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| Submission Date | 2018-09-11 |
| Project Name | ParkingManagