American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science & Technology (FST)

PROJECT TITLE

Central Vehicle Tracking System

A Software Engineering Project Submitted
By

Semester: Summer_21_22		Section: H	Group Number: 04	
SN	Student Name	Student ID	Contribution (CO3+CO4)	Individual Marks
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The project will be Evaluated for the following Course Outcomes

CO3: *Select* appropriate software engineering models, project management roles and their associated skills for the complex software engineering project and evaluate the sustainability of developed software, taking into consideration the societal and environmental aspects	Total Marks	
Appropriate Process Model Selection and Argumentation with Evidence	[5 Marks]	
Evidence of Argumentation regarding process model selection	[5Marks]	
Evaluate the sustainability of the developed software in terms of both society and the environment (Impact identification)	[5Marks]	
Submission, Defense, Completeness, Spelling, grammar and Organization of the Project report	[5Marks]	
CO4: *Develop* project management plan to manage software engineering projects following the principles of engineering management and economic decision process	Total Marks	
Develop the project plan, its components of the proposed software products	[5Marks]	
Identify all the activities/tasks related to project management and categorize them within the WBS structure. Perform detailed effort estimation correspond with the WBS and schedule the activities with resources	[5Marks]	
Identify all the potential risks in the specific project and prioritizing/categorizing those to overcome the risk factors.	[5Marks]	

Description of Student's Contribution in the Project work

Student Name: MD. REDWAN AHMED
Student ID: 21-45311-2
Contribution in Percentage (20%):
Contribution in the Project:

- Use Case Diagram
- Sequence Diagram

_____
Signature of the Student

Student Name: HASIN AABRAR KHAN
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Contribution in Percentage (20%):
Contribution in the Project:

- Project Proposal
- Class Diagram

_____
Signature of the Student

Student Name: NABIHA TAHSIN
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Contribution in Percentage (20%):
Contribution in the Project:

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- Requirement Analysis

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Contribution in the Project:

- Project Proposal
- ER Diagram

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- Development Life Cycle
- Activity Diagram

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1. PROJECT PROPOSAL

1.1 Background to the Problem

Background description:

Vehicles are an essential part of this modern economy. Some of the main reasons why this project might be the solution of some big traffic and vehicle related problems are:

- Everything from public transportation to business deliveries all around the world is done by vehicles. Most importantly in Bangladesh it is almost impossible to go out without interacting a vehicle.
- Because of the overpopulation of this country vehicle count is increasing day by day. One of the biggest challenges that comes with the overpopulation of vehicles is managing them for smooth traffic flow.
- In Bangladesh, most of the vehicles on road are completely unmanaged by the authorities.
- There is almost no tracking of the vehicles serving on the roads. Which often causes long traffic jams and fatal accidents.
- This project aims to solve these problems by centralizing all the vehicles on the road for proper management and making the drivers obey the traffic laws.

The root cause of this problem and the reason for its consideration:

In this project we analyze what are root causes of the problems that urge us to build this system. The root causes of the problems are-

- Unorganized vehicles on the road.
- Lack of overhead authority to look after the drivers and their vehicles. In Dhaka, more than five lakh registered vehicles are now on the road without fitness clearance mainly due to poor monitoring by the authorities. [Source: Adhikary, T. S. (2022, February 16). *Over half a million unsafe vehicles on the roads of Bangladesh*. Asia News Network. https://asianews.network/over-half-a-million-unsafe-vehicles-on-the-roads-of-bangladesh/]

- People violate the traffic laws and there is no one to act which encourages the drivers to violate more rules and drive dangerously on the road with unmaintained vehicles. Mobile courts of BRTA have found some irregularities: not having digital number plates and fare charts, not having drivers' photos and mobile numbers inside buses, carrying extra passengers without following health guidelines, unhygienic environment inside buses. . [Source Info: Adhikary, T. S. (2021, January 26). *A third of govt- owned buses broke rules*. The Daily Star. https://www.thedailystar.net/backpage/news/third-govt-owned-buses-broke-rules-2034445]
- Some people faking and imposing their driving documents. This problem of uncontrolled drivers and vehicles is very important to consider. Because they are causing suffering for the people and the driver who want to peacefully drive their vehicles as well.
- Traffic jam and location related doubts while driving on roads.

By eliminating these problems, the road can be made more secure, and less traffic jams will occur.

1.2 Solution to the Problem

Project objectives:

The objective of our project is to-

- Unifying all the vehicles and their drivers under a central system.
- Ensuring proper conditions and eligibility of vehicles and driver to go out on the road. To achieve this goal the solutions could be to authenticate the vehicles and drivers for fitness.
- Checking if the driver is eligible to drive certain types of vehicles or not.
- Tracking the location of the vehicle and providing support if needed.
- Checking if the drivers are violating any rules or not.
- Checking the drivers when they enter the vehicle to see if they are the right driver or not and monitoring their intentions and attention while driving.
- Holding vehicle owners and drivers liable for any kind of misconduct.

These are the solutions that we are going to provide to solve the above-mentioned problems.

Proposed solutions to deal with the problems:

In the proposal of this problem-solving system, mentioned ways can be followed:

- As a solution to fake documentation, we can authenticate the driver and vehicle details as per the online database of registered driver’s license.
- Vehicles can be verified by proper documentation of the purchase and insurance. This solution is particularly appropriate for this problem, because the is data stored in the database each time anyone gets a driving license. And this can be easily developed by any software firm with a reasonable budget.
- To solve the problem of any driver violating the rules, we can implement GPS tracking to uniquely identify each vehicle and monitor their parking and traffic signal violation details.

