

# Company Name: TRANSPOLOGIC

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## SDA Deliverable #1

Section: CS-5B

### Team Members

Name	Roll Number	Role
Ahmad Habib	23i-0011	Team Manager
Muhammad Umer Naseer	23i-0663	Analyst / Designer
Rayyan Qamar Hashmi	23i-0815	Developer / QA Manager

# SDA

## Deliverable#02

Company: TranspoLogic

Product: FleetConnect – Road Cargo Fleet Management MIS

### 1. Project Overview

FleetConnect is a Cargo Fleet Management Information System (MIS) that is created to streamline the operations of trucking and road cargo transport businesses. FleetConnect offers a unified platform to manage fleets, drivers, cargo shipment, routes, schedules, and maintenance. The system consolidates all records into one MIS to allow for transparency, minimize inefficiencies, and assist in decision-making.

### 2. Motivation

Road cargo and transport companies are plagued by inefficient route planning, a lack of shipment visibility, missed deliveries, poor maintenance monitoring, and the use of manual paperwork. These problems lead to increased costs, late shipments, and unsatisfied customers. Our motivation is to create an MIS with a focus on road cargo that gives improved control of operations, reduces human error, and delivers on time and reliably.

### 3. Objectives

- To create and develop a centralized MIS for the operations of road cargo fleets.
- To keep precise records for vehicles, drivers, shipments, and routes.
- To allocate cargoes with real-time status.
- To monitor and schedule vehicle servicing.
- To produce analytical and financial reports to aid in decision-making.
- To give an easy-to-use GUI to logistics staff and administrators.

#### 4. Expected Outcomes

- A working MIS for trucking and cargo fleet management.
- Centralized vehicle, driver, and shipment database.
- Improved fleets utilization through best route scheduling.
- Scheduled maintenance tracking to prevent breakdowns and delay.
- Accurate shipment assignment and delivery status reporting.
- MIS reports on revenue, expenditure, fleet usage, and performance.
- Scalable system architecture for expansion in the future.

#### 5. Project Scope

FleetConnect will feature the following modules:

- Fleet Management: Vehicle registration, service history, availability tracking of trucks and road cargo vehicles.
- Driver Management: Profiles, license details, assignments, and working hours.
- Cargo & Shipment Management: Creating shipments, cargo information, vehicle allocation, and status updates of delivery.
- Route & Schedule Management: Vehicle to route allocation, trip planning, and schedule monitoring.
- Maintenance Tracking: Service alerts, repair history, and downtime tracking.
- Reporting & Analytics: Revenue reports, shipment history, fleet utilization, and driver performance reports.

#### 6. Tools and Technologies

- Backend: SQL for database management.
- Design & Documentation: UML diagrams, MS Office.
- Frontend: Java with Java Swing/JavaFX for GUI.
- Version Control: GitHub for source code management.

