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| Test Case ID | Test Case Objective | Steps | Expected Result | Result |
| 1 | Generate QR Code | 1.Stop the car infornt of the gate  2. Obersve if the new QR Code is gernerated | New QR Code is gernerated | New QR Code is gernerated |
| 2 | Register an account | 1.Scan the QR Code  2.Enter User name and Password to create an account. | The account is created successfully and Customer Information is stored in database | The account is created successfully and Customer Information is stored in database |
| 3 | Register an account with invalid input | 1.Scan the QR Code  2.Enter Invalid User name and Password to create an account. | The account is not created successfully and users are notified to change a valid input for username | The account is not created successfully and users are notified to change a valid input for username |
| 4 | Reserving a vacant  spot | 1.login in the website  2.Select a period of time  3.Select a vacant spot to reserve | A pop up window should show up on the website showing the reservation is susseccful. | A pop upp window show up after reserving a vacant spot saying it’s susseccful |
| 5 | Reserving a occupied  spot | 1.login in the website  2.Select a period of time  3.Select a occupied spot to reserve | A pop up window should show up saying it’s invalid. | A pop up window shows up saying it’s invalid as expected. |
| 6 | Enter garage | 1.Stop the car at the front gate of the garage  2.Observe if the gate is open and the behavior of the camera | The gate is open once the car arrives the front gate with no other problem. | The gate opened after the car stopped, as expectted. |
| 7 | Camera tracking the occupied spot | 1.Park the car at the desired spot. | The camera turns to the occupied spot and take a picture | The camera turns to the occupied spot and take a picture |
| 8 | Camera tracking of unoccupied spots | 1.Turn on the software and IR sensors.  2. Observe the behavior of the camera | The motor will not move and the Arduino will not send signal to trigger the camera | As expected, there is no motion of the camera |
| 9 | Occupied spot information update | 1.Do TC-7  2.Observe the data update of database, website and backend. | Information should be updated in all three part: database, website and backend mangement software. | We can see the change in the database and the backend management software. |
| 10 | Status Checking | 1.Park at the reserved spot  2. check parking records on the phone. | The reservation information is shown on the website | After logging to myAccount on the website, we can monitor the parking status (ex. time) and where we parked. |
| 11 | Fee calculation | 1.Park the car  2.Login in and observe the fee on the website | The fee displayed on the website should be growing by time according to the set rate. | We can see the fee displayed on the website after logging in to myAccount. |
| 12 | Exsiting the garage | 1.Stop the car at the exit. | The gate should open. | The gate opens as expected. |
| 13 | Status update after leaving the garage | 1.Move the car exit the garage  2.Observe the changes on the backend, database and website. | Changes are reflected on website, database and backend management software that the car is no longer parking in the garage. | Changes on website, database and backend management software indicating the car is no longer parking in the garage. |

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| Integration Test | Test Description | Steps | Expected Result | Result |
| User | A new user’s parking experience without a reservation. | 1.Stop the car infront of the front gate.  2.Scan the QR Code and regeist with a valid input  3.Drive into the garage and park the car on a vacant spot.  4.Check the status on the phone  5.Drive the car to the exit  6.Leave the garage and check the cost online | 1.QR Code generated on the screen  Front door open  4.The parking information including time and place are shown  5.The exit door open  6.The website shows the parking time and cost. | 1.QR Code generated on the screen  Front door open  4.The parking information including time and place are shown  5.The exit door open  6.The website shows the parking time and cost. |
| Manager | Make sure manage works are automatically done | 1.Stop the car infront of the front gate. Check the backend and database  2.Scan the QR Code and regeist with a valid input  3.Drive into the garage and park the car on a vacant spot.  4.Drive the car to the exit  5.Change the price | 1.Data are updated  2.Account is created and user information is shown  3.The car is located and the corresponding information will be updated on the website. Data are stored in backend and database  4.Information will be updated and the website will show the spot is unoccupied. Parking time is stop.  5.The cost changes | 1.Data are updated  2.Account is created and user information is shown  3.The car is located and the corresponding information will be updated on the website. Data are stored in backend and database  4.Information will be updated and the website will show the spot is unoccupied. Parking time is stop.  5.The cost changes |