

ProgSD Team Project Specification 2024

E-Vehicle Share System

Objective

Your task is to create a software system to support an electric vehicle share programme. You need to create a functioning end-to-end prototype and demonstrate it with appropriate data. Your product is meant to provide an interface for customers to reserve and return vehicles and to pay their bills; for operators to assess the state of the vehicles in the system and make changes; and for managers to view usage reports.

Your system must be implemented as a web app using **Django** <https://www.djangoproject.com/>, with a front-end implemented using **Bootstrap** <https://getbootstrap.com/>. You and your team should use the documentation and tutorials from the project websites to develop your application. Note that developing skills in reading and understanding this sort of API documentation is one of the specific aims of this course.

Your system must include a **database** to store the details of the vehicles, charging points, city locations, customers, and any other data as needed by your implementation. You must include at least **two vehicle types**, for example electric scooters and electric bikes; you can also include more vehicle types if you want.

The detailed functionality of the system is up to you, but it should include at least the following capabilities:

- Customers should be able to:
 - **Rent** a vehicle at any location in the city, as long as there is a working vehicle available at that location.
 - **Return** a vehicle to any location. When a customer returns a vehicle, their account is **charged** depending on how long the vehicle rental was and what type of vehicle was used.
 - **Report a vehicle** as defective.
 - **Pay** any charges on their account.
- Operators should be able to:
 - **Track** the location of all vehicles in the city.
 - **Charge** a vehicle when the battery is depleted.
 - **Repair** a defective vehicle.
 - **Move vehicles** to different locations around the city as needed.
- Managers should be able to:
 - **Generate reports** showing all vehicle activities over a defined time period, using appropriate **data visualisation** techniques.

You may want to consult similar real-world systems such as Lime (<https://li.me/>) or Voi (<https://www.voiscooters.com/>) to help with your system design. **Note that it is not expected that you exactly duplicate the functionality of these systems.**

Collaboration and communication

You will be provided an account on the university's gitlab servers, and you must use these servers to work together to develop your code. You will be asked to provide a link to the git project as part of the submission process.

For communication among team members, **you must create a chat group on Microsoft Teams**. You should not use other platforms such as WeChat, Discord, or WhatsApp for communication among team members. You should also make sure that you communicate in a language that **all team members can understand**.

What to submit

Each group must submit the following (through Moodle):

- A **report** describing the functionality that was implemented, explaining any design decisions that were made. The report should also include a summary of how each team member contributed to the design and implementation, as well as to the report. Templates and examples will be provided.
- A **video presentation** of your system, up to **10 minutes long**.
 - All members of the team must speak on the video (cameras not required)
 - The video must include a live demo of all the system functionality, as well as a discussion of all design decisions.
- A **zip file** containing all of the source code involved in the system, along with any other resources required to run it. You should also include a README file describing exactly how to run your software.
- A link to the gitlab repo containing your final source code, on the university-provided stgit system.

If your video and/or your zip file is too big to upload to Moodle directly, you should upload a link to allow the markers to view the video or download the zip file. Please make sure that the permissions are public so that the markers are able to access your materials.