- GPS can also be used to send help to a vehicle in need. This is also appropriate because of the availability of GPS, and the ease of use.
- To ensure the driver is the rightful driver of the vehicle or not, facial recognition hardware and software can be implemented inside each registered vehicle. Which will monitor the driver and their condition while driving and inform the authorities if anything goes wrong. This can also be achieved because the hardware and software for facial recognition is becoming widely available in our country.

Basic functionalities of our proposed solution that makes the best use of state-of-art technology and produced a significant result that is likely to have a major impact on societal, health, safety, legal and cultural issues:
The problems mentioned in this report can be solved using technological assistance. Such as-

- State of the art technologies such as Online authentication system can be used to solve fake documentation and unauthorized vehicles.
- A special facial recognition system can be used to identify the right driver and monitor drivers' behavior while driving.
- The Advanced Global Positioning System can be used to keep track of the vehicles' location and conditions.

By using these technologies, the real-life problems mentioned above can be easily solved and it will have a major impact on social, health, safety, legal and cultural issues. Because the factors causing the issues will be reduced.

Contribution of our project to the development of scientific results:
The Central Vehicle Tracking System (CVTS) project successfully implements real-time monitoring and control for fleets of cars, which significantly advances scientific findings. Important contributions consist of:

- **Enhanced Operational Efficiency:** By utilizing real-time tracking, CVTS maximizes transportation operations and route planning.
- **Data-Driven Decision-Making:** The system produces and evaluates large amounts of data on the movements of vehicles and operational parameters, it is the development of scientific understanding of traffic patterns.
- **Integration of Cutting-Edge Technologies:** CVTS fosters scientific discoveries at the nexus of data analytics, and transportation management by integrating cutting-edge technologies like GPS and IoT.
- **Security and Privacy Measures:** By putting strong security measures in place, CVTS protects sensitive data and advances scientific understanding of cybersecurity in linked systems.
- **User-Centric Interface Design:** CVTS improves user experience in intricate operating situations and advances scientific study in the field of user interface design.

In conclusion, the CVTS advances science by utilizing state-of-the-art technologies, solving real-world transportation and logistics issues, encouraging data-driven decision-making, and encouraging cooperation among researchers.

Literature review on what are the other studies that have discussed the same topic of ours:

Our project idea is in category B type. As there are some similar ideas like this project even if not implemented.
With similar goals of our project, some many other projects like “Intelligent Real-Time Vehicle Tracking Information System” focus on developing an intelligent information system for real-time vehicle tracking using an event streaming platform.
The goal is to achieve high performance, provide real-time data processing, and build a resilient, fault tolerant, and high availability service.
The system allows users to operate, observe, and track vehicles in real-time, enabling fleet management functions like fleet tracking, routing, dispatching, onboard information, and security.
The system is used in transport and logistics industries, requiring an open architecture and high scalability.
The server part of the system is built using Java programming language and Spring Framework, while the event streaming platform is Kafka. Hibernate is used for data storage and processing.
Third-party React libraries are used on the client side to display GPS data and vehicle information.
The system covers all user needs for real-time tracking using a web browser.
This project is somehow a bit different to our project “Central Vehicle Tracking System” in terms of functional requirements and proposed solutions.

Source Info: *Google Scholar*. (n.d.).
https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Intelligent+Real-Time+Vehicle+Tracking+Information+System&btnG=

Description of all the existing studies presented in the problem area:

Existing Studies:

- **Modelling Traffic Flow:** The use of computers and mathematical models to simulate traffic flow is the subject of numerous studies. This aids in deciphering patterns of traffic congestion and locating possible hotspots.
- **Research on Behavior:** Research looks at how drivers behave and pinpoints the elements that lead to breaking traffic laws. It is essential to comprehend these behaviors in order to create therapies that work.
- **Analysis of Accidents:** Research looks on the trends and causes of traffic accidents. This covers elements including weather patterns, driving behavior, road design, and the role of technology in reducing or preventing collisions.
- **Infrastructure and Urban Planning:** The goal of urban planning research is to create infrastructure and transportation networks that reduce traffic jams. This covers research on the effects of smart city planning, optimized road layout, and public transit.
- **Strategies for Traffic Management:** Various strategies for traffic management have been explored, such as dynamic traffic signal control, intelligent transportation systems (ITS), and real-time traffic monitoring to optimize flow and reduce congestion.

Existing solutions:

- **Traffic Control and Management Systems:** Software solutions are used by Intelligent Transportation Systems (ITS) to handle dynamic rerouting, adaptive signal control, and real-time traffic monitoring. Two such examples are SURTRAC (Scalable Urban Traffic Control) and SCATS (Sydney Coordinated Adaptive Traffic System)
- **Apps for navigation:** Real-time traffic data is incorporated into navigation apps such as Waze, Google Maps, and Apple Maps to give users the best routes possible, avoiding traffic jams and accidents.
- **Vehicle-to-Infrastructure (V2I) Communication:** Infrastructure and automobiles can communicate thanks to emerging technologies. In order to improve traffic management and reduce accidents, V2I systems make use of sensors and communication protocols.
- **Software for Simulating Traffic:** Traffic flow is modelled and analyzed using simulation tools such as VISSIM and AIMSUN. These simulations help in establishing efficient traffic management methods and in comprehending the effects of various scenarios.
- **Telematics Systems:** Telematics solutions offer valuable insights into driver behavior by collecting and analyzing data on speed, braking, and compliance with traffic regulations. Telematics is a feature that fleet management systems frequently use to increase driver safety.
- **Systems for Surveillance and Enforcement:** Red-light and speed cameras are examples of automated enforcement systems that use software to monitor and enforce traffic laws, discouraging noncompliant behavior.

2. DEVELOPMENT LIFE CYCLE

2.1 Process Model

Analysis regarding the nature and environment of the software:

Creating an automated central system for tracking drivers and vehicles requires a lot of work, including integrating hardware sensors, analyzing data in real-time, and making sure the system is reliable and safe.

Nature of the Software:

1. **Processing in real time:** Real-time vehicle and driver behavior monitoring is a feature of the system. Decision-making and quick response are essential for efficiency and safety.

2. **Hardware Integration:** It is essential to integrate sensors, cameras, and other hardware elements. Accurate monitoring requires reliable hardware and software communication.

3. **Dependability and Safety:** In an autonomous central vehicle tracking system, strict dependability and safety requirements are essential. The system needs to follow tight safety rules and requirements.

4. **Flexibility & Expandability:** The program must be scalable for upcoming improvements and flexible enough to accommodate various car kinds. To keep up with evolving technology and requirements, regular updates and enhancements could be required.

Environment of the Software:

1. **Conditions that are dynamic and unpredictable:** Automobiles function in a variety of unpredictably changing contexts. The software needs to manage different weather conditions, traffic patterns, and road conditions.

2. **Adherence to Regulations:** Adherence to legal and safety mandates is crucial. Regulations and industry standards should be met, if not exceeded, by the software's design.

3. **Privacy and Data Security:** Strong security procedures are needed to handle sensitive data about driver and vehicle behavior. To safeguard user information, privacy concerns need to be considered.

Best Suitable Method: We have chosen SCRUM as the most suitable method for developing our project. Choosing the Scrum model for developing an automated vehicle and driver monitoring system, given a team size of 5 members and a development time of approximately 3 months, involves considering the project's nature, requirements, and the advantages offered by Scrum in this context.

Our arguments, based on our analysis of the selected method and why it is the best choice among all other methods to develop our proposed software.

1. **Iterative and agile development:**
   Scrum: Provides a fixed-length sprint development approach that is iterative and agile, usually lasting 2-4 weeks. This makes it possible to deliver functional software in short cycles, adapt to changing needs, and get constant feedback.
   Others: These models (Waterfall, V, Sawtooth, Spiral, Unified Process, WRSPM) are usually more sequential and might not be able to handle the many modifications and iterations needed for an automated vehicle system in a short amount of time.

2. **Fast Reaction to Modifications:**
   Scrum: Places a strong emphasis on flexibility, which makes it appropriate for projects whose needs or technologies change over time.
   Others (WRSPM, Spiral, Unified Process, and Prototyping Models): Although several of these approaches allow for prototypes or iterations, Scrum's shorter sprints allow for quicker reactions to changes and new information.

3. **Small-Group Cooperation:**
   Scrum: Intended for small, interdisciplinary teams with three to nine people. promotes efficient communication, teamwork, and a common understanding of objectives.
   Other models (WRSPM, V Model, Unified Process Model, and Waterfall): Certain models might not be as suitable for the intimate cooperation required in a small group setting.

4. **Frequent Delivery:**
   Scrum: Encourages frequent releases at the conclusion of every sprint, enabling stakeholders to observe real progress and offer ongoing input.
   Others (V, Sawtooth, Unified Process, Waterfall, and WRSPM models): These models frequently feature lengthier development cycles, which postpone input and insight into the state of the project.

5. **Risk Reduction:**
   Scrum: Frequent reviews and retrospectives help identify and mitigate risks early on.
   Others (WRSPM, Unified Process Model, Spiral Model, and Waterfall): Although there are methods that deal with risk management, Scrum's iterative approach makes it easier to recognize and reduce hazards as the project progresses.

6. **Client Partnership:**
   Scrum: Through rituals like the Sprint Review, it promotes regular customer interaction.
   Others: Some approaches (Waterfall, V, Sawtooth, Spiral, Unified Process, Prototyping, Lean Software Development, Kanban, WRSPM) might not place as much emphasis on consistent customer collaboration.

7. **Effective Use of Resources:**
   Scrum: Constantly reordering priorities promotes flexible planning and effective resource use.
   Others (WRSPM, Spiral, Sawtooth, Unified Process, and Waterfall models) might not be as flexible in response to shifting priorities.

Evidence to support argument for our model selection in developing our proposed solution:

Iterative and Incremental Approach: Our project is not a huge project. Overall development time can be around 3 months. And team members are also limited to five. Scrum encourages an incremental and iterative approach to development. At the conclusion of each sprint, which lasts for two to four weeks, it enables your team to deliver functional software increments. This fits in perfectly with your three-month development schedule.

Ability to Adjust: This project is based on a dynamic environment. Environment variables, project requirements and priorities can change at any time during the development process. Scrum welcomes change. Scrum enables us to swiftly and easily modify priorities when your team becomes more knowledgeable about the system requirements or encounters unforeseen difficulties.

Collaboration and Communication: Our small team of five members needs to be helpful and communication between the members needs to be very strong to successfully execute this project. Scrum places a strong emphasis on communication and teamwork between stakeholders, product owners, and team members. Effective communication is facilitated by regular rituals like sprint planning, retrospectives, and daily stand-ups.

Transparency and Visibility: To develop our system all developers need to see the codes to build and modify features. Scrum master and management needs to monitor the progress and the customer needs to test and give feedback on the features. So, transparency is very important in our project. Scrum makes information transparent by using tools like burndown charts, sprint backlogs, and product backlogs. This aids in everyone's understanding of the project's advancement and difficulties.

Empowered Teams: Self-organizing teams gain empowerment from Scrum. Members of your team take responsibility for their job, collaborate to make decisions, and constantly enhance their workflows. As our project is based on a small team, and development time is short. We need constant motivation to keep the teams organized and keep up the workflows until the project is completed and all the user requirements are met.

2.2 Project Role Identification and Responsibilities

The roles/stakeholders in the software/project management activities in our software development and their responsibilities of the role in the software development:

1. **Product Owner:**
   - Represents the business and end-users.
   - A product owner is selected by the Scrum Master, along with the customer and the management.
   - He makes the final decisions of the tasks related to product Backlog.
   - Defines and prioritizes features for the automated vehicle and driver monitoring system.
   - Provides continuous feedback to ensure the product meets business objectives.
2. **Scrum Master:**
   - Facilitates the Scrum process for the team.
   - Removes impediments and ensures a smooth development process.
   - Helps the team stay focused and on track to meet sprint goals.
3. **Scrum Team:**
   - Comprises software developers, testers, and other necessary roles.
   - Responsible for implementing and delivering increments of the automated vehicle and driver monitoring system during each sprint.
   - Collaborates closely to ensure cross-functional capabilities.
   - Has the authority to decide on the necessary actions and to organize itself in order to achieve the goals of each Sprint.
   - The scrum team is involved, for example, in effort estimation, creating the Sprint Backlog, reviewing the product Backlog list and suggesting impediments that need to be removed from the project.

4. **Customer:**
    - Include end-users, customers, regulatory bodies, and other parties with an interest in the automated vehicle and driver monitoring system.
    - Provide requirements, feedback, and validation throughout the development process.
    - Customer participates in the tasks where product Backlog is related and the item for the system is being developed or enhanced.
5. **Project Manager:**
    - Management oversees final decision making, along with the agreements, standards, and
    - conventions to be followed in the project.
    - Management participates in the setting of goals and requirements for the system.
    - Oversees the project from a high-level perspective.
    - Assists in resource allocation and helps manage dependencies.
    - Works closely with the Scrum Master to ensure project goals align with organizational objectives.
6. **Business Analyst:**
    - Collaborates with the Product Owner to gather and refine business requirements.
    - Works closely with the Development Team to ensure a clear understanding of user needs.
    - Assists in defining user stories and acceptance criteria.
7. **UX/UI Designer:**
    - Designs the user interface and experience for the automated vehicle and driver monitoring system.
    - Collaborates with the Development Team to implement user-friendly design elements.
    - Incorporates user feedback into design iterations.
8. **Architect/Systems Architect:**
    - Designs the overall system architecture for the automated monitoring system.
    - Collaborates with the Development Team to ensure technical feasibility and adherence to architectural principles.
9. **Quality Assurance (QA) Team:**
    - Plans and executes testing activities to ensure the quality of the system.
    - Works closely with the Development Team to identify and address defects.
    - Collaborates on automated testing strategies to enhance efficiency.
10. **Security Specialist:**
    - Focuses on identifying and addressing security vulnerabilities in the automated monitoring system.
    - Collaborates with the Development Team to implement security measures and ensure compliance.

11. Operations and Support Team:

- Assists in deployment, monitoring, and maintenance of the automated monitoring system.
- Provides ongoing support to end-users.
- Collaborates with the Development Team to address operational issues.

Case Study:

In this system, all vehicles of a country or city are managed centrally by this management. For that, the user will have to login to the system. One can login as admin, driver, and owner. System verifies the password and login info. The system can check the driver in charge and driver in duty, driver's conditions, valid documents. The system can track vehicle location by GPS. Checks if there's any rules violation and notifies the authority and the driver if there's any problem or accidents. If any accidents occur, authority is formed, and authority notifies emergency services and also checks if this is an issue to be solved by police. The system can notify the driver about road conditions. The new vehicle is registered by the owner and verified by the authority. Enter the data into the database. Also new driver information and owner information is entered, checked, and verified by the system.

Functional & Non-Functional Requirement Analysis:

Registration:

Functional Requirements

- Car owners and drivers can register to the system and provide details into the system such as name, registration ID, phone number, email, address, photo, licenses and certificates and papers linked to vehicle registration also.
- They will also set passwords for logging in.

Priority Level: High

Precondition: User must have a unique username and mail address and must follow certain characteristics rules when password to be set.

Login

Functional Requirements

- After registration, the car driver and owner will login to the system providing details into the system such as name, registration ID, password.
- The login credentials (username, registration ID and password) will be verified with database records by the system.
- If the login is successful, the home page will be displayed.

Priority Level: High

Precondition: User must have valid username and password.

Document Verification

Functional Requirements

- Users will have various types of driver documents, including licenses, medical certifications, training records, and endorsements in their profile section.
- The system should validate documents against predefined criteria which includes document type, expiration date, and data accuracy. Documents nearing expiration should trigger notifications to both users and drivers.
- The system must verify that extracted data matches the document's content. Any discrepancies should trigger alerts and be logged for review.
- The system should employ fraud detection techniques to identify potential counterfeit or tampered documents. Suspicious documents should be flagged for manual review.
- The system should integrate with licensing authorities for real-time document verification. Licenses and endorsements can be verified against official databases.
- After successful verification, the document status is updated to "Verified" or a similar label. Users can easily identify compliant documents.

Priority Level: High
Precondition: Document authenticity must be verified.

Vehicle authentication

Functional Requirements

- Vehicle owner will upload vehicle details like vehicle type, name, license ID etc. to the system and system will verify and upload it to the database for authentication.
- Related details like owner details and driver-in-charge info will also be updated in this detailed information.
- The system must verify that extracted data matches the document's content. Suspicious documents should be flagged for manual review.

Priority Level: High
Precondition: Vehicle details must have validity.

Document Management

Functional Requirements

- In order to search and retrieve driver documents based on many criteria (such as name, document type, and expiration date), the program must have an intuitive user interface.
- Notifications will be sent automatically to selected staff if the driving and vehicle documents have expired or are about to expire.
- Any updated new information such as- owner info, driver info, vehicle info will be updated in the database by the system if user provides new details.
- Verified documents should be archived securely for future reference. Archived documents can be retrieved for audit or compliance purposes.

Priority Level: High
Precondition: Document authenticity must be verified and valid.

Monitoring

Functional Requirements

- Vehicles will be monitored at every state with dashcam, sensor and face detector and will be recorded in the system.
- Also, the driver in duty will be verified if the correct driver in charge as database, if driver is maintaining traffic rules properly, speeding or not, if vehicle and driver license is valid or not.
- Any kind of unusuality will be caught in the system.

Priority Level: High
Precondition: Driver-in-charge and driver-in duty should be the same person.

Location tracking

Functional Requirements

- The vehicle will always be in surveillance and tracked in roads.
- It is also needed for traffic jams, locating advantages and road conditions. Or, if vehicle is lost in GPS, system will detect the problem in maps.

Priority Level: High
Precondition: Vehicle must have GPS installed.

Notification & Communication

Functional Requirements

- Notification will be sent to drivers and owners in different cases. Driver will be notified of the road conditions in certain intervals of time.
- If the driver is not attentive to driving, speeding more than ruled then driver will be notified instantly.
- If driver is drugged during driving, the owner of vehicle will be notified the nearest police authority as well and will be checked.
- In case of accidents, several users will be notified.
- Also, if there's any documents that need to upload, updated or needed to submit, related user will be contacted.

Priority Level: Medium
Precondition: Vehicle must have GPS, dashcam and face detector installed.

Emergency services

Functional Requirements

- Emergency services like legal authority, police and medical assistance will be available through the alert system for accidents such as collision or sudden car breakdown or any kind of passenger emergencies.

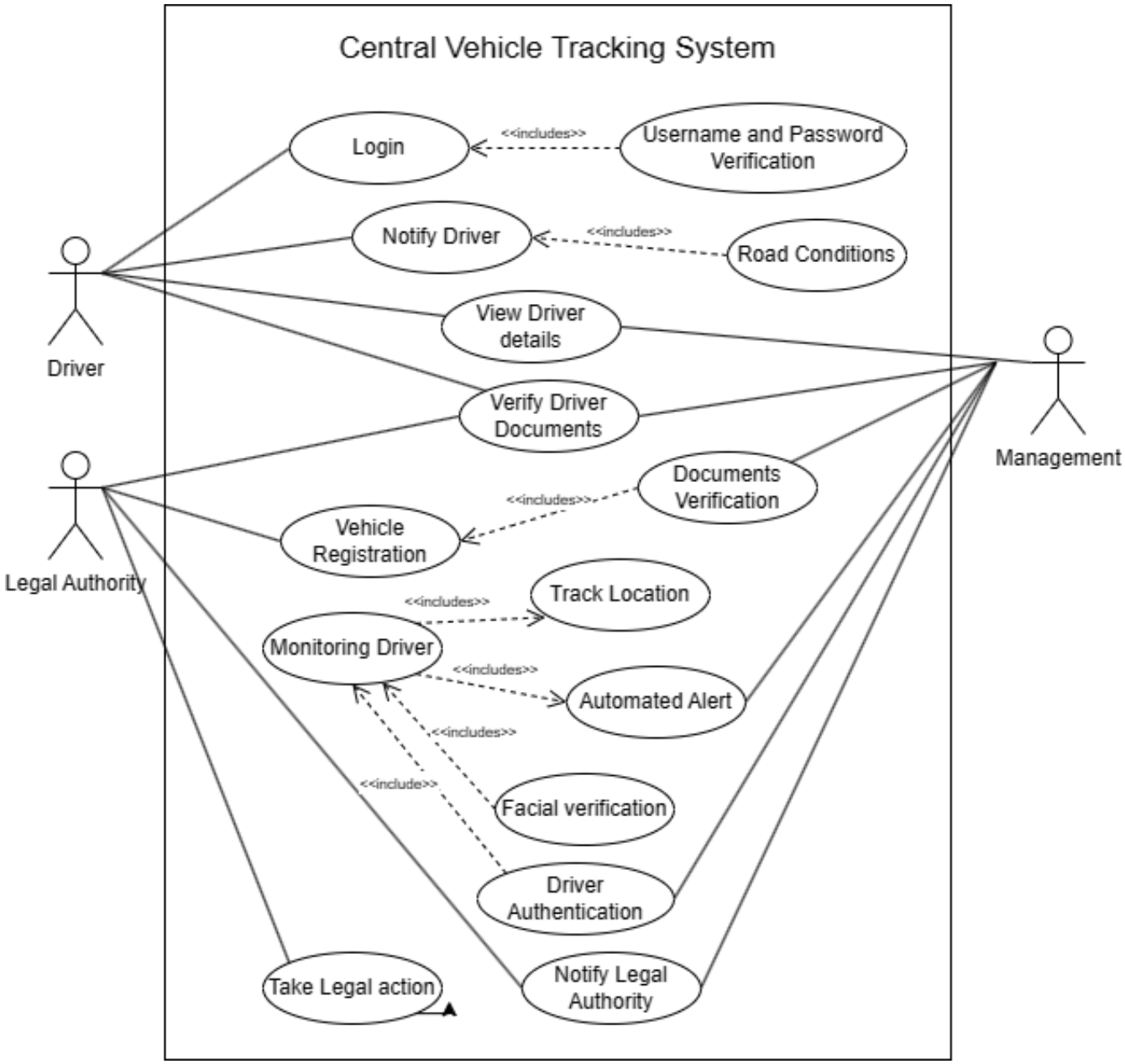
Priority Level: Medium
Precondition: Vehicle must have GPS and dashcam installed.