# **Deliverable #3**

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**Company:** TranspoLogic

**Product:** FleetConnect

**Group members:**

Ahmad Habib 23i-0011

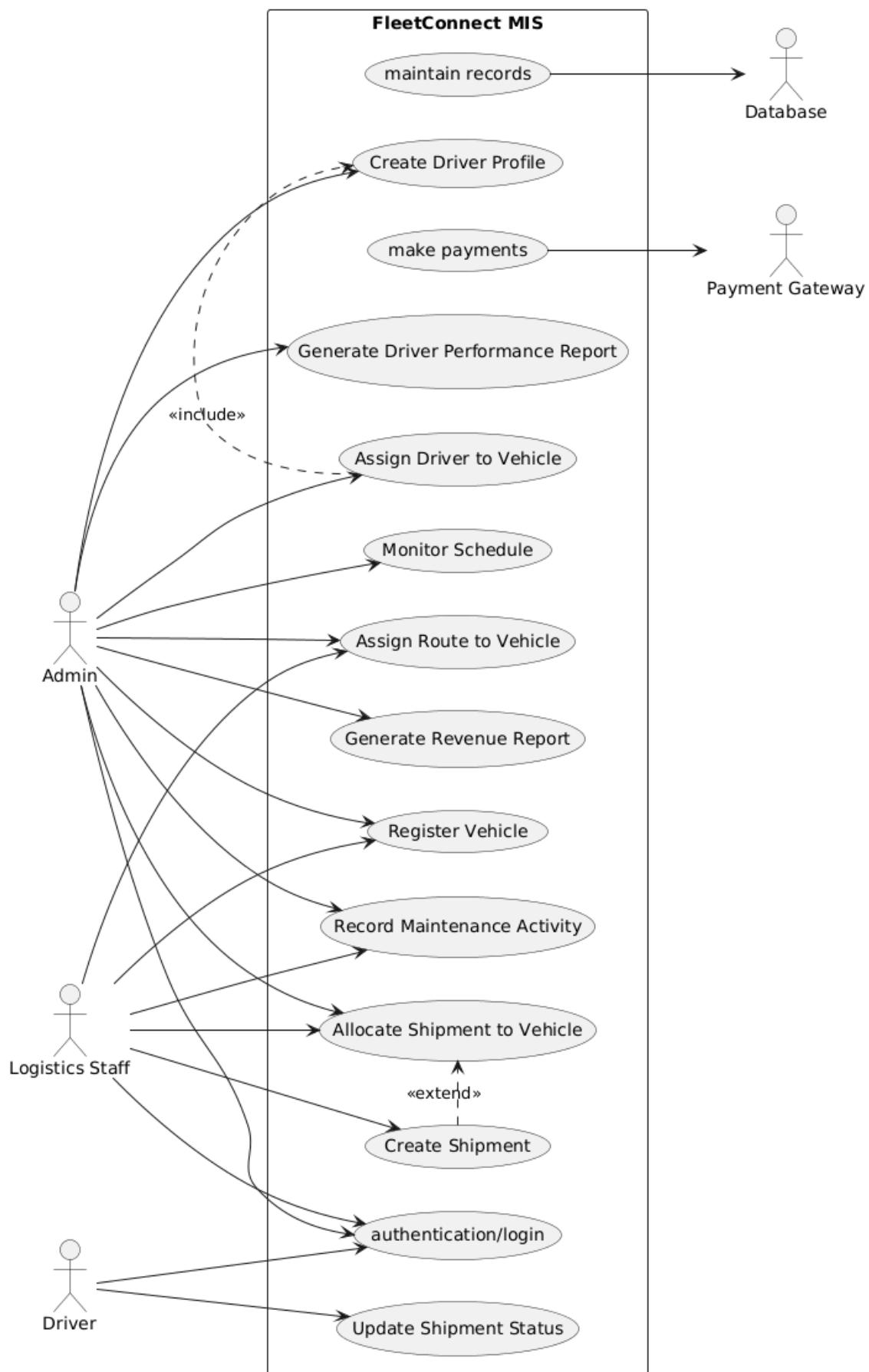
Rayyan Qamar Hashmi 23i-0815

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**Section:** CS-5B

## FleetConnect MIS- UseCase Diagram

**Team:**  
**Ahmad Habib (23i-0011)**  
**Umer Naseer (23i-0663)**  
**Rayyan Qamar (23i-0815)**



# FleetConnect: Fully Dressed Use Cases

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## Use Case 1: Register Vehicle

Use Case Name	Register Vehicle	
Scope	FleetConnect MIS	
Level	User Goal	
Primary Actor	Admin/Logistics Staff	
Stakeholders and Interests	Admin: wants accurate vehicle records. Company: needs updated fleet availability.	
Preconditions	Admin must be logged in.	
Postconditions	Vehicle is stored in the system with status available.	
Main Success Scenario	Actor Action	System Response
Extensions	Missing/invalid data → system requests correction.	

## Use Case 2: Create Driver Profile

Use Case Name	Create Driver Profile	
Scope	FleetConnect MIS	
Level	User Goal	
Primary Actor	Admin	
Stakeholders and Interests	Drivers: want their credentials stored. Company: requires valid driver details.	
Preconditions	Admin must be logged in.	
Postconditions	Driver profile is created in system.	
Main Success Scenario	Actor Action	System Response
Extensions	License invalid → system rejects entry.	

### Use Case 3: Assign Driver to Vehicle

Use Case Name	Assign Driver to Vehicle	
Scope	FleetConnect MIS	
Level	User Goal	
Primary Actor	Admin	
Stakeholders and Interests	Driver: wants fair workload. Admin: needs correct allocation.	
Preconditions	Driver and vehicle must exist and be available.	
Postconditions	Driver assignment stored in database.	
Main Success Scenario	Actor Action	System Response
	Admin selects driver and vehicle.	System checks availability.
	Admin confirms assignment.	System stores assignment.
Extensions	Vehicle under maintenance → assignment not allowed.	

### Use Case 4: Create Shipment

Use Case Name	Create Shipment	
Scope	FleetConnect MIS	
Level	User Goal	
Primary Actor	Logistics Staff	
Stakeholders and Interests	Customer: wants shipment delivered. Company: wants cargo records.	
Preconditions	System must have available vehicle.	
