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Documentation On  
“Courier Management System”  
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Submitted By:

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**Project Guide**

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# **1. Introduction**

The Courier Management System is a simple java project that helps a courier company or businesses manage their customers' parcels or packages details. The system stores all the information related to parcel, customers, and staff.

The system has a tracking feature where can help to monitor the movement of the customer's parcel. The Staff user can manage all the data in the system including managing the branches and branches staff user. The Customer can only track a parcel.

While taking orders from its customers, the branch staff will take all the details of its customers who is placing the orders and all the details for the recipient such as its address, name, mobile number etc. The shipping amount of parcel will be calculated according to weight of parcel and distance from source to destination.

The couriered items have multiple statuses which are the "Item Accepted by Courier", "Collected", "Shipped", "In-Transit", "Arrived At Destination", "Out for Delivery", "Delivered" and "Unsuccessful Delivery Attempt". These statuses will help to determine the movement of the parcel. The system also generates a report between two dates and selected status.

The system admin or staff user can store or adds multiple items at the same time but these items will be stored in the database separately because each package has a different reference number or different tracking number. For example, Client 1 has 3 boxes of the package to be couriered in the same recipient, the system user can submit the parcel registration to the system at once but will be stored separately so that the system will generate a different unique reference number in each item so that they can track easily each item.

## **1.1 Document Purpose**

The Courier management system is web application that helps a courier company or businesses manage their customers' parcels or packages details. The system stores all the information related to parcel, customers, and staff. The system has a tracking feature which can help to monitor the movement of the customer's parcel. The Staff user can manage all the data in the system including managing the branches and staff user. The Customer can only track a parcel.

## **1.2 Problem Statement**

The Organization was holding the system where the records in the database were not completely secure. In the current system, where whole records were handled by various employees and the data were stored in registers and excel sheets. This results in data redundancy.

### **1.3 Product Scope**

- It manages all the information about courier, Customer, Employees.
- Status will get updated for each parcel.
- For Each parcel different tracking number will be generated.
- It will provide report on courier based upon Status.
- After adding parcel details a mail is sent to the customer regarding the tracking number and a link to track parcel.
- Customer can track their parcel using Tracking number generated for each parcel.

### **1.4 Aims and Objectives**

Specific goals are: -

- To produce a web-based system that allows the admin to manage the Courier management system.
- To provide security to the records in the database
- To generate the multiple reports form the information provided as per requirement.
- To ease the process of courier company.

## **2. Overall Description**

### **2.1 Functional and Non-Functional requirements**

#### **Functional Requirements:**

##### **Login:**

Admin can login using some credentials such as registered email id and password.

##### **Dashboard:**

Admin can view numbers like total number of customer, total number of parcels, total number of staff, how many parcels are accepted or in-transit, shipped, out of delivery or delivered or unsuccessful delivery.

##### **Parcel details:**

Admin will add customer and parcel details. Preview of consignment details will be generated and a mail is sent it to the customer on their registered email id regarding tracking number and track parcel link.

##### **Parcel tracking:**

Customer will be able to track parcel status. Customer will be able to track deliver using unique tracking id send to them through mail. Staff team will be able to track parcel delivery for particular customer.

##### **Parcel status:**

Admin will update the status of consignment.

##### **Delivery processing:**

Admin will assign delivery person to deliver the consignment. Delivery person will be able get delivery details so that he /she can deliver consignment to customer end. Delivery vendor will be able to list all consignment delivery to be done by their staff.

##### **Parcel list:**

Admin can view information related to consignment which is stored in database.

##### **Staff list:**

Admin can view information related to staff which is stored in database.

##### **Customer list:**

Admin can view information related to customer which is stored in database and can edit the information of customer and also it can delete it. Admin can add parcel from list. It will redirect to add parcel page where the details of customer is fetched and admin has to add recipient information.

##### **Add Customer:**

Admin can add information of customer and if customer is registered already so it will give a message that email id is already exists.

## **Non-Functional Requirements:**

### **Security**

Admin will be allowed to place the courier order for customer. System will internally maintain secure communication channel between Servers (App Servers, database Server). Sensitive data will be always encrypted across communication. Use of proper firewall to protect servers from outside fishing, vulnerable attacks.

### **Reliability**

The system will backup business data on regular basis and recover in short time duration to keep system operational. Continuous updates are maintained, continuous Administration is done to keep system operational.

### **Availability**

System will be available for 24/7.

### **Maintainability:**

Commercial database software will be used to maintain System data Persistence. Admin will easily monitor and configure System using administrative tools.

### **Portability:**

PDA: Portable Device Application. System will provide portable User Interface (HTML, CSS, JS) through staff will be able to access courier management system.