Non-functional Requirements:

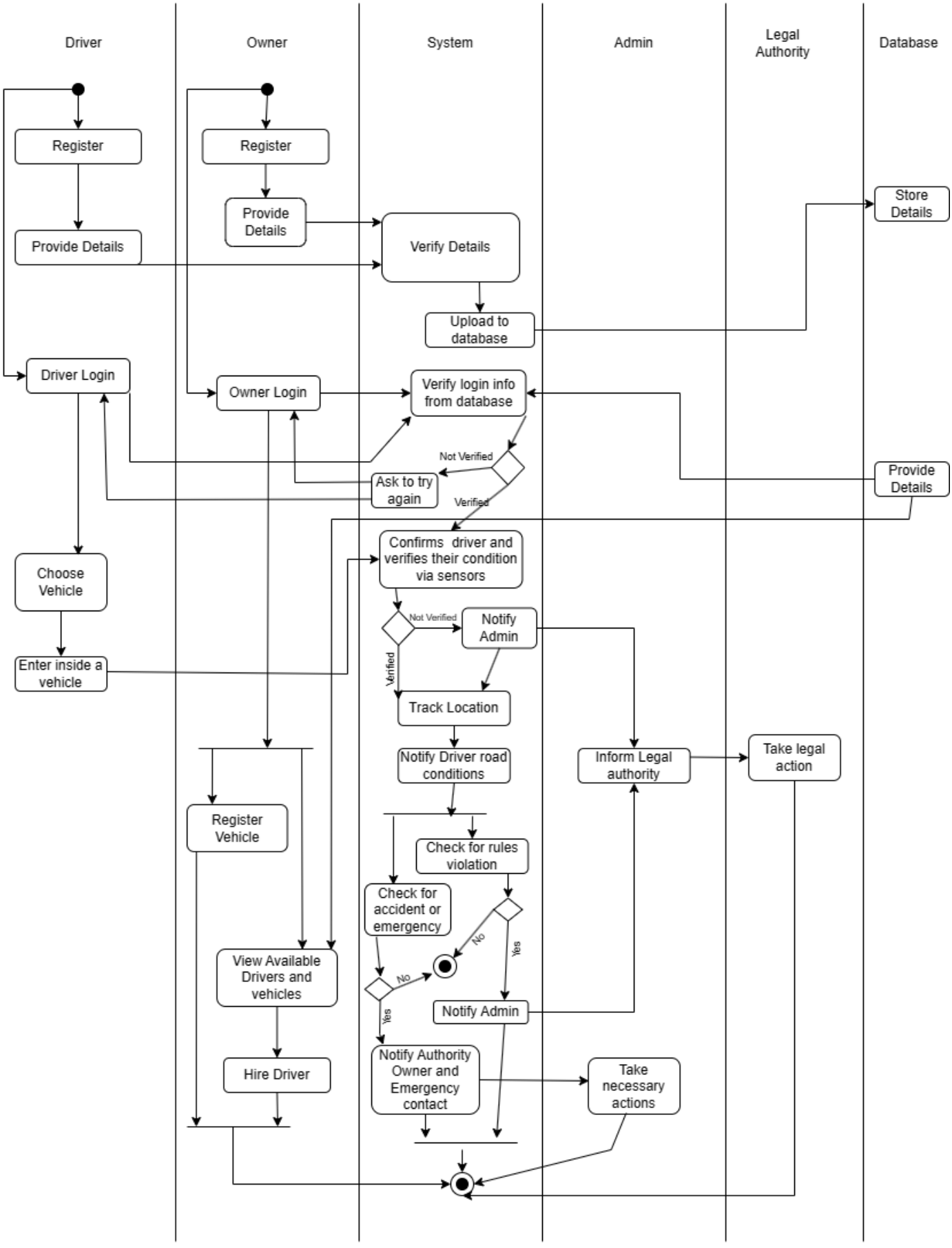
1. **Performance:** The system must be quick to respond and able to accommodate several users at once without experiencing any lag.
2. **Reliability:** Users should have confidence in the system's capacity to function without glitches or unplanned crashes.
3. **Security:** The system needs to prevent illegal access to data.
4. **Compliance:** It needs to abide by all applicable laws and regulations in order to operate.
5. **Usability:** Anyone should be able to operate the system without the requirement for specialized training.

