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## SAE 4.01 – Developing a complex application

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For this SAE, we chose to keep the subject we had for the first semester: Recreate Tesla's website. To make it work, we had to develop three key elements: the database, the API and the client.

The database was made according to the code-first approach: We first created the models in our API and then we used them to generate the tables and the associations between them. The data rows we inserted are mainly coming from the official Tesla website, and the rest were randomly generated.

The API is coded in C# and integrates design patterns such as Singleton and Repository. The models are used by other classes to handle the data from and to the client or the database. The http requests (Get, Post, Put, Delete) are received by the Controllers who format them so that the Managers can run them in the database. These Managers send SQL requests to the database and receive its responses. We use interfaces (IDataRepository) to make the Controllers and Managers communicate.

As for the client, we coded it with VueJS and separated the data management from the GUI by making Controllers and Vues/Components. Controllers interact with the API to send or receive the website's data while the Vue and the Components format the information to make it easily readable to the consumer. Compared to our first website, this one is more ergonomic, visually appealing and far less energy intensive.

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