### **Accessibility:**

Only registered staff will be able to place an order of consignment after authentication. Staff team will be able to view daily, weekly, monthly, annual all the information of delivery person, customer, and consignment information through customized dashboard. Staff will be able to see the delivered product graph.

### **Safety:**

CMS will be secure from malicious attack, fishing. CMS will be always kept updated with latest anti-virus software and kept it updated.

### **Modularity:**

System will be designed and developed using reusable, independent or dependent business scenarios in the form of modules. These modules will be loosely coupled and highly cohesive. System will contain adding consignment details, updating status, tracking, delivery processing and consignment list.

## **2.2 Operating Environment:**

### **2.2.1 Hardware Specifications:**

**Processor** - Any Processor above 1 GH

**RAM** - Minimum 4GB.

**Hard Disk** - Minimum 500 GB

### **2.2.2 Software Specifications:**

**Front End** - ReactJS

**Back-End** - Spring-boot.

**Database** – MySQL.

**Software** – Spring Tools Suite STS.

**Operating System** - Windows Family.

## **2.3 Design and Implementation Constraints:**

- The application will use Reactjs, mysql and Springboot as main technologies.
- HTTP protocol are used as communication protocols. the client can access it via HTTP protocol.
- Several types of validations make this web application a secured.
- Since Courier Management System is a web-based application, internet connection must be established.
- The Courier Management System will be used on PCs and will function via internet or intranet in any web browser.

### **3. Requirement Specification**

#### **3.1 External Interface Requirements:**

##### **User Interfaces:**

###### **Admin**

- Dashboard
- Add customer and parcel details.
- Update Parcel status.
- Assign a delivery person for delivery.
- Parcel List.
- Customer List.
- Staff List.
- Track Parcel.
- Report.

###### **Customer**

- Track Parcel.

##### **Hardware Interfaces:**

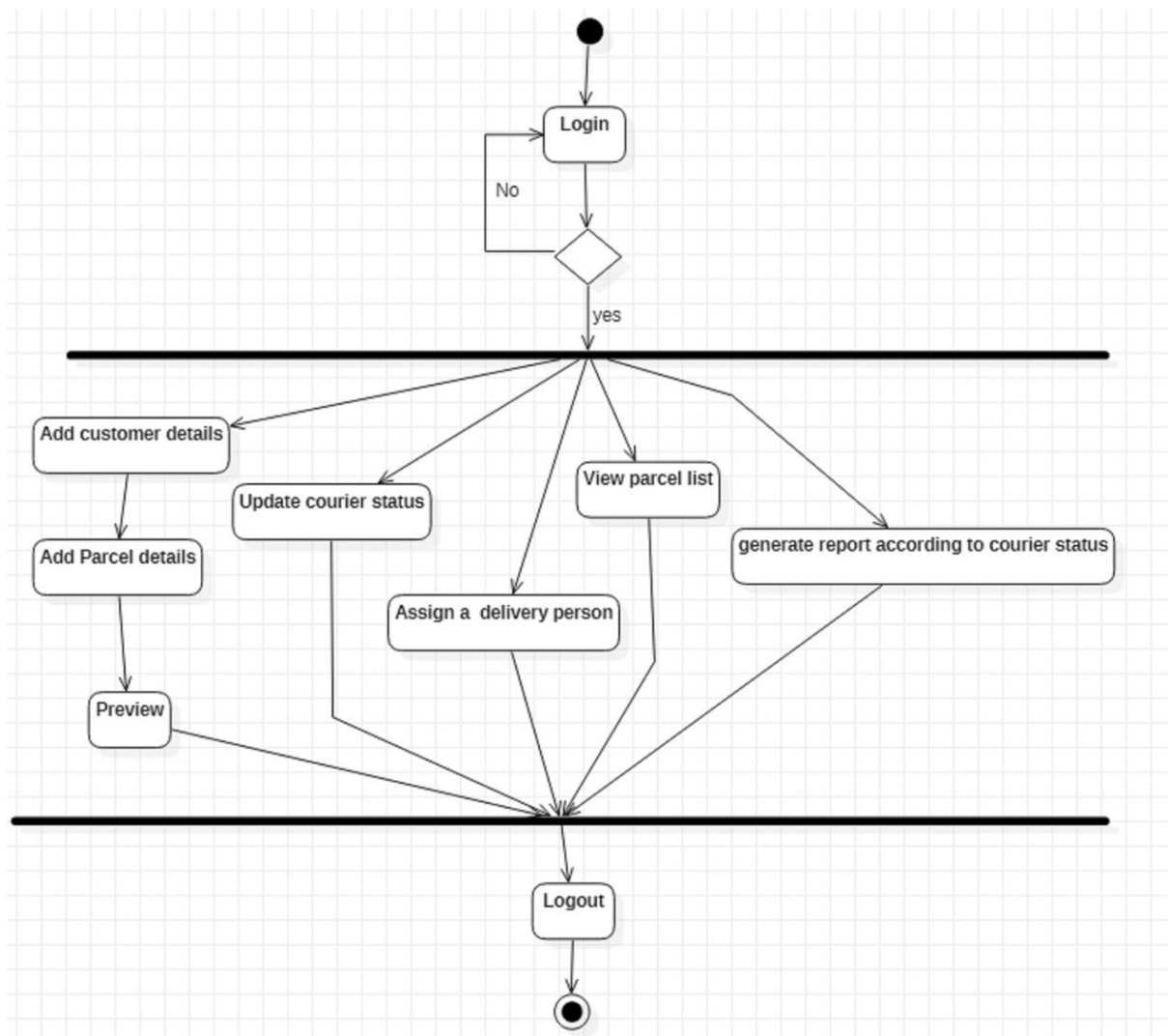
- No extra hardware interfaces are needed.
- The system will use the standard hardware and data communication resources.