UML Diagrams

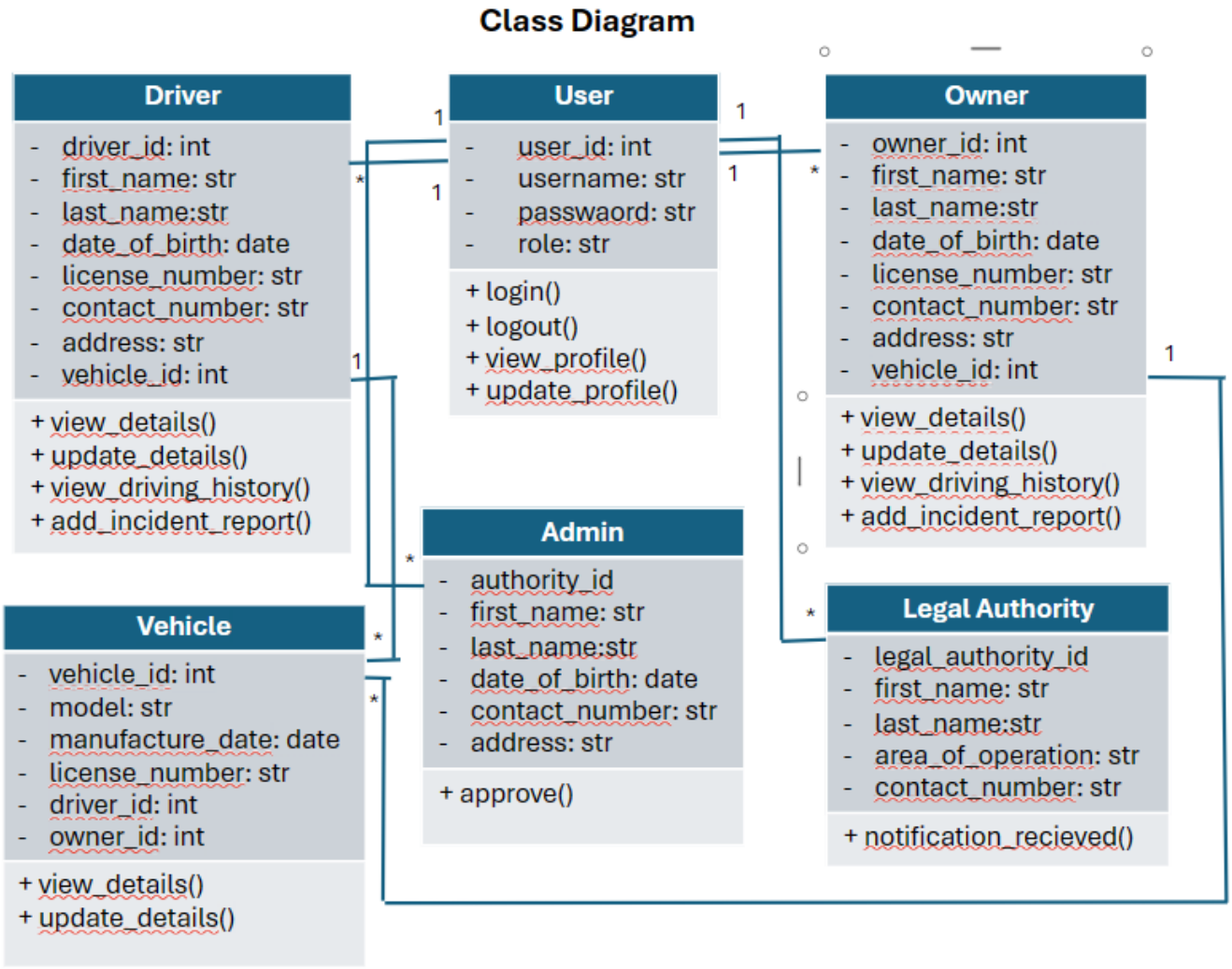
1. Use Case Diagram:



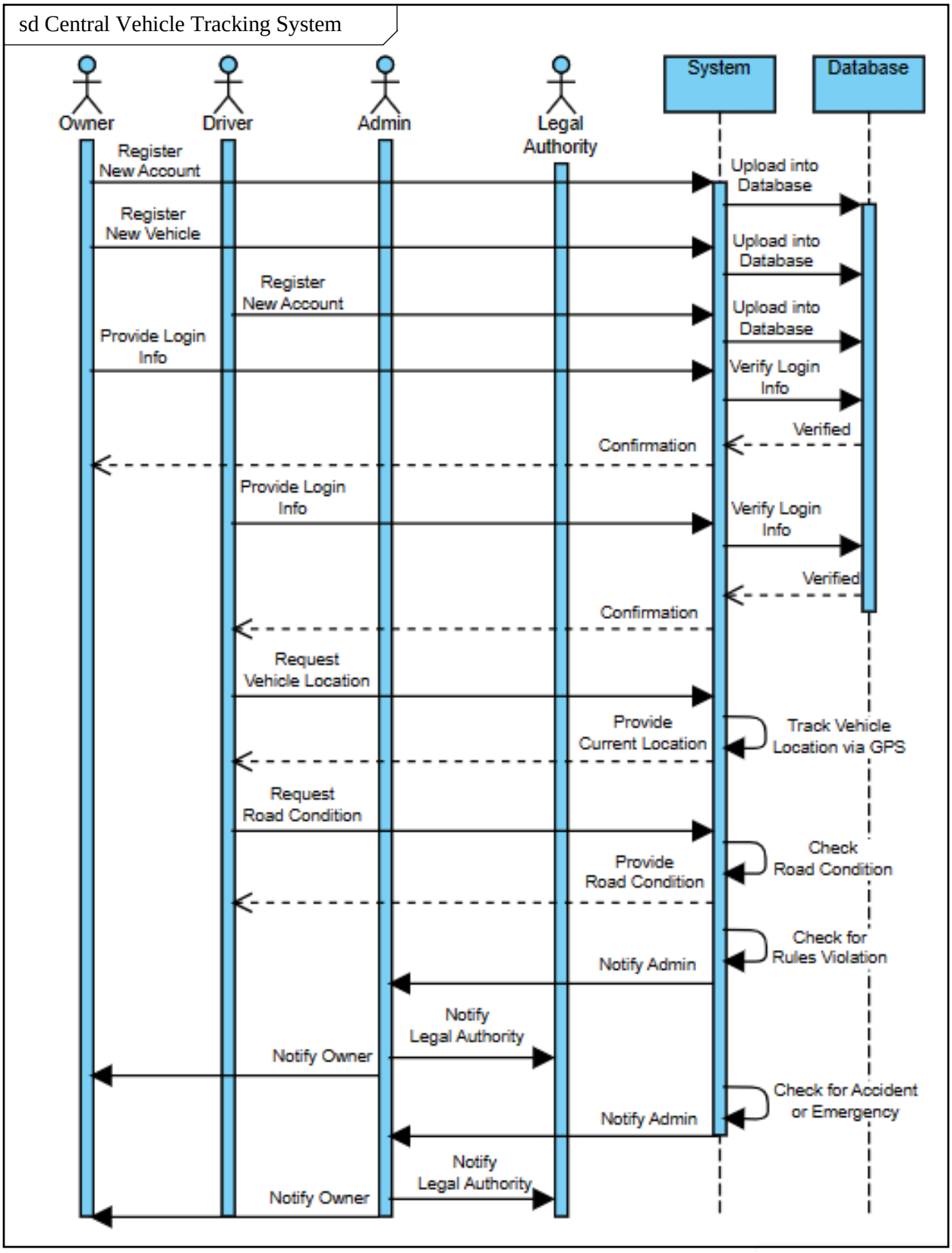
2. Activity Diagram:



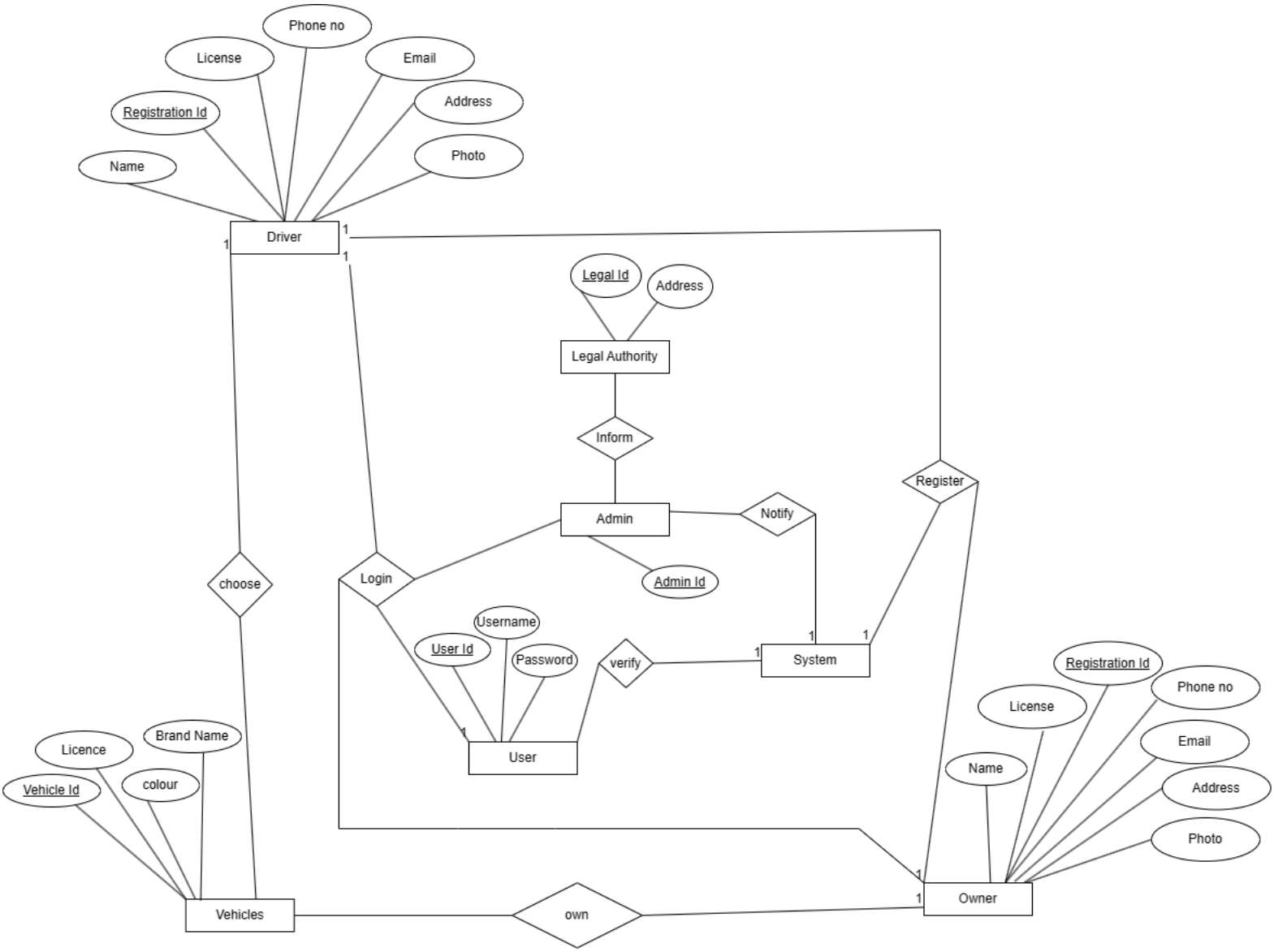
3. Class Diagram:



4. Sequence Diagram:



5. ER Diagram


Phone no
License
Email
Registration Id
Address
Name
Photo
Driver
1
1
1
1
Legal Id
Address
Legal Authority
Inform
Register
Admin
Notify
Admin Id
choose
Login
Username
User Id
Password
verify
1
1
System
1
User
Registration Id
Phone no
License
Email
Name
Address
Photo
Licence
Brand Name
Vehicle Id
colour
1
1
Vehicles
own
Owner