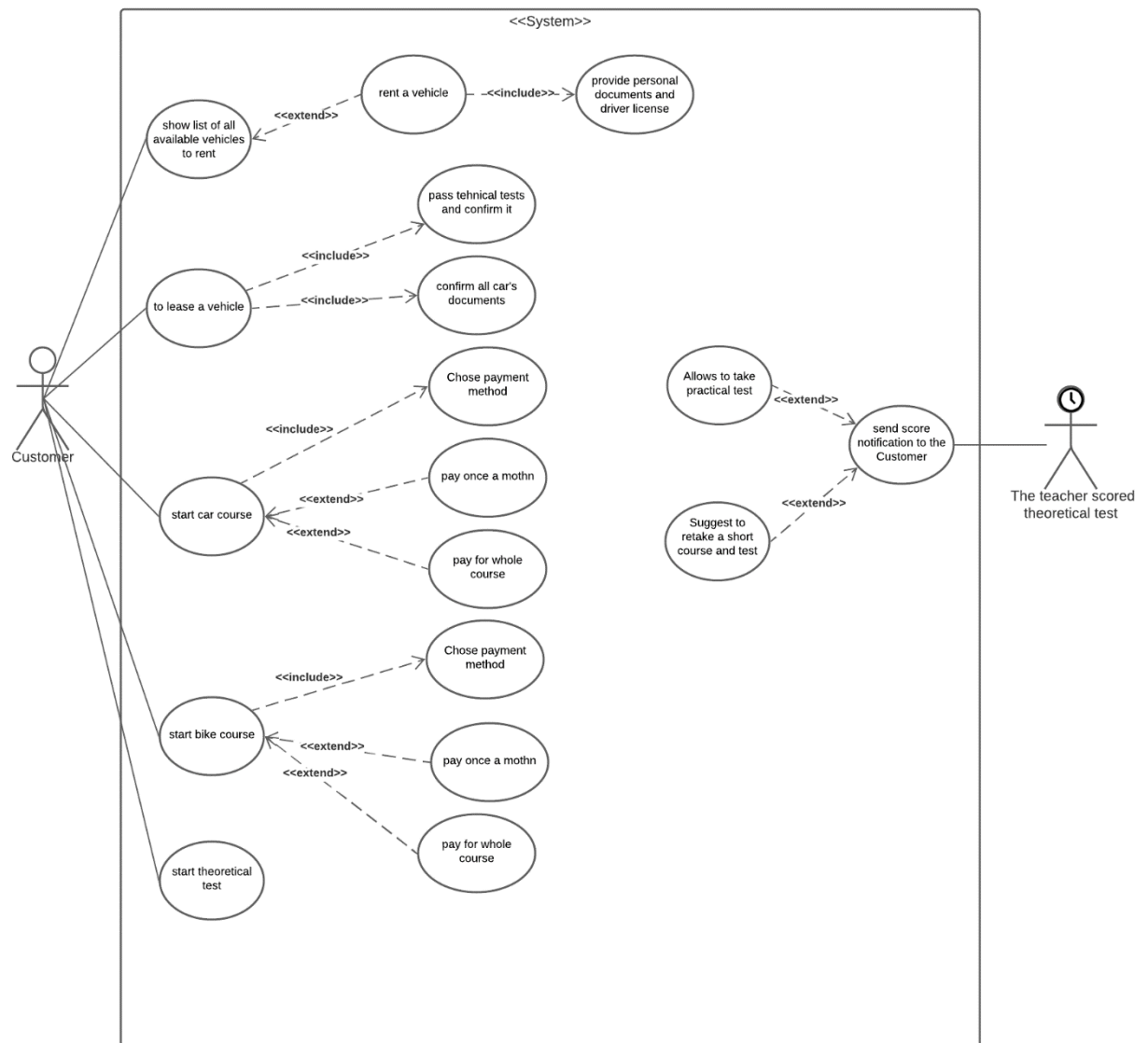