## **4. System Design**

### **4.1 Activity Diagram**

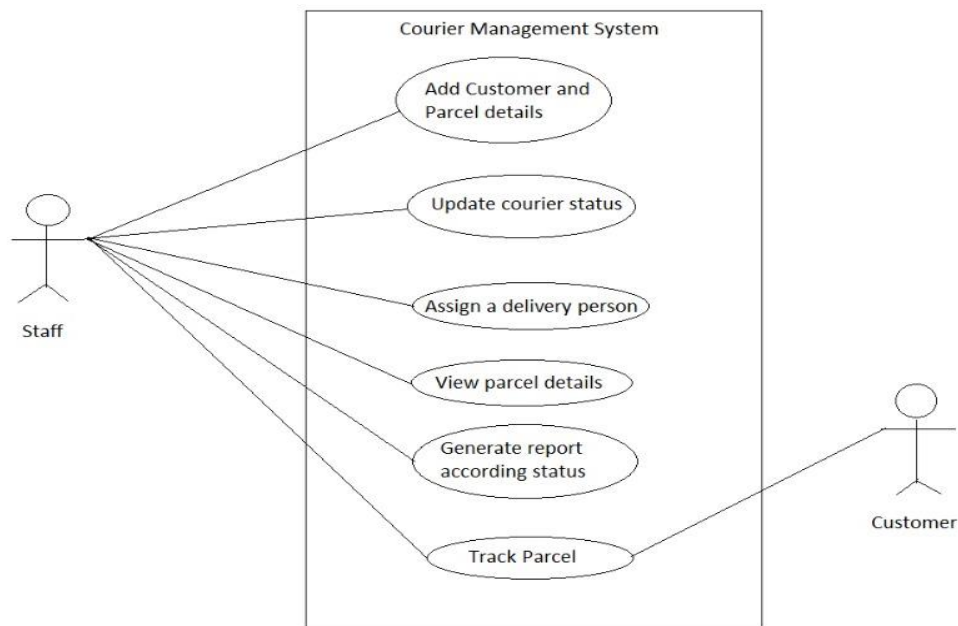
This is Activity UML diagram of Courier Management System which shows the flow of Admin module.



**Figure 1: Activity Diagram**

## **4.2 Use Case Diagram**

This use case Diagram is a graphical depiction of the interactions among the elements of Courier Management System. It represents the methodology used in the system analysis to identify, clarify and organize system requirements of Courier Management System. The main actors of Courier Management System in this Use Case Diagram are: Admin, Staff and Customer who perform the different types of use cases shown on the picture below.



**Figure 2: Use Case Diagram**

### 4.3 ER Diagram

This ER (Entity Relationship) Diagram represents the model of Courier Management System Entity. The entity-relationship diagram of Courier Management System shows all the visual instrument of database tables and the relations between Admin, Staff, Parcel details and Customer etc. It used structure data and to define the relationship between structured data groups of Courier Management System functionalities.

