**Course Name:** Programming for Big Data

**Course Code:** PROG8420-23S-Sec1

**Professor Name:** Jomis John

Functional Requirements for the Project

**Members:**

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**Functional Requirements**

**Project Name:** Transwift Inc.

**Purpose:**

The purpose of this project will be to develop a software application that aims to optimize and streamline transportation operations within a logistics system. The primary goal is to enhance the efficiency, cost-effectiveness, and reliability of transportation processes involved in the movement of goods or products from one location to another. Implementing a Transportation Management application is to optimize the transportation processes, enhance delivery performance, minimize costs, improve customer satisfaction, and streamline overall logistics operations within the transportation domain.

**Scope:**

The scope of this project typically encompasses various aspects related to managing and optimizing transportation operations within the logistics. Some of the key aspects and objectives covered in this project are:

1. User Interface (UI) Module
2. Authentication and User Roles Module
3. Database Management Module
4. Driver Management Module
5. Vehicle Scheduling Module
6. Delivery Tracking Module
7. Notifications and Alerts Module
8. Cost Calculation Module

**Team**

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| --- | --- | --- |
| Name | Role | Email/Phone |
| Venkata Varun Pechetty | Business Analyst | +1 742-987-9999 |
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**Functional Requirements**

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| # | Functional Requirement | Category | Notes | Priority | Owner |
| 1 | System should allow user to view and access the Dashboard | User Interface (UI) – Dashboard Creation | User will be able to access to important modules and functionalities of the application from the dashboard through intuitive navigation menus or buttons. | High | Venkata |
| 2 | System should allow user to view and access the Route Planning from the Dashboard | User Interface (UI) – Dashboard – Route Planning | User will be able to navigate to Route Planning from the Dashboard | High | Venkata |
| 3 | System should allow user to view and access the Route Planning from the Dashboard | User Interface (UI) – Dashboard – Route Planning | User will be able to enter the origin and destination addresses to calculate an optimal route for a transportation task. | High | Venkata |
| 4 | System should allow user to view and access the Route Planning from the Dashboard | User Interface (UI) – Dashboard – Route Planning | User will be able to set preferences and constraints for the route planning algorithm, such as avoiding toll roads or considering time windows for deliveries. | Medium | Venkata |
| 5 | System should allow user to view and access the Route Planning from the Dashboard | (UI) – Dashboard – Route Planning | User will be able to save, or export planned routes for future reference or sharing with other stakeholders. | Medium | Venkata |
| 6 | System should allow user to view and access the Vehicle Management from the Dashboard | User Interface (UI) – Dashboard – Vehicle Management | User will be able to navigate to Vehicle Management from the Dashboard | High | Venkata |
| 7 | System should allow user to assign vehicles to tasks | User Interface (UI) – Dashboard – Vehicle Management | User will be able to assign vehicles to transportation tasks, considering factors such as load size, route distance, and vehicle availability. | High | Venkata |
| 8 | System should send an alert notification for overlapping schedules | User Interface (UI) – Dashboard – Vehicle Management | User will be able to receive notifications or alerts if there are conflicts or issues with vehicle assignments, such as overlapping schedules or maintenance requirements. | Low | Venkata |
| 9 | System should allow user to track the location in real-time | User Interface (UI) – Dashboard – Vehicle Management | User will be able to track the status and location of assigned vehicles in real-time on a map. | Medium | Venkata |
| 10 | System should allow user to view and access the Driver Management from the Dashboard | User Interface (UI) – Dashboard – Driver Management | User will be able to navigate to Driver Management from the Dashboard | High | Venkata |
| 11 | System should allow user to view the drivers profile | User Interface (UI) – Dashboard – Driver Management | User should be able to maintain a list of drivers with their personal information, qualifications, and availability. | High | Arbaaz |
| 12 | System should allow user to assign drivers to the tasks | User Interface (UI) – Dashboard - Driver Management | User should be able to assign drivers to transportation tasks based on their availability, qualifications. | High | Arbaaz |
| 13 | System should allow user to view and access the Delivery Tracking from the Dashboard | User Interface (UI) – Dashboard - Delivery Tracking | User will be able to navigate to Delivery Tracking from the Dashboard | High | Arbaaz |
| 14 | System should allow user to track the locations and delivery ETA’s | User Interface (UI) – Dashboard - Delivery Tracking | User will be able to track the status and location of deliveries in real-time on a map, including estimated time of arrival (ETA) and any delays. | Low | Arbaaz |
| 15 | System should send an alert notification for successful completion or exceptions | User Interface (UI) – Dashboard - Delivery Tracking | User will be able to receive notifications or updates on the progress of deliveries, including successful completion or exceptions. | Medium | Ravali |