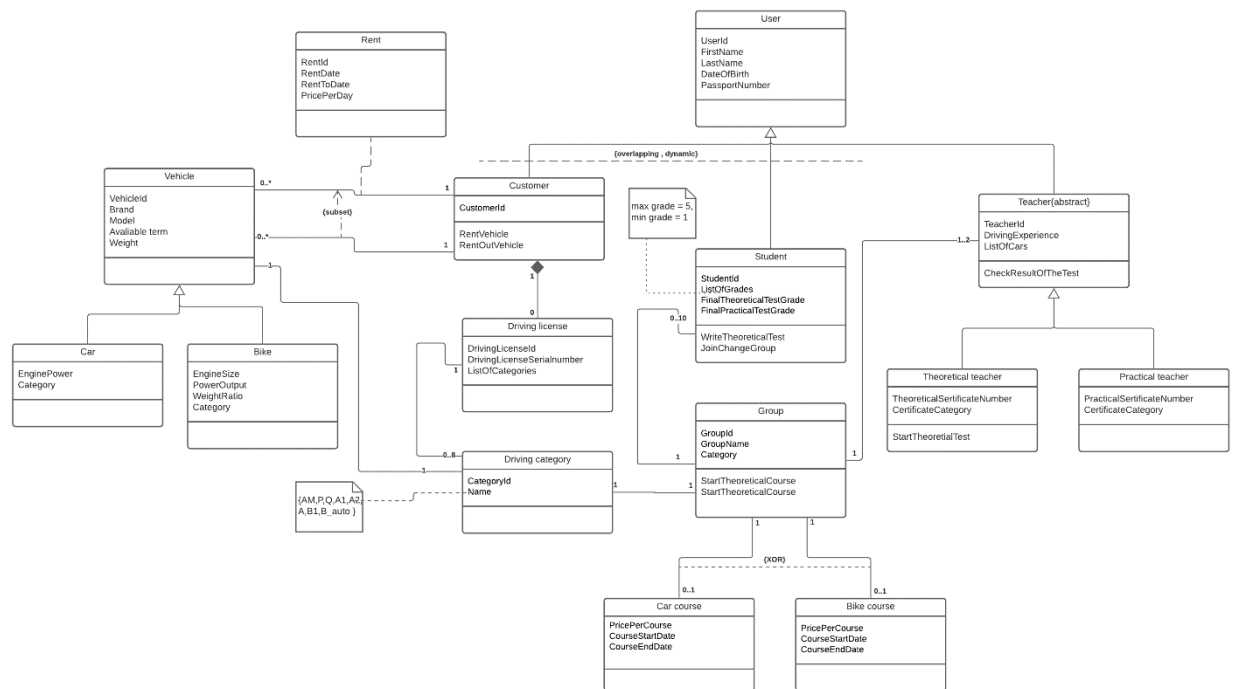## 1.1 Story.