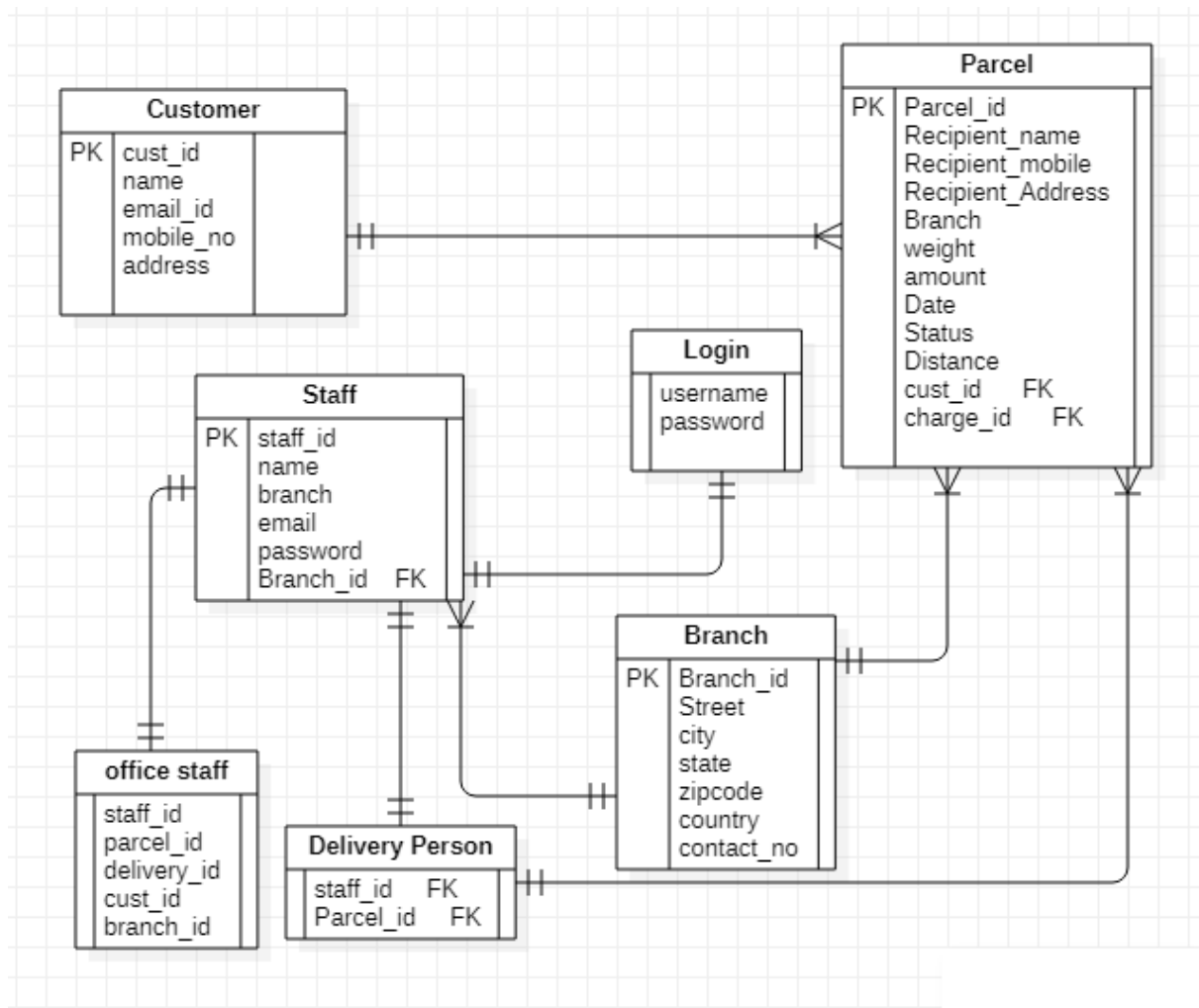


Figure 3: ER Diagram

## 5. Table Structure

### 5.1 Admin:

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	auto_increment
email	varchar(255)	YES		NULL	
password	varchar(255)	YES		NULL	

### 5.2 Customer:

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	auto_increment
name	varchar(20)	YES		NULL	
address	varchar(40)	YES		NULL	
email	varchar(20)	YES	UNI	NULL	
mobile	varchar(255)	YES		NULL	

