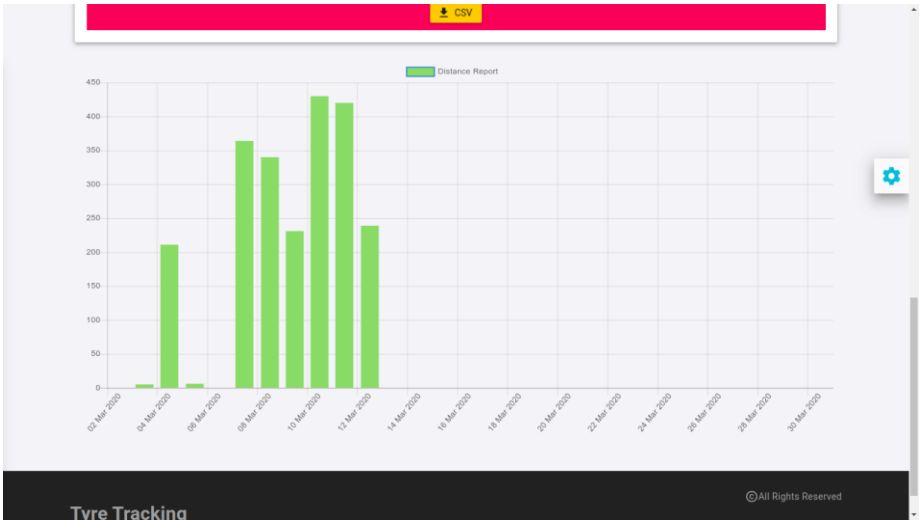
12.1.



12.2.


Daily Distance Report
1 2 3
Day
Date
Distance
Monday
02-03-2020
0
Tuesday
03-03-2020
5
Wednesday
04-03-2020
211
Thursday
05-03-2020
6
Friday
06-03-2020
0
Saturday
07-03-2020
364
Sunday
08-03-2020
340
Monday
09-03-2020
231
Tuesday
10-03-2020
430
Wednesday
11-03-2020
420
1 2 3
CSV
Distance Report
450
400

12.3.


CSV
Distance Report
450
400
350
300
250
200
150
100
50
0
02 Mar 2020
04 Mar 2020
06 Mar 2020
08 Mar 2020
10 Mar 2020
12 Mar 2020
14 Mar 2020
16 Mar 2020
18 Mar 2020
20 Mar 2020
22 Mar 2020
24 Mar 2020
26 Mar 2020
28 Mar 2020
30 Mar 2020
Tyre Tracking
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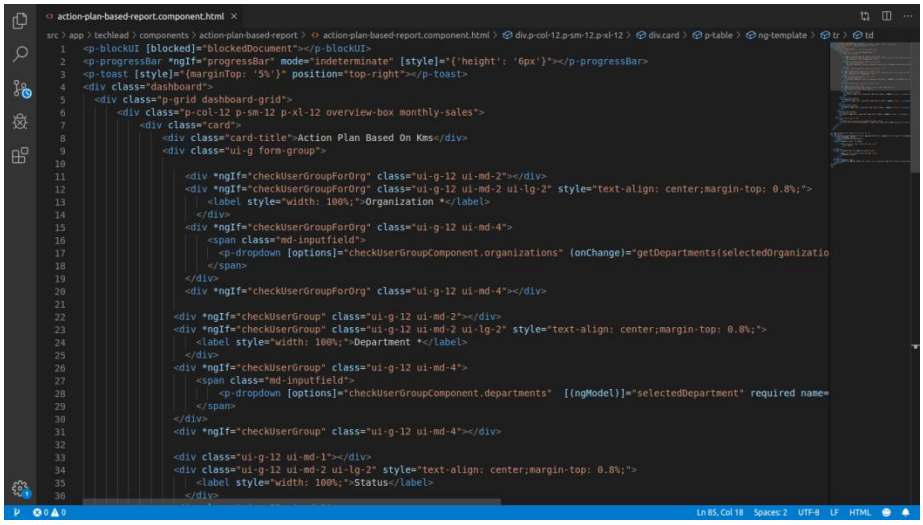
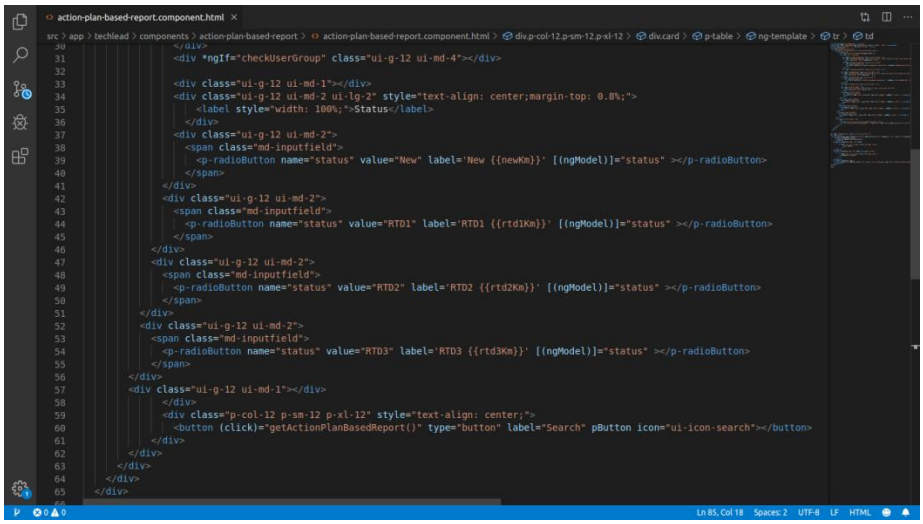
Annexure 3 – (Coding)