The car school company provides the opportunity to enroll in different categories of car or motorcycle driving courses. Upon completion of the courses, the Student takes a practical and theoretical test. In case of successful passing of the tests, the student will receive a driver's license, if the student has not passed the test, the student must undergo a short repeated course, after which he must pass the exams again.

The company also provides an opportunity to rent and lease transport. If the Visitor wants to rent out the transport, his car must pass all technical checks, as well as the integrity of the documents, after which the be handed over to the company. All tested cars can be rented by other people.
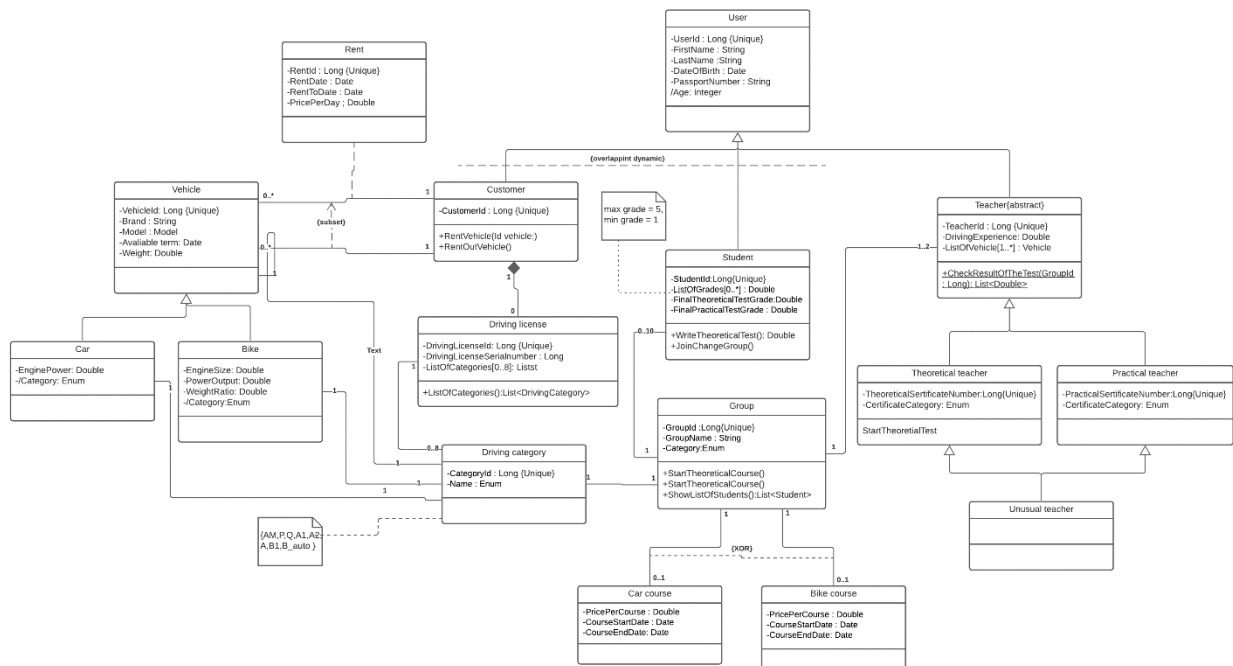
1.2 Use case Diagram:

1.3 Analytical class diagram

User
- UserId
- FirstName
- LastName
- DateOfBirth
- PassportNumber

Rent
- RentId
- RentDate
- RentToDate
- PricePerDay

Vehicle
- VehicleId
- Brand
- Model
- Avaliable term
- Weight

Customer
- CustomerId
- RentVehicle
- RentOutVehicle

{overlapping , dynamic}

{subset}

Teacher{abstract}
- TeacherId
- DrivingExperience
- ListOfCars
- CheckResultOfTheTest

max grade = 5,
min grade = 1

Student
- StudentId
- ListOfGrades
- FinalTheoreticalTestGrade
- FinalPracticalTestGrade
- WriteTheoreticalTest
- JoinChangeGroup

Car
- EnginePower
- Category

Bike
- EngineSize
- PowerOutput
- WeightRatio
- Category

Driving license
- DrivingLicenseId
- DrivingLicenseSerialnumber
- ListOfCategories

Theoretical teacher
- TheoreticalSertificateNumber
- CertificateCategory
- StartTheoretialTest

Practical teacher
- PracticalSertificateNumber
- CertificateCategory

Group
- GroupId
- GroupName
- Category
- StartTheoreticalCourse
- StartTheoreticalCourse

Driving category
- CategoryId
- Name

{AM,P,Q,A1,A2,A,B1,B_auto }

{XOR}

Car course
- PricePerCourse
- CourseStartDate
- CourseEndDate

Bike course
- PricePerCourse
- CourseStartDate
- CourseEndDate

1.4 Design class diagram

User
- -UserId : Long {Unique}
- -FirstName : String
- -LastName :String
- -DateOfBirth : Date
- -PassportNumber : String
- /Age: Integer

Rent
- -RentId : Long {Unique}
- -RentDate : Date
- -RentToDate : Date
- -PricePerDay ; Double

{overlappint dynamic}

Customer
- -CustomerId : Long {Unique}
- +RentVehicle(Id vehicle:)
- +RentOutVehicle()

{subset}

Vehicle
- -VehicleId: Long {Unique}
- -Brand : String
- -Model : Model
- -Avaliable term: Date
- -Weight: Double

max grade = 5,
min grade = 1

Teacher{abstract}
- -TeacherId : Long {Unique}
- -DrivingExperience: Double
- -ListOfVehicle[1..*] : Vehicle
- +CheckResultOfTheTest(GroupId : Long): List<Double>

Student
- -StudentId:Long{Unique}
- -ListOfGrades[0..*] : Double
- -FinalTheoreticalTestGrade:Double
- -FinalPracticalTestGrade : Double
- +WriteTheoreticalTest(): Double
- +JoinChangeGroup()

Car
- -EnginePower: Double
- -/Category: Enum

Bike
- -EngineSize: Double
- -PowerOutput: Double
- -WeightRatio: Double
- -/Category:Enum

Driving license
- -DrivingLicenseId: Long {Unique}
- -DrivingLicenseSerialnumber : Long
- -ListOfCategories[0..8]: Listst
- +ListOfCategories():List<DrivingCategory>

Theoretical teacher
- -TheoreticalSertificateNumber:Long{Unique}
- -CertificateCategory: Enum
- StartTheoretialTest

Practical teacher
- -PracticalSertificateNumber:Long{Unique}
- -CertificateCategory: Enum

Unusual teacher

Group
- -GroupId :Long{Unique}
- -GroupName : String
- -Category:Enum
- +StartTheoreticalCourse()
- +StartTheoreticalCourse()
- +ShowListOfStudents():List<Student>

Text

Driving category
- -CategoryId : Long {Unique}
- -Name : Enum

{AM,P,Q,A1,A2,A,B1,B_auto }

{XOR}

Car course
- -PricePerCourse : Double
- -CourseStartDate : Date
- -CourseEndDate: Date

Bike course
- -PricePerCourse : Double
- -CourseStartDate : Date
- -CourseEndDate: Date

1.4.1 Description

The System should remember about user: FirstName, Surname, Date Of birth, PESEL.

The user may be a Customer and Student at the same time. Also teacher may be a user.

The Customer is available to rent and rent vehicle out to the company.

The System should remember about renting: rent date, rent term and price per day.

The Customer to be allowed to rent or rent vehicle out must have a driving license.

The System remembers serial number of driving license and driving category for Driving license.

Driving category are may be such as: AM,P,Q,A1,A2, A,B1,B_auto.

The vehicle may be a Car and Bike.

The system should store for car: Engine power and its category; for Bike – Engine size, power output, weight ratio and category.

The System should remember all Student's grades. Also each Student is assigned to Group.

The Group consist of group name, members and driving category.

Each Group can start one of two available courses such as Car course and Bike course.

The System should store about each course: price for whole course, start date and end date of course.

Teacher divided into teacher category : Theoretical and Practical teacher. The System should store about each teacher : driving experience, list of vehicle; for Theoretical teacher : theoretical license serial number and certificate category such as driving category; for Practical teacher : practical license serial number and certificate category such as driving category; If Teacher has theoretical license and practical license he/she may be a unusual teacher who can teach the student a theoretical and practical part.

1.5 Scenario:

1.5.1 Use Case

No.	Use-case step description
1.	Rent Vehicle

1.5.2 Actors

No.	Use-case step description
1.	User

1.5.3 Purpose and context

Customer uses a system in order to choose and rent vehicle for some purpose.

1.5.4 Dependencies

1.5.4.1 Included use-cases

Provide personal documents and driver license

1.5.4.2 Extended use-cases

None.

1.5.5 Assumptions and pre-conditions

No.	Use-case step description
1.	Customer has been authenticated as an valid user.

2. User got a list of all vehicles available to rent.

1.5.6 Initiating business events

1.5.7 Basic flow of events

No.	Use-case step description
1.	The customer chooses vehicle.
2.	The System shows vehicle information: -Model -Serial number -cost per month -available rent term
3.	The Customer want to rent this vehicle.
4.	The System asks Customer to enter all requires data: -First Name -Last Name -Passport ID -scan of driving license -payment method
5.	The System confirm all personal information
6.	The System shows notification that vehicle was rented successfully.
7.	The System close a rent vehicle tab and prosses ends;

1.5.8 Alternative flows of events

1.5.8.1 Customer provide wrong driver license category.

No.	Use-case step description
1.	The customer chooses vehicle.
2.	The System shows vehicle information: -Model -Serial number -cost per month -available rent term

3. The Customer want to rent this vehicle.

4. The System asks Customer to enter all requires data:

   -First Name

   -Last Name

   -Passport ID

   -scan of driver license

   -payment method

5. The System verifies input data

6. The System rejects a rent request.

7. The System displays a message that the Client is not allowed to drive this vehicle due to non-compliance with the driving category and prosses ends.