### 5.3 Staff:

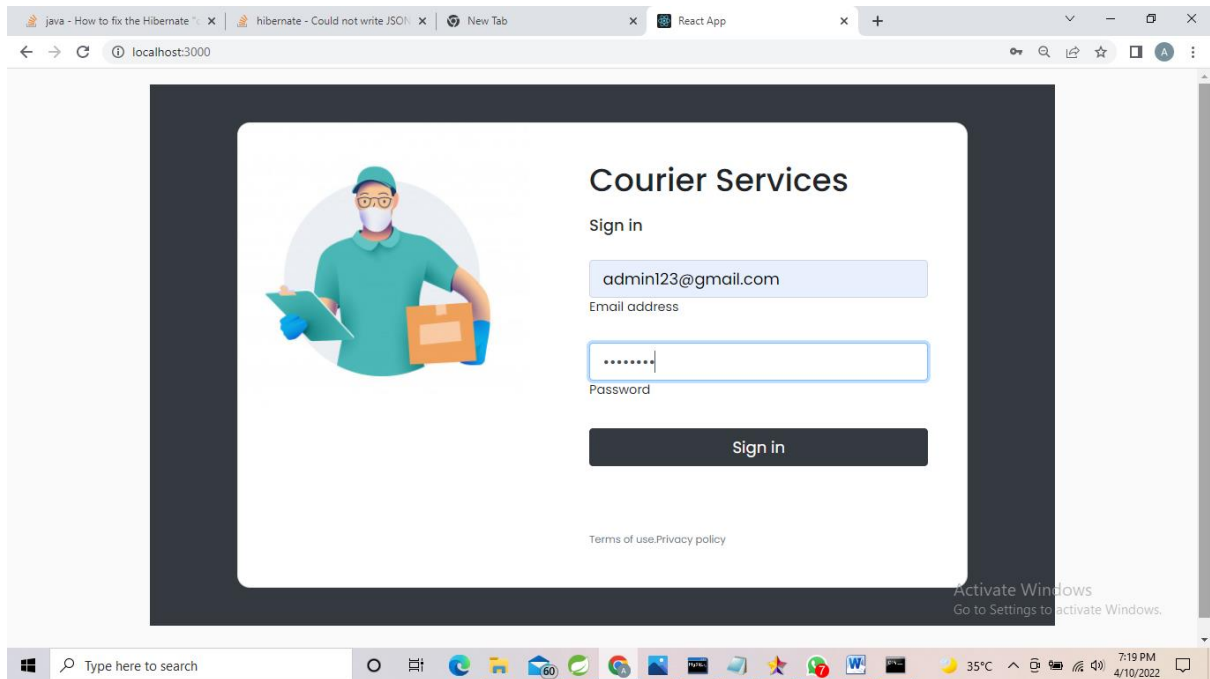
Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	auto_increment
name	varchar(20)	YES		NULL	
branch	varchar(30)	YES		NULL	
email	varchar(30)	YES		NULL	
join_date	date	YES		NULL	
mobile	varchar(255)	YES		NULL	
type	varchar(20)	YES		NULL	

#### 5.4 Parcel:

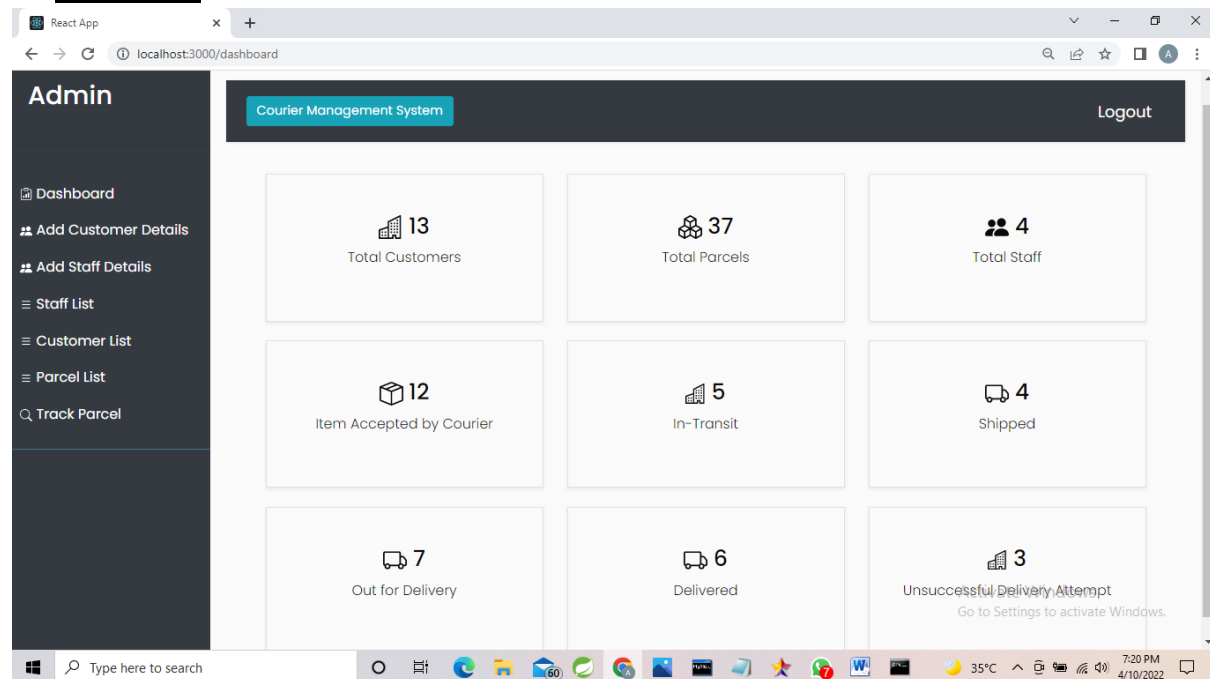
Field	Type	Null	Key	Default	Extra
ref_no	bigint	NO	PRI	NULL	auto_increment
branch	varchar(20)	YES		NULL	
datecreated	datetime(6)	YES		NULL	
delivery_person	varchar(255)	YES		NULL	
destination	varchar(255)	YES		NULL	
destination_pincode	varchar(255)	YES		NULL	
distance	smallint	YES		NULL	
price	double	YES		NULL	
recipient_address	varchar(20)	YES		NULL	
recipient_mobile	varchar(255)	YES		NULL	
recipient_name	varchar(20)	YES		NULL	
source	varchar(255)	YES		NULL	
source_pincode	varchar(255)	YES		NULL	
status	varchar(255)	YES		NULL	
weight	int	YES		NULL	
customer_id	int	NO	MUL	NULL	

