The aim of this project is to create a parking booking system with direct connection to parking lot indicators. As more and more cars are on the road it can be quite difficult to find parking spots to park so by creating an application that allows a user to book a spot to park will allow less hassle in finding parking spots and with direct connection to light indicators on each parking spot, it will make it easier for the driver to find a spot. This system may be implemented in hotels, restaurants, or stores as a valet parking service so to speak. As someone books a parking spot, they are able to speak to a valet that will then drive or direct the driver to an empty spot and block the parking spot behind them. To simulate such a system, Arduino technology will be used to build the electrical system and a mock-up of a booking application will be made to interact with this system.

Our first goal would be to create the base light indicator system for each parking spot using Arduino technology to simulate it. Research on how to program a photoresistor to turn lights on and off would have to be completed. A code where if a green light is on, it would indicate that the parking spot is free and when a photoresistor is covered, the green light would turn off and instead a red light would turn on to indicate an occupied space would be used with the system. The fact a photoresistor is used is purely to simulate what would happen to the light indicators if a car were to park there. In reality, they use ultrasonic sensors from the ceiling to the floor, but it might be easier to use a photoresistor purely for demonstration purposes. Using an RGB LED might be more efficient as well to use for the colour change but the main priority would be just to get at least 2 LEDs with 2 different colours as parking indicators.

On the software side of things, the next goal would be to develop a mock-up of how the booking application would look like using Figma. The overall design of the application would be shown at this stage and what would happen if certain buttons were pressed. By creating this mock-up, it would assist in explaining how our system will work and how the parking spot will react since we physically are not able and don’t have the ability to make an application directly connect to Arduino technology. Adding a payment option to the application is an idea that has popped up however this isn’t so much of a priority as just completing the application but this addition to the application may be useful as some businesses may require a payment from users to park in certain spots.

The final goal would be to create a small miniature of a parking area with the Arduino system built into it to demonstrate how the hardware side of things would work. It might also be good to demonstrate a user using the application and how it might affect the light system. A small parking space will possibly be made from a cardboard box with the whole system attached to it. If things go smoothly, it might also be good to model another parking space next to that one where it is a “reserved” parking space so to speak where there will be a red light that is constantly on and bollards that would be manually placed during the demonstration and would probably be placed by a valet for example if this parking lot was used by a hotel or restaurant.