Postconditions	Shipment record created.	
Main Success Scenario	Actor Action	System Response
	Staff selects 'Create Shipment.'	System shows shipment form.
	Staff enters cargo details.	System saves shipment.
Extensions	No available vehicles → notify staff.	

### Use Case 5: Allocate Shipment to Vehicle

Use Case Name	Allocate Shipment to Vehicle	
Scope	FleetConnect MIS	
Level	User Goal	
Primary Actor	Admin/Staff	
Stakeholders and Interests	Drivers: want clear assignments. Company: wants efficient vehicle usage.	
Preconditions	Shipment and vehicle must exist.	
Postconditions	Shipment assigned to vehicle.	

Main Success Scenario	Actor Action	System Response
	Admin selects shipment.	System displays available vehicles.
	Chooses vehicle.	System confirms allocation.
Extensions	Vehicle capacity exceeded → system prevents allocation.	

### Use Case 6: Update Shipment Status

Use Case Name	Update Shipment Status	
Scope	FleetConnect MIS	
Level	User Goal	
Primary Actor	Driver	
Stakeholders and Interests	Customer: wants visibility of shipment. Admin: monitors delivery progress.	
Preconditions	Shipment must be active.	
Postconditions	Status updated (in-transit, delivered).	
Main Success Scenario	Actor Action	System Response
	Driver logs in.	System shows active shipments.
	Driver updates shipment status.	System stores update.
Extensions	Invalid shipment ID → error message.	

### Use Case 7: Assign Route to Vehicle

Use Case Name	Assign Route to Vehicle	
Scope	FleetConnect MIS	
Level	User Goal	
Primary Actor	Admin/Staff	
Stakeholders and Interests	Driver: needs correct route. Company: requires efficient scheduling.	
Preconditions	Vehicle and route exist.	
Postconditions	Vehicle is linked to route.	
Main Success Scenario	Actor Action	System Response
	Admin selects vehicle.	System retrieves available routes.
	Admin assigns route.	System updates record.
Extensions	Route not found → system error.	

## Use Case 8: Monitor Schedule

Use Case Name	Monitor Schedule	
Scope	FleetConnect MIS	
Level	User Goal	
Primary Actor	Admin	
Stakeholders and Interests	Admin: tracks ongoing trips. Customer: expects timely delivery.	
Preconditions	Trips scheduled.	
Postconditions	Schedules displayed.	
Main Success Scenario	Actor Action	System Response
	Admin opens 'Monitor Schedule.'	System shows current trip schedules.
Extensions	No trips scheduled → display empty.	

## Use Case 9: Record Maintenance Activity

Use Case Name	Record Maintenance Activity	
Scope	FleetConnect MIS	
Level	User Goal	
Primary Actor	Admin/Staff	
Stakeholders and Interests	Admin: keeps vehicles safe. Company: wants minimized downtime.	
Preconditions	Vehicle exists.	
Postconditions	Maintenance log updated.	
Main Success Scenario	Actor Action	System Response
	Staff selects vehicle.	System shows maintenance form.
	Records maintenance work.	System saves record.
Extensions	Invalid entry → request correction.	

## Use Case 10: Generate Revenue Report

Use Case Name	Generate Revenue Report	
Scope	FleetConnect MIS	
Level	User Goal	
Primary Actor	Admin	
Stakeholders and Interests	Admin: wants financial data. Company: needs revenue tracking.	
Preconditions	Financial data must exist.	
Postconditions	Report generated.	
Main Success Scenario	Actor Action	System Response

	Admin selects 'Generate Revenue Report.'	System compiles data.
	Admin views report.	System displays it.
Extensions	Missing data → mark report incomplete.	

### Use Case 11: Generate Driver Performance Report

Use Case Name	Generate Driver Performance Report	
Scope	FleetConnect MIS	
Level	User Goal	
Primary Actor	Admin	
Stakeholders and Interests	Admin: evaluates driver performance. Drivers: want fair assessment.	
Preconditions	Driver data must exist.	
Postconditions	Report generated.	
Main Success Scenario	Actor Action	System Response
	Admin selects driver.	System compiles trip and workload history.
	Admin requests report.	System displays report.
Extensions	No data → notify admin.	

### Use Case 12: Authentication

Use Case Name	Authentication	
Scope	FleetConnect MIS	
Level	User Goal	
Primary Actor	Admin, Logistic Staff, Drivers	
Stakeholders and Interests	All above mentioned entities need to login inorder to operate the system.	
Preconditions	User needs to have internet and device to access the system	
Postconditions	User logged in.	
Main Success Scenario	Actor Action	System Response
	User enters credentials	System accesses the database to check for pre-existing records.
		System displays dashboard.
Extensions	No data → show error.	

# **Deliverable #4**

**Company:** TranspoLogic

**Product:** FleetConnect

**Group members:**

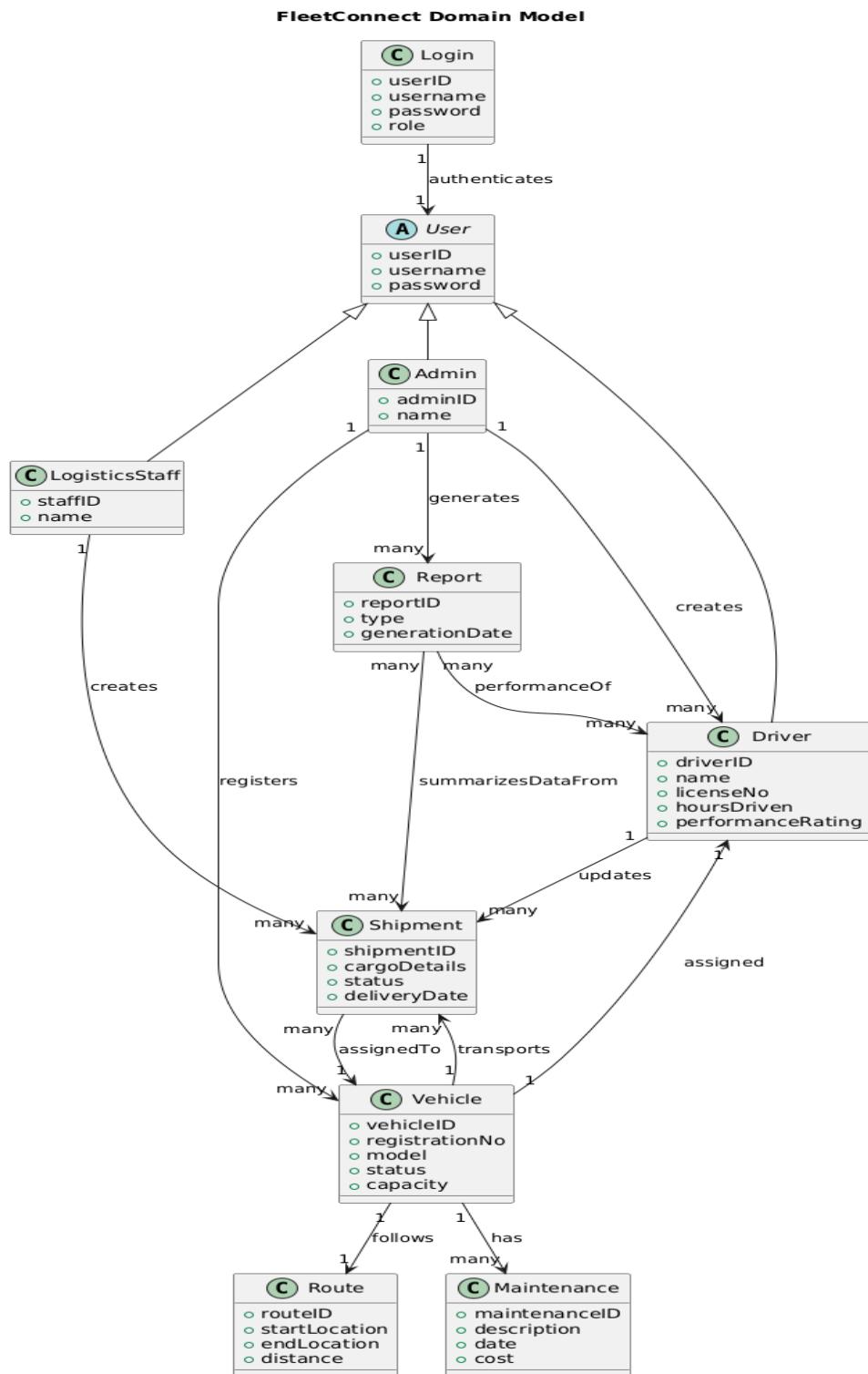
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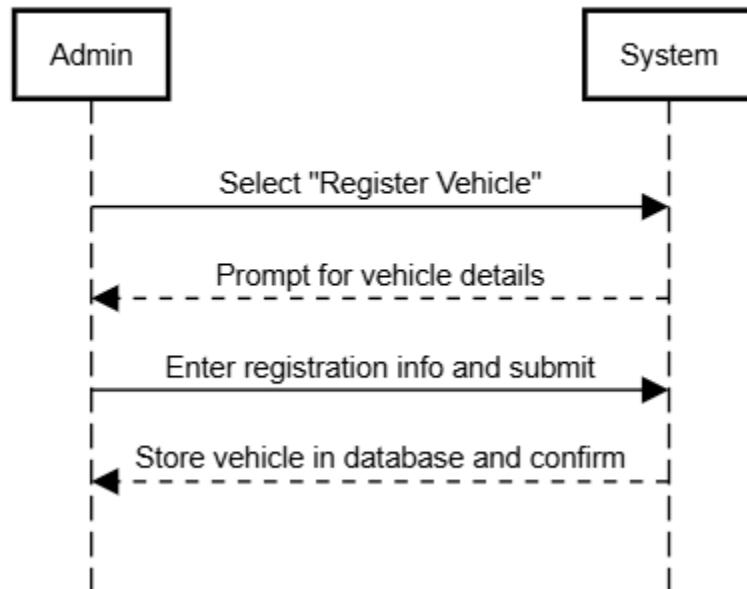
**Section:** CS-5B

## Domain Model

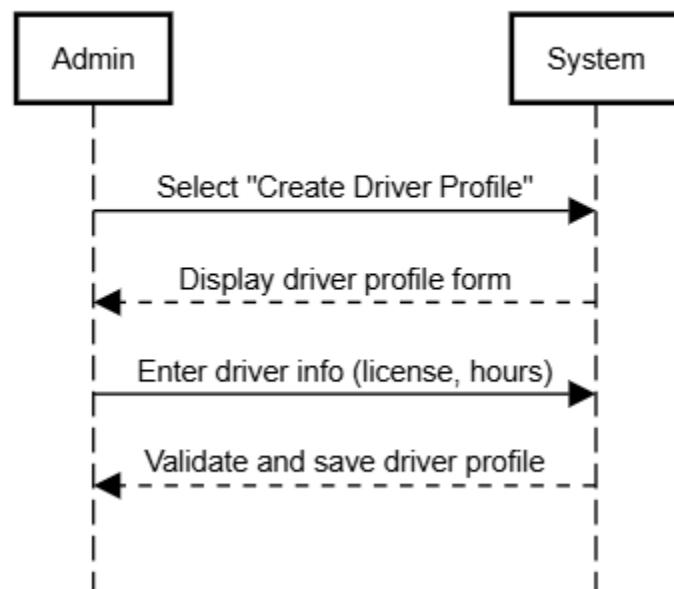


## System Sequence Diagrams

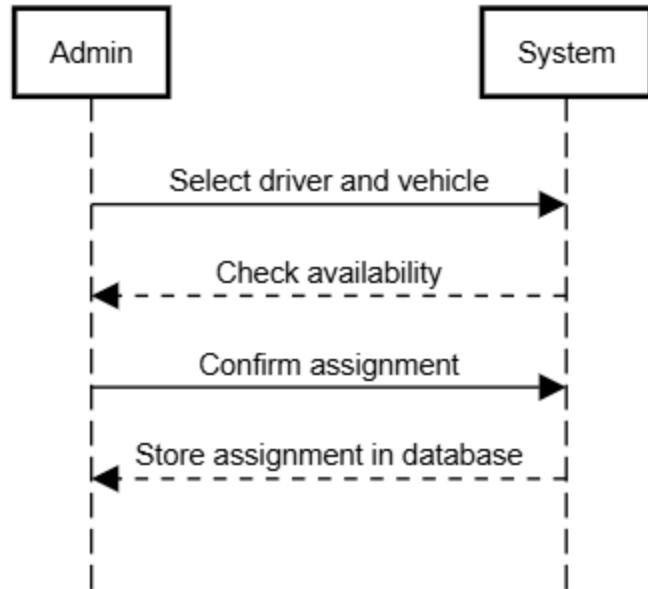
### Register Vehicle



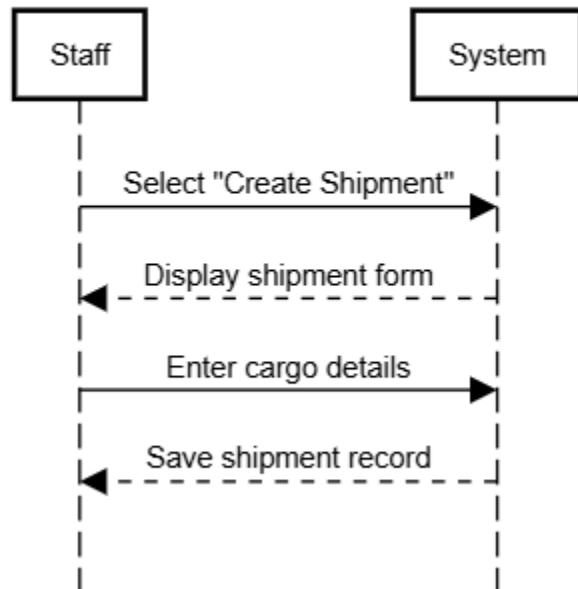
### Create Driver Profile



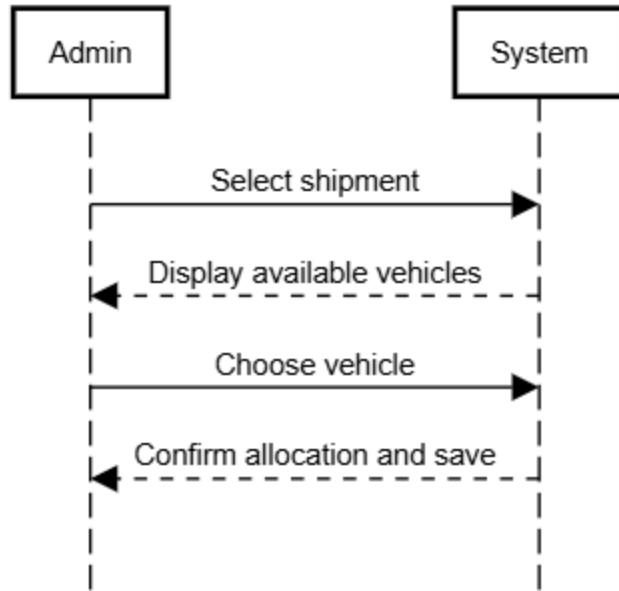
## Assign Driver to Vehicle



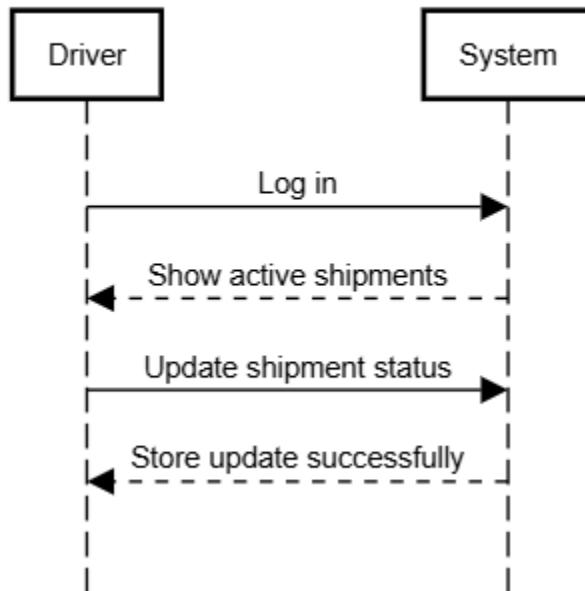
## Create Shipment



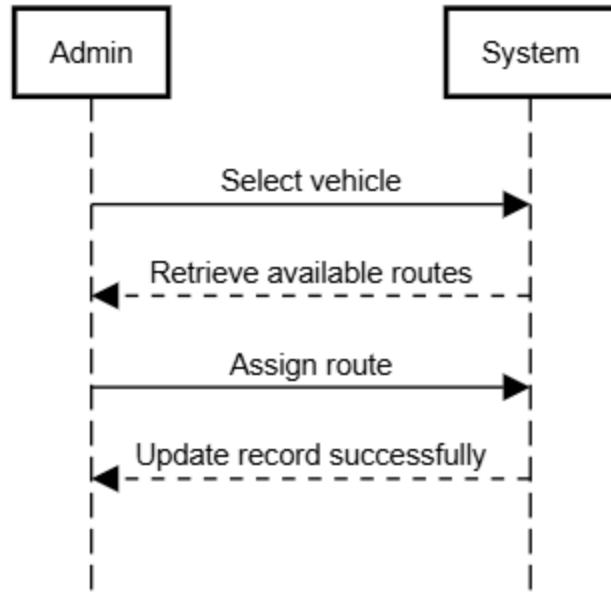
## Allocate Shipment to Vehicle



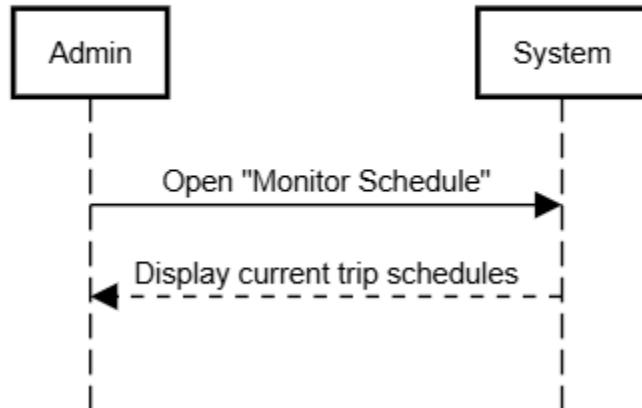
## Update Shipment Status



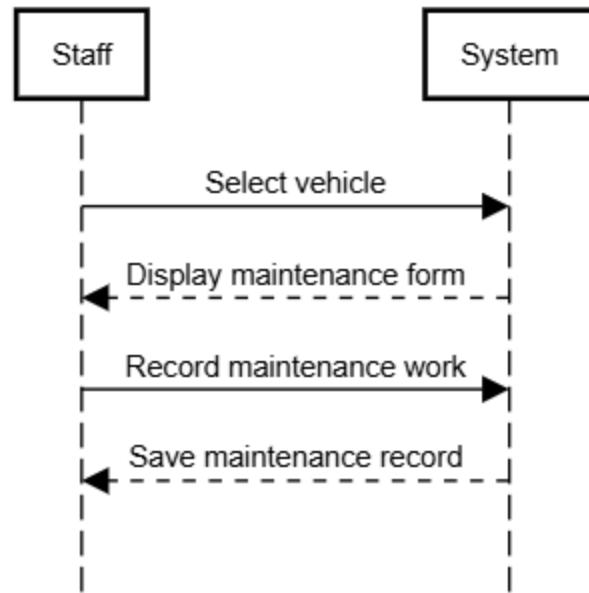
## Assign Route to Vehicle



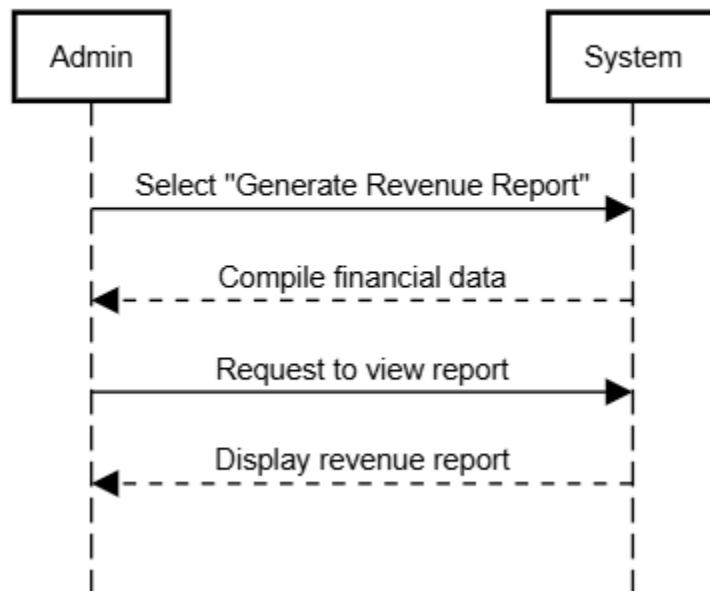
## Monitor Schedule



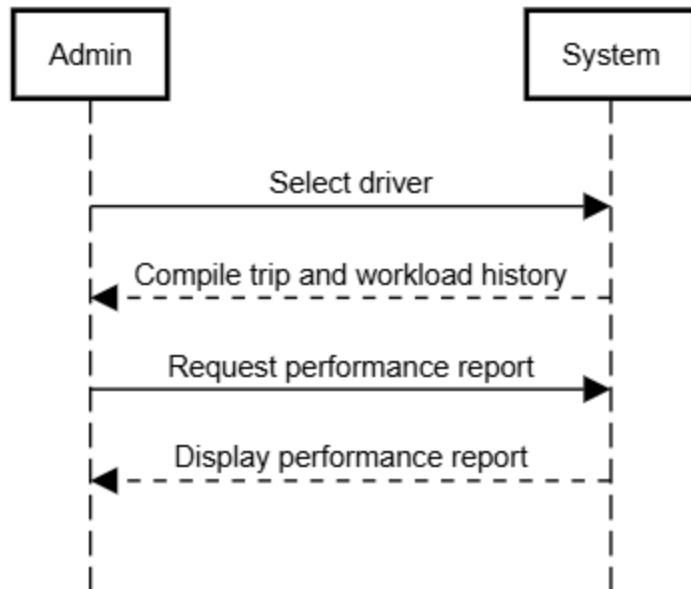