## 6. Snapshots

### 6.1 Login Page



### 6.2 Homepage



## 6.3 Add Staff

The screenshot shows a web browser window with the URL `localhost:3000/staff`. The page is titled "Courier Management System" and has a "Logout" button in the top right. On the left is a sidebar menu with the "Admin" header and options: Dashboard, Add Customer Details, Add Staff Details (active), Staff List, Customer List, Parcel List, and Track Parcel. The main content area is titled "Add Staff Details" and contains a form with the following fields: Name (text input with "Rohit"), Branch (text input with "Aurangabad"), Email Id (text input with "rohit156@gmail.com"), type (dropdown menu with "Office Staff" selected), Join Date (text input with "31-01-2022" and a calendar icon), and Contact No (text input with "8898760987" and a numeric keypad icon). At the bottom of the form are "Submit" and "Cancel" buttons. The Windows taskbar at the bottom shows the time as 07:26 PM on 07-04-2022.

The screenshot shows the same web browser window, but the URL is `localhost:3000/stafflist`. The sidebar menu is identical. The main content area is titled "Staff Details" and displays a table with the following data:

Name	Branch	Email Id	Type	Join Date	Actions
Riya	Chennai	riya@gmail.com	Office staff	2022-04-01	<button>Update</button> <button>Delete</button>
Ram	Jalna	ram23@gmail.com	Delivery Staff	2022-02-28	<button>Update</button> <button>Delete</button>
Rohit	Aurangabad	rohit156@gmail.com	Office staff	2022-01-31	<button>Update</button> <button>Delete</button>
Soniya	Mumbai	soniya55@gmail.com	Office staff	2021-09-30	<button>Update</button> <button>Delete</button>

The Windows taskbar at the bottom shows the time as 07:31 PM on 07-04-2022.

## 6.4 Add Customer:

The screenshot shows a web application interface for managing customer details. The browser tabs include 'localhost:9090/api/staff', 'React App', and another 'React App'. The address bar shows 'localhost:3000/customerlist'. The left sidebar contains a menu with options: Dashboard, Add Customer Details, Add Staff Details, Staff List, Customer List, Parcel List, and Track Parcel. The main content area is titled 'Customer Details' and features a search bar. Below the search bar is a table with columns: Name, Email Id, Phone No, Address, and Actions. The table lists three customers: Abhilasha Salvi, mansvi rathod, and Sunil. Each row has buttons for 'Add Parcel', 'Edit', 'Delete', and 'Details'.

Name	Email Id	Phone No	Address	Actions
Abhilasha Salvi	abhil25@gmail.com	9678568855	Abhilasha house,N4,Aurangabad	<button>Add Parcel</button> <button>Edit</button> <button>Delete</button> <button>Details</button>
mansvi rathod	mansvi@gmail.com	9665673795	manprit nivas hadapsar pune	<button>Add Parcel</button> <button>Edit</button> <button>Delete</button> <button>Details</button>
Sunil	snltd254@gmail.com	8087875387	Asmita Nivas, Vektesh Nagar	<button>Add Parcel</button> <button>Edit</button> <button>Delete</button> <button>Details</button>

## 6.5 Add Parcel:

The screenshot shows the 'Add Parcel' form in a web application. The browser tabs include 'localhost:9090/api/staff', 'React App', and 'pune pin code - Google Search'. The address bar shows 'localhost:3000/customer/6/parcel'. The left sidebar contains a menu with options: Admin, Dashboard, Add Customer Details, Add Staff Details, Staff List, Customer List, Parcel List, and Track Parcel. The main content area is titled 'Courier Management System' and features a form for adding a parcel. The form is divided into two columns: Sender Information and Recipient Information. The Sender Information column includes fields for Name (Sunil), Contact No (8087875387), Address (Asmita Nivas, Vektesh Nagar), Source (Handed), Pincode (43502), and Branch (pune). The Recipient Information column includes fields for Name (Swara Rathod), Contact No (9087876054), Address (Swara house,Dange chowk pune), and Destination (Pune). Below these columns are fields for Weight (25), Distance (80), and Cost (50). The form has 'Submit' and 'Cancel' buttons.