13. Action Plan HTML

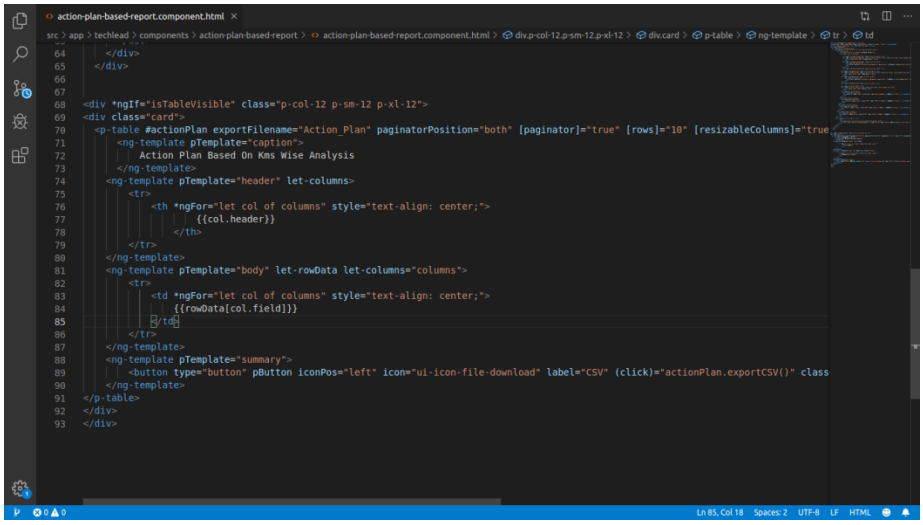
13.1.



13.2.

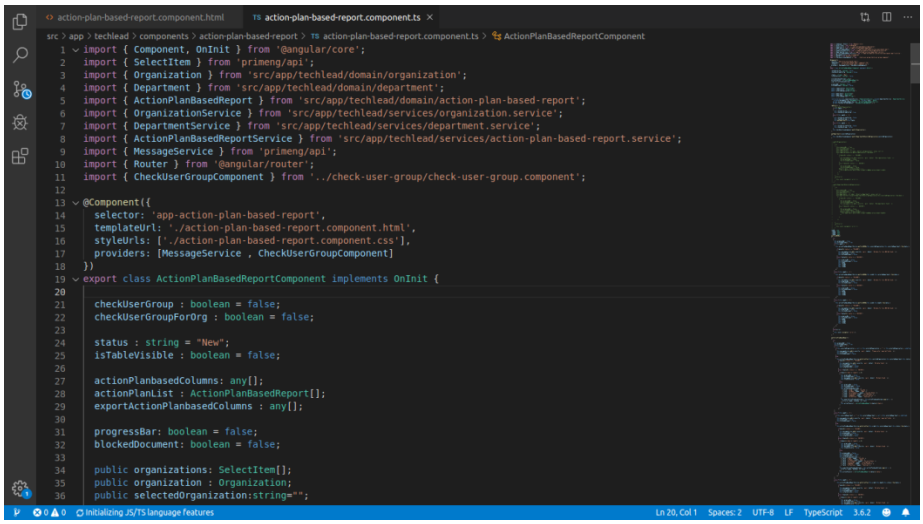


13.3.