1.5.8.2   The Customer did not choose anything

No.	Use-case step description
1.	The Customer did not choose any vehicle.
2.	The Customer closed a rent vehicle tab.
3.	The process ends.

1.5.9 Extension points

Extension point condition
None.

1.5.10 Post-conditions

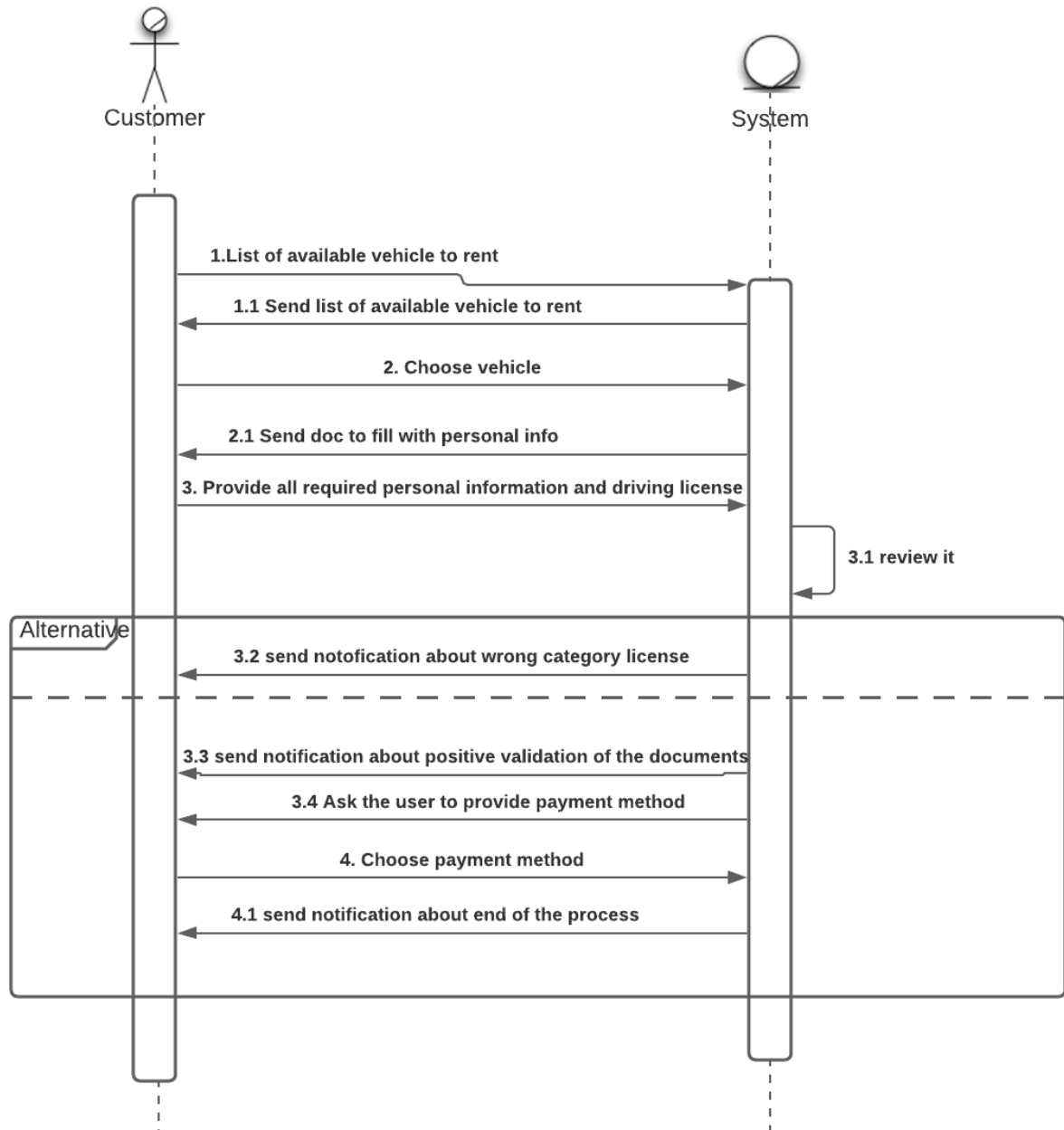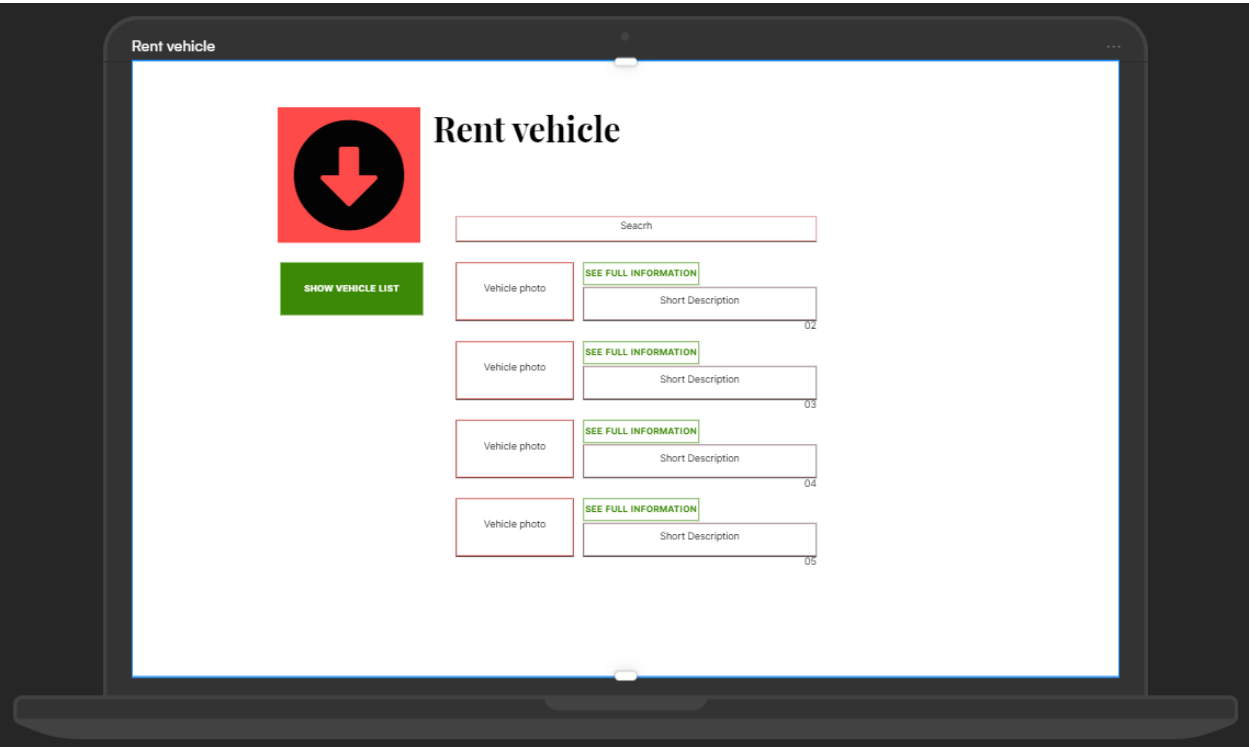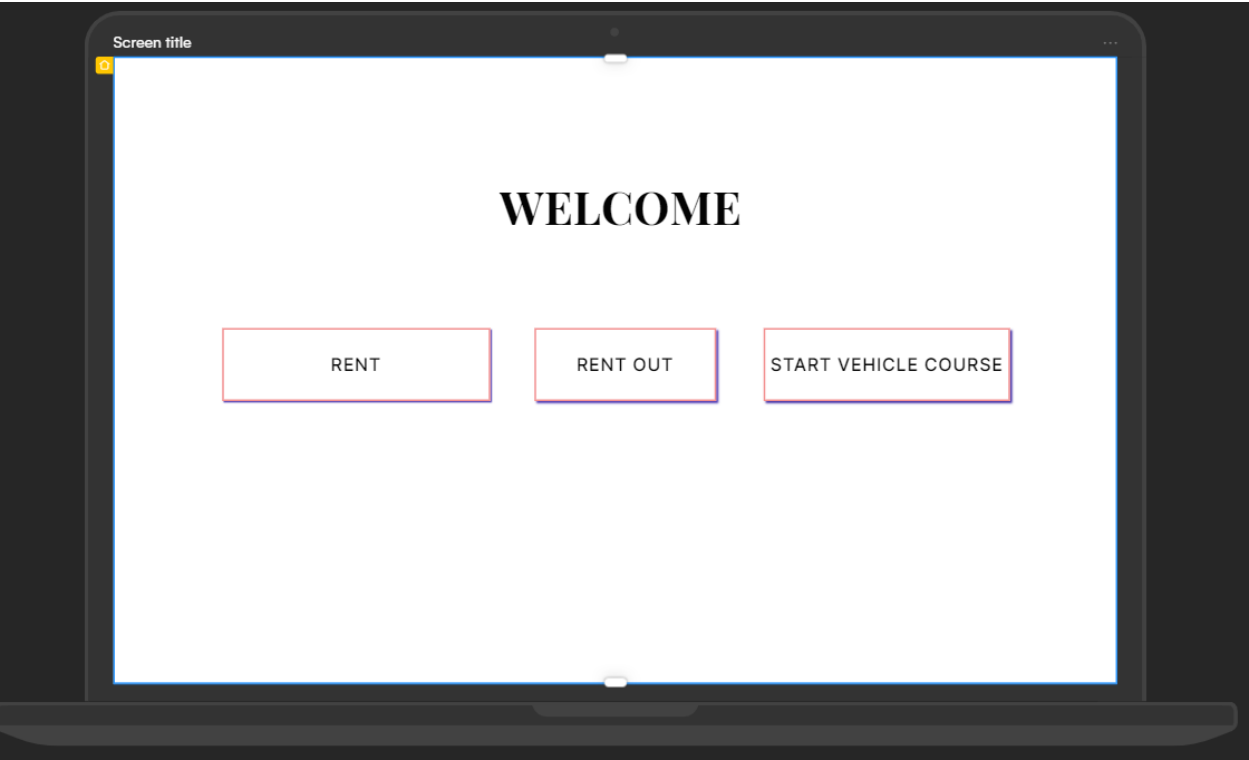| No.	Use-case step description
1.	The Customer successfully rent a vehicle. The Customer goes to closest company department to sing documents and pick the keys.