Sender Information		Recipient Information	
Name	Sunil	Name	Swara Rathod
Contact No	8087875387	Contact No	9087876054
Address	Asmita Nivas, Vektesh Nagar	Address	Swara house,Dange chowk pune
Source	Handed	Destination	Pune
Pincode	43502	Pincode	411002
Branch	pune		
Weight	25	Distance	80
		Cost	50



## Parcel List:

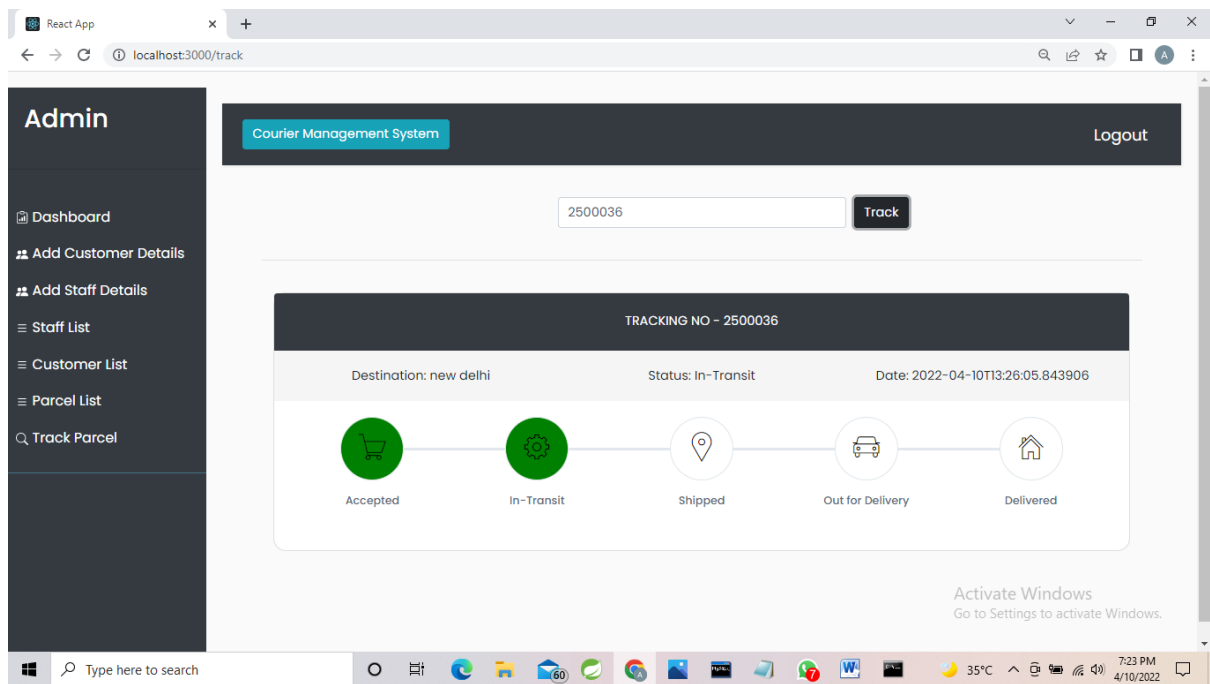
The screenshot shows a web application running on a browser at localhost:3000/parcellist. The application has a dark sidebar on the left with the title 'Admin' and a list of menu items: Dashboard, Add Customer Details, Add Staff Details, Staff List, Customer List, Parcel List (selected), and Track Parcel. The main content area has a header with 'Courier Management System' and a 'Logout' button. Below the header, the title 'Parcel Details' is followed by a search bar. A table displays a list of parcels with columns: Ref\_no, Source, Destination, Status, Date, and Actions. The table contains six rows of data. The bottom of the screen shows a Windows taskbar with various icons and a system tray displaying the date and time.