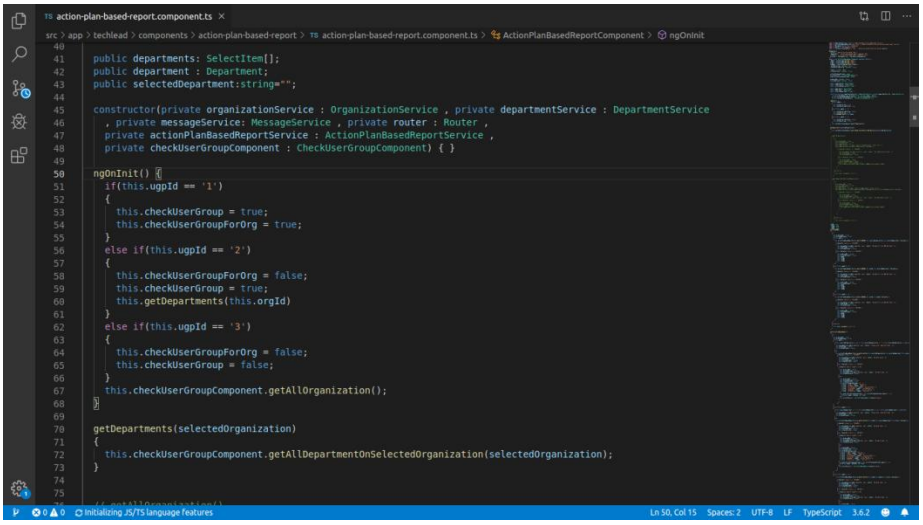


14. Action Plan component file

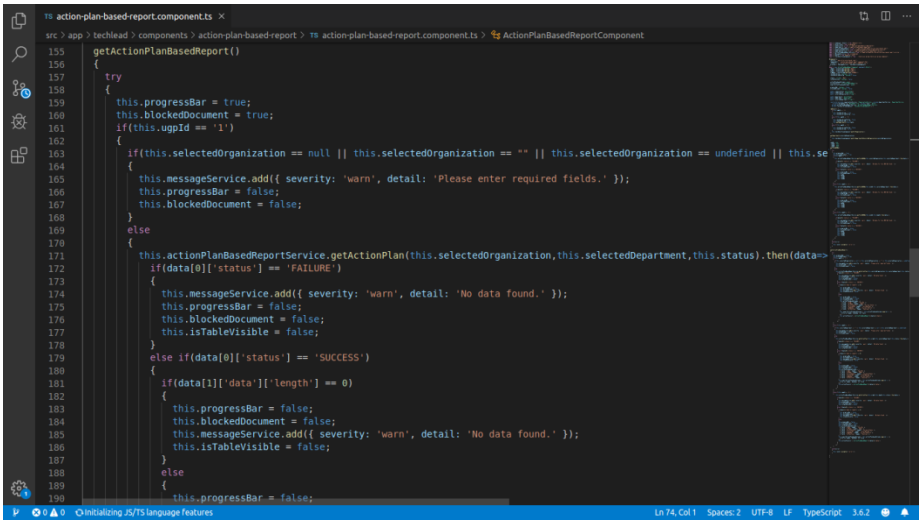
14.1.