## Record Maintenance Activity



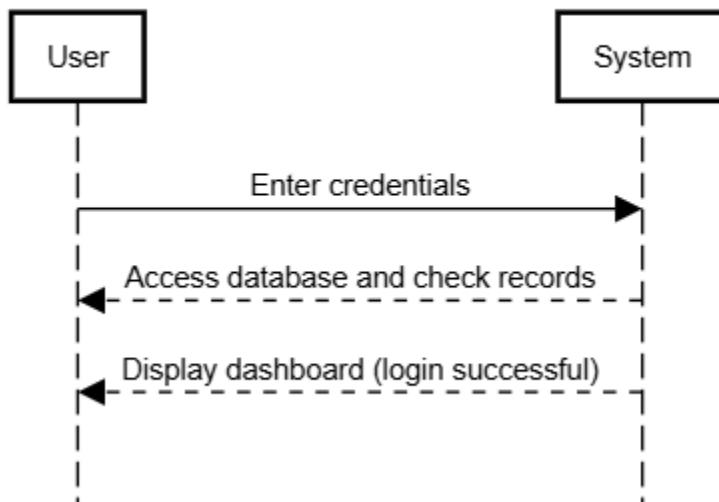
## Generate Revenue Report



## Generate Driver Performance Report



## Authentication



# **Deliverable #5**

**Company:** TranspoLogic

**Product:** FleetConnect

**Group members:**

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**Section:** CS-5B



Admin

PerformanceController

ReportingService

DriverRepository

TripRepository

PDFGenerator

Database

requestDriverPerformance(driverId, period)

generateDriverPerformance(driverId, period)

findById(driverId)

SELECT driver

driver

driver

fetchTripsByDriver(driverId, period)

SELECT trips

trips

trips

renderPerformanceReport(driver, trips)

pdfFile

downloadReport(pdfFile)