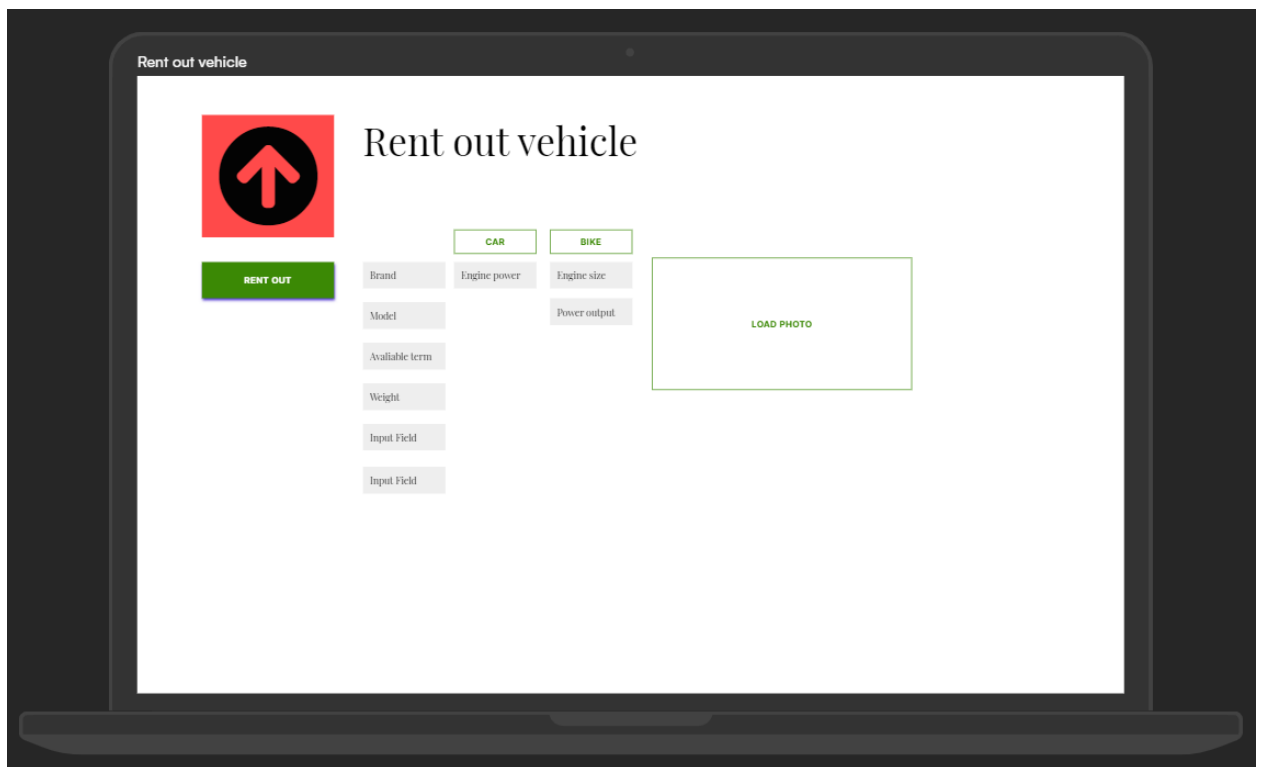## 1.5.11 Activity diagram
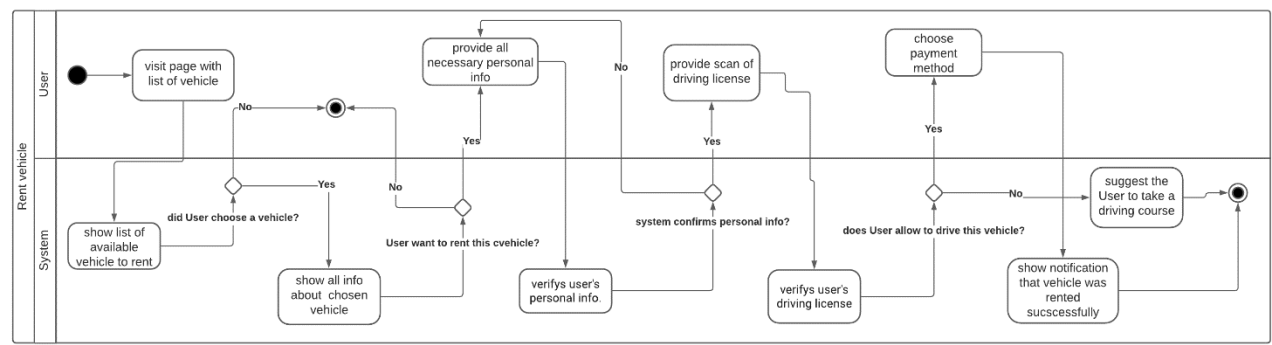
1.6   State diagram

1.7 Sequence diagram

Customer — System

1. List of available vehicle to rent
1.1 Send list of available vehicle to rent
2. Choose vehicle
2.1 Send doc to fill with personal info
3. Provide all required personal information and driving license
3.1 review it

Alternative

3.2 send notofication about wrong category license

3.3 send notification about positive validation of the documents
3.4 Ask the user to provide payment method
4. Choose payment method
4.1 send notification about end of the process

1.8 User interface

Rent vehicle

FULL INFORMATION

VEHICLE PHOTO

First Name

Last Name

Passport ID

DESCRIPTION

Date of Birth

load driveing license scan

VERIFY DATA

RENT VEHICLE

Rent out vehicle

RENT OUT

CAR

BIKE

Brand

Engine power

Engine size

LOAD PHOTO

Model

Power output

Avaliable term

Weight

Input Field

Input Field

Start vehicle course

CAR COURSE	BIKE COURSE

Choose Category: e.g A1 ⌄	Choose Category: e.g A1 ⌄
FirstName	FirstName
LastName	LastName
Passport ID	Passport ID
Choose payment method ⌄	Choose payment method ⌄