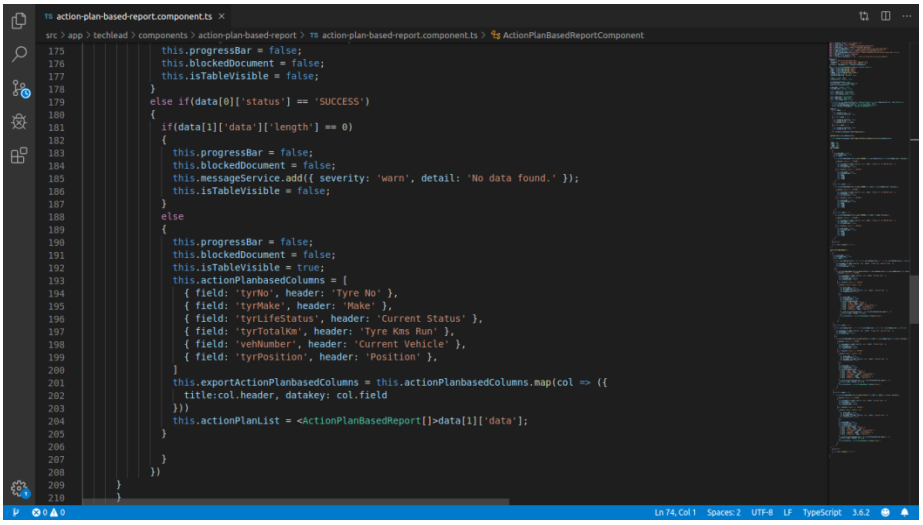
14.2.


action-plan-based-report.component.ts
src > app > techlead > components > action-plan-based-report > action-plan-based-report.component.ts > ActionPlanBasedReportComponent > ngOnInit
public departments: SelectItem[];
public department : Department;
public selectedDepartment:string="";
constructor(private organizationService : OrganizationService , private departmentService : DepartmentService
, private messageService: MessageService , private router : Router ,
private actionPlanBasedReportService : ActionPlanBasedReportService ,
private checkUserGroupComponent : CheckUserGroupComponent) { }
ngOnInit() {
if(this.ugpId == '1')
{
this.checkUserGroup = true;
this.checkUserGroupForOrg = true;
}
else if(this.ugpId == '2')
{
this.checkUserGroupForOrg = false;
this.checkUserGroup = true;
this.getDepartments(this.orgId)
}
else if(this.ugpId == '3')
{
this.checkUserGroupForOrg = false;
this.checkUserGroup = false;
}
this.checkUserGroupComponent.getAllOrganization();
}
getDepartments(selectedOrganization)
{
this.checkUserGroupComponent.getAllDepartmentOnSelectedOrganization(selectedOrganization);
}
Initializing JS/TS language features
Ln 50, Col 15
Spaces: 2
UTF-8
LF
TypeScript
3.6.2

14.3.


action-plan-based-report.component.ts
src > app > techlead > components > action-plan-based-report > action-plan-based-report.component.ts > ActionPlanBasedReportComponent
getActionPlanBasedReport()
{
try
{
this.progressBar = true;
this.blockedDocument = true;
if(this.ugpId == '1')
{
if(this.selectedOrganization == null || this.selectedOrganization == "" || this.selectedOrganization == undefined || this.se
{
this.messageService.add({ severity: 'warn', detail: 'Please enter required fields.' });
this.progressBar = false;
this.blockedDocument = false;
}
else
{
this.actionPlanBasedReportService.getActionPlan(this.selectedOrganization,this.selectedDepartment,this.status).then(data=>
if(data[0]['status'] == 'FAILURE')
{
this.messageService.add({ severity: 'warn', detail: 'No data found.' });
this.progressBar = false;
this.blockedDocument = false;
this.isTableVisible = false;
}
else if(data[0]['status'] == 'SUCCESS')
{
if(data[1]['data']['length'] == 0)
{
this.progressBar = false;
this.blockedDocument = false;
this.messageService.add({ severity: 'warn', detail: 'No data found.' });
this.isTableVisible = false;
}
else
{
this.progressBar = false;
Initializing JS/TS language features
Ln 74, Col 1
Spaces: 2
UTF-8
LF
TypeScript
3.6.2