pdfFile



PerformanceController

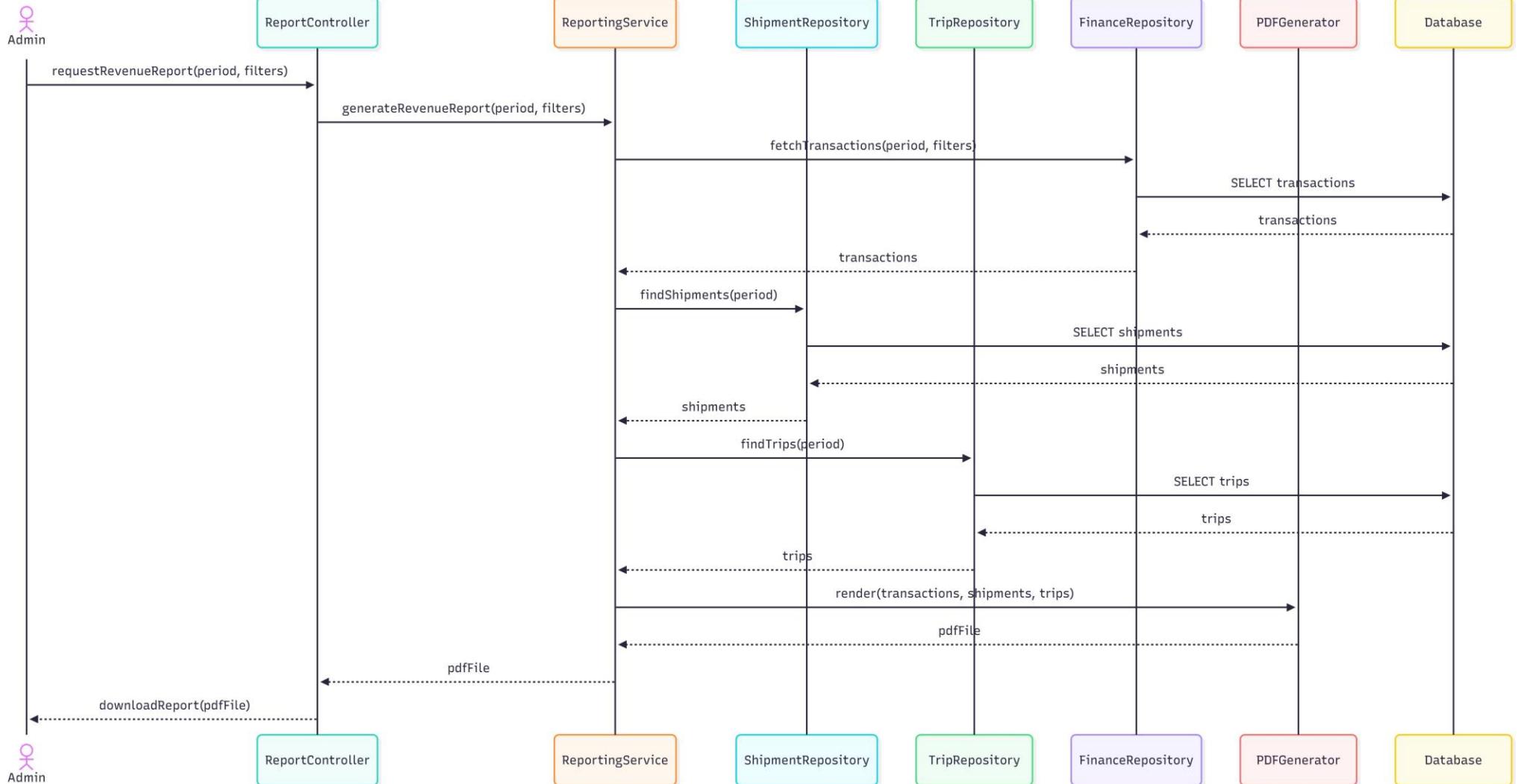
ReportingService

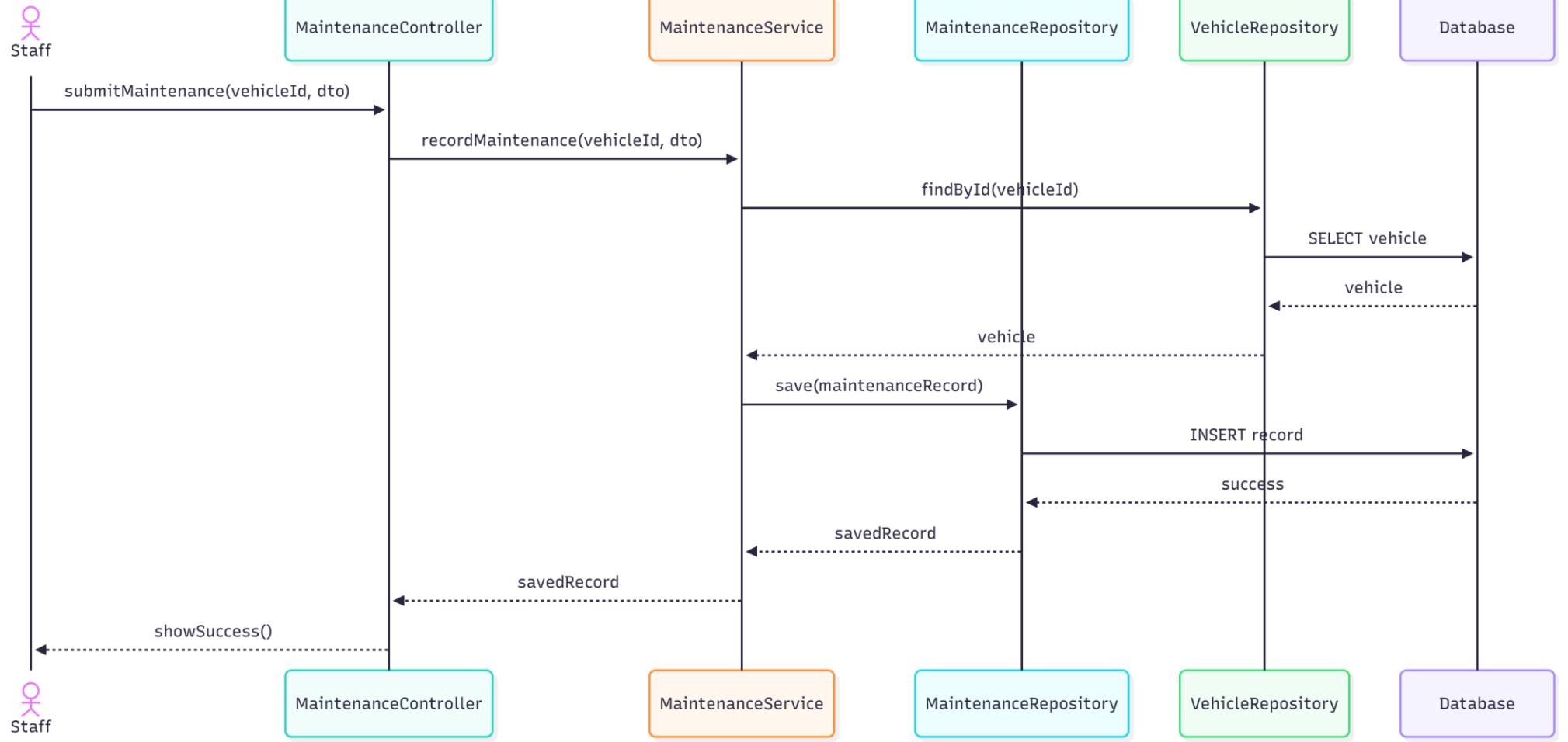
DriverRepository

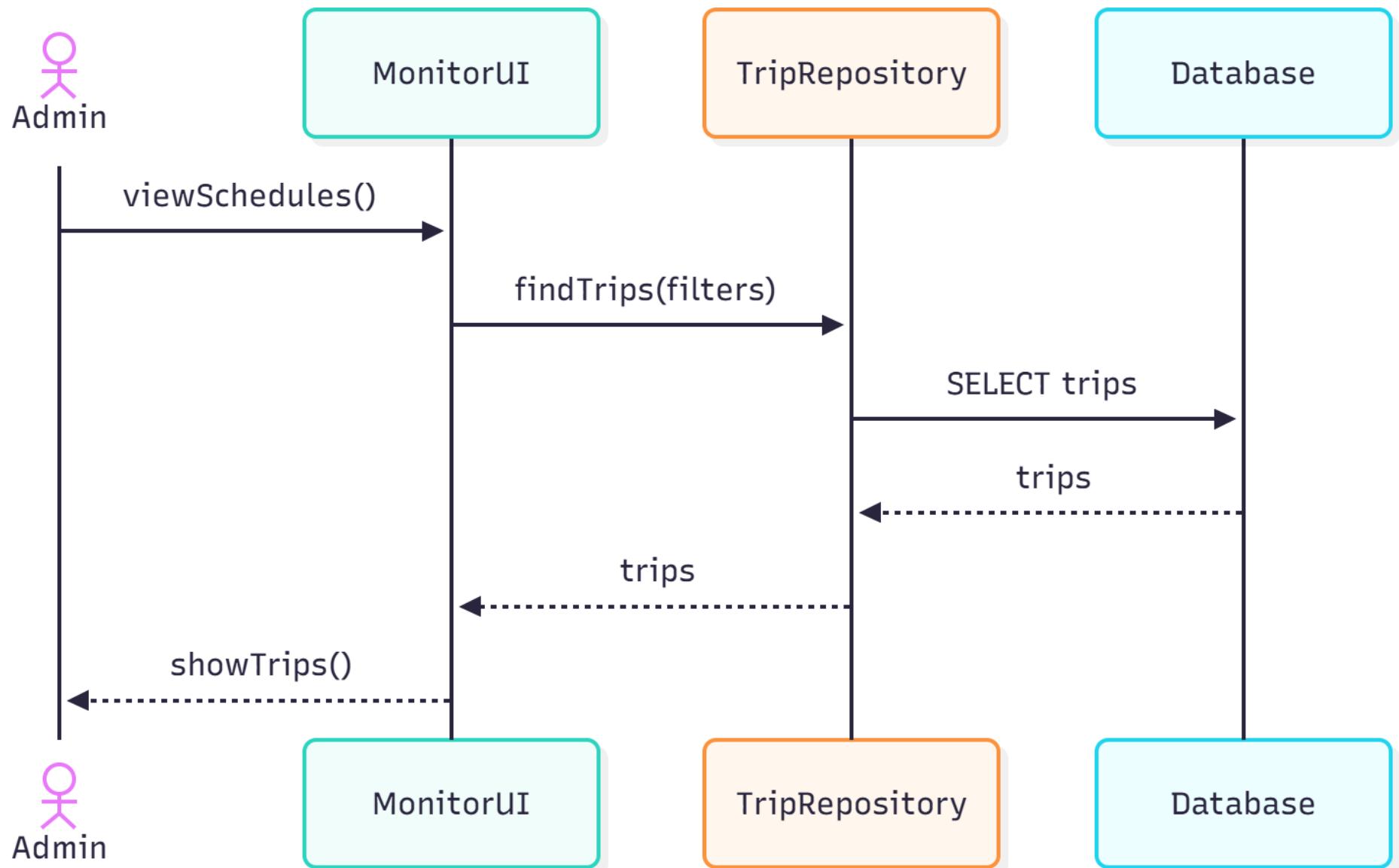
TripRepository

PDFGenerator

Database









Admin

RouteController

RouteService

RouteRepository

VehicleRepository

TripRepository

Database

assignRoute(vehicleId, routeId, startTime)

assignRoute(vehicleId, routeId, startTime)

findById(vehicleId)

SELECT vehicle

vehicle

vehicle

findById(routeId)

SELECT route

route

route

save(newTrip)

INSERT trip

success

savedTrip

showSuccess()

savedTrip



Admin

RouteController

RouteService

RouteRepository

VehicleRepository

TripRepository

Database



Driver

ShipmentController

ShipmentService

ShipmentRepository

SessionManager

Database

updateStatus(shipmentId, status, token)

validate(token)

driverId

updateShipmentStatus(shipmentId, status)

findById(shipmentId)

SELECT shipment

shipment

shipment

update(shipment.status = status)

UPDATE shipment

success

updatedShipment

updatedShipment

showSuccess()



ShipmentController

ShipmentService

ShipmentRepository

SessionManager

Database