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| 16 | System should allow user to create an account | Authentication and User Roles | User will be able to create a new account with a unique username and password so that he/she can access the application. | High | Arbaaz |
| 17 | System should encrypt the user’s password | Authentication and User Roles | Encryption logic must be implemented for security. | High | Arbaaz |
| 18 | System should allow user to access their account using their credentials | Authentication and User Roles | User will be able to log in to the application using their username and password to authenticate their identity. | High | Arbaaz |
| 19 | System should allow user to view and edit their profile | Authentication and User Roles | User will be able to view and update my profile information, such as name, email address, and contact details, to ensure my account information is up to date. | Medium | Arbaaz |
| 20 | System should allow user to logout | Authentication and User Roles | User will be able to log out of the application to ensure the security of my account and prevent unauthorized access. | High | Arbaaz |
| 21 | System should allow user to receive messages when authentication fails | Authentication and User Roles | User will be able to receive appropriate error messages or notifications when authentication fails or when there are issues with his/her account. | Low | Arbaaz |
| 22 | System should allow user to reset their password | Authentication and User Roles | User will be able to reset their password in case of forgot password or need to change it for security reasons. | Medium | Arbaaz |
| 23 | System should allow user to have different roles | Authentication and User Roles | User will be able to have different roles or permissions assigned to their account, such as administrator, manager, or regular user | High | Vijaya |
| 24 | System should allow admin to manage user accounts | Authentication and User Roles | Admin will be able to manage user accounts, including creating, editing, and deleting user profiles, to maintain the system's security and user management. | Low | Vijaya |
| 25 | System should allow admin to assign roles to users | Authentication and User Roles | Admin will be able to assign appropriate roles and permissions to user accounts based on their responsibilities and access needs. | Medium | Vijaya |
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| 26 | System should allow supervisor to add new driver | Driver Management Module | Supervisor will be able to add new drivers to the system, providing their personal details such as name, contact information, and license information. | High | Ravali |
| 27 | System should allow supervisor to maintain and update driver records | Driver Management Module | Supervisor will be able to update and maintain the driver records, including their qualifications, certifications, and any other relevant information. | Medium | Ravali |
| 28 | System should allow supervisor to filter drivers | Driver Management Module | Supervisor will be able to view and search the list of drivers, filtering them based on availability, qualifications, or other criteria. | Medium | Ravali |
| 29 | System should allow supervisor to remove drivers | Driver Management Module | Supervisor will be able to archive or remove drivers from the system when they are no longer active or relevant. | Low | Ravali |
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| 30 | System should allow supervisor to add new vehicles | Vehicle Management Module | Supervisor will be able to add new vehicles to the system, providing their details such as make, model, and capacity. | High | Ravali |
| 31 | System should allow supervisor to remove vehicles | Vehicle Management Module | Supervisor will be able to remove vehicles from the system when they are no longer in the fleet. | Low | Ravali |
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| 32 | System should have a database connection | Database Management Module | Establish an active and reliable database connectivity using ORM | High | Vijaya |
| 33 | System should allow the users to store data from UI | Database Management Module | Users should be able to store and retrieve data from the database to persist information across sessions | High | Vijaya |
| 34 | System should allow users to create new records | Database Management Module | Users should be able to create new records in the database, providing the necessary information for each record | High | Vijaya |
| 35 | System should allow users to update new records | Database Management Module | Users should be able to update existing records in the database, modifying the information as needed | Medium | Vijaya |
| 36 | System should allow users to delete new records | Database Management Module | Users should be able to delete records from the database when they are no longer needed or relevant | Low | Vijaya |
| 37 | System should allow users to apply filters | Database Management Module | Users should be able to query the database to retrieve specific data based on search criteria or filters | Low | Vijaya |
| 38 | Data Design with primary keys, foreign keys, and relationships | Database Management Module | To define and enforce data integrity constraints, such as unique values or referential integrity, to maintain data accuracy and consistency | High | Vijaya |
| 39 | Database failures should be handled properly | Error Handling | System must handle database errors and, providing informative error messages and appropriate actions for recovery | Low | Ravali |
| 40 | System failures related code should be handled properly | Error Handling | System must handle exceptions and, providing informative error messages | Low | Ravali |
| 41 | System transactions must be logged | Error Handling | All transactions and process must be logged properly for troubleshooting | Medium | Ravali |