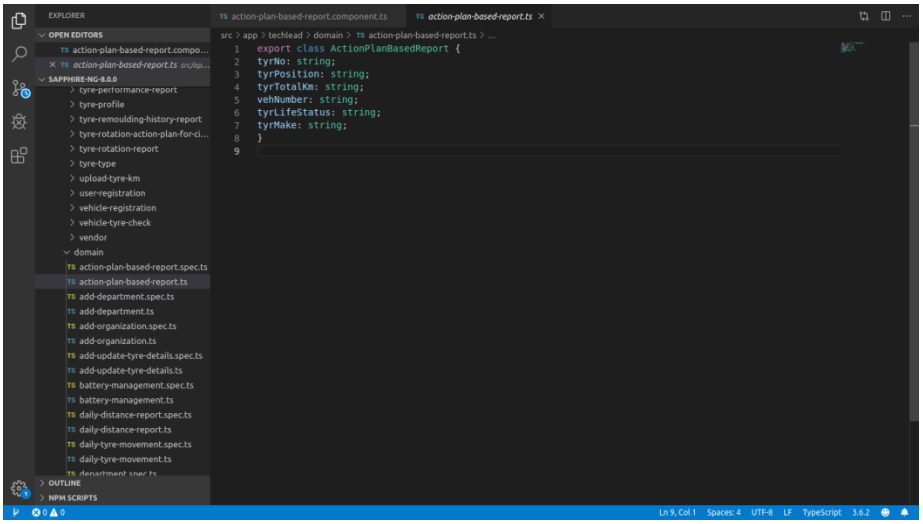
14.4.



```
this.progressBar = false;
this.blockedDocument = false;
this.isTableVisible = false;
}
else if(data[0]['status'] == 'SUCCESS')
{
if(data[1]['data']['length'] == 0)
{
this.progressBar = false;
this.blockedDocument = false;
this.messageService.add({ severity: 'warn', detail: 'No data found.' });
this.isTableVisible = false;
}
else
{
this.progressBar = false;
this.blockedDocument = false;
this.isTableVisible = true;
this.actionPlanbasedColumns = [
{ field: 'tyrNo', header: 'Tyre No' },
{ field: 'tyrMake', header: 'Make' },
{ field: 'tyrLifeStatus', header: 'Current Status' },
{ field: 'tyrTotalKm', header: 'Tyre Kms Run' },
{ field: 'vehNumber', header: 'Current Vehicle' },
{ field: 'tyrPosition', header: 'Position' },
]
this.exportActionPlanbasedColumns = this.actionPlanbasedColumns.map(col => ({
title:col.header, datakey: col.field
}))
this.actionPlanList = <ActionPlanBasedReport[]>data[1]['data'];
}

}
})
}
}
```

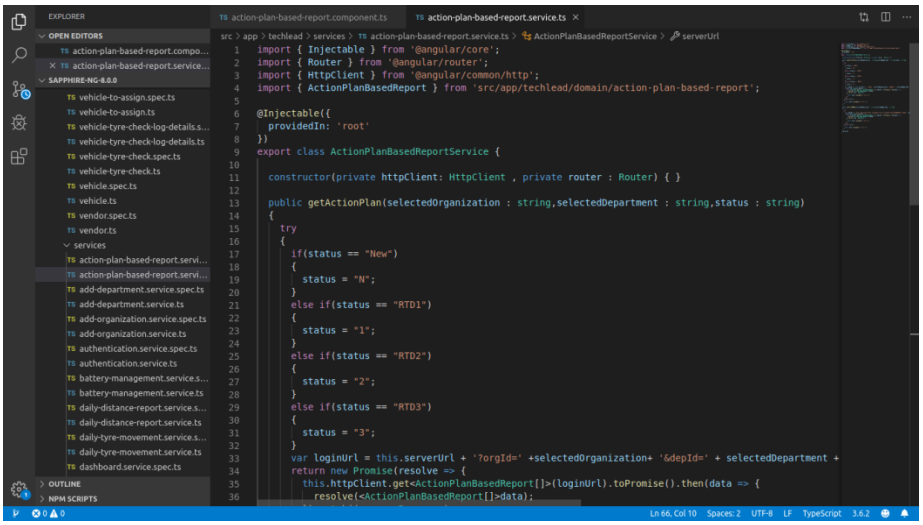
15. Action Plan class file



```
export class ActionPlanBasedReport {
tyrNo: string;
tyrPosition: string;
tyrTotalKm: string;
vehNumber: string;
tyrLifeStatus: string;
tyrMake: string;
}
```

16. Action Plan service file

16.1.



16.2.