Ref_no	Source	Destination	Status	Date	Actions
2500000	aurangabad maharashtra	Ahmednagar maharashtra	Delivered	2022-04-04T22:20:15.738798	<a href="#">Edit</a>
2500001	aurangabad maharashtra	mumbai maharashtra	In-Transit	2022-04-04T22:20:23.082083	<a href="#">Edit</a>
2500002	dsdsd	dcscs	Unsuccessful Delivery	2022-04-04T22:52:49.087097	<a href="#">Edit</a>
2500003	auran	csdcsc	In-Transit	2022-04-07T12:35:07.404973	<a href="#">Edit</a>
2500004	scsdc	dcscsc	Unsuccessful Delivery	2022-04-04T22:52:29.855078	<a href="#">Edit</a>
2500005	ddddddd	fffffffff	Out for Delivery	2022-04-04T22:06:45.208974	<a href="#">Edit</a>

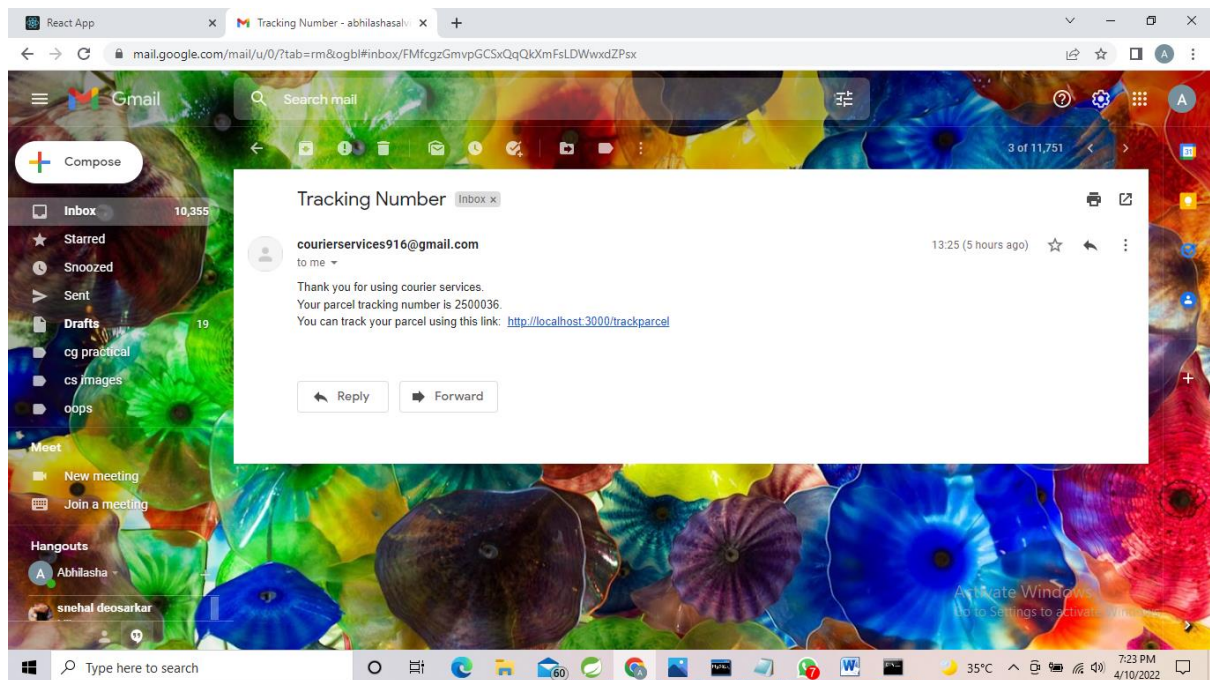
## Update Status:

The screenshot shows the 'Update Status' page of the web application at localhost:3000/parcel/edit/2500000. The sidebar is identical to the previous page, with 'Parcel List' selected. The main content area has a header with 'Courier Management System' and a 'Logout' button. Below the header, the title 'Update Status' is followed by a 'Status' label and a dropdown menu currently showing 'Out for Delivery'. A 'Submit' button is located below the dropdown. The bottom of the screen shows a Windows taskbar with various icons and a system tray displaying the date and time.

## 6.6 Track Parcel:



Mail is sent to customer:



## **7. Conclusion**

Using this project “Courier Management System” reduced as much as possible to avoid errors while entering the data. It also provides error message while entering invalid data. No formal knowledge is needed for the user to use this system.

Courier Management System, as described above, can lead to error free, secure, reliable and fast management system. It can assist the user to concentrate on their other activities rather to concentrate on the record keeping. Thus, it will help organization in better utilization of resources.

## **8. Future Scope**

- We can give more advance software for Courier Management System including more facilities.
- Customer can online book for parcel pickup.
- We will host the platform on online servers to make it accessible worldwide.
- Implement the backup mechanism for taking backup of codebase and database on regular basis on different servers.

## **9. References:**

- Google for problem solving
- <http://www.javatpoint.com/java-tutorial>
- <http://www.tutorialspoint.com/mysql/>
- <http://d.apache.org/docs/2.0/misc/tutorials.html>
- Head First Java 2nd Edition
- <https://www.bezkoder.com/jpa-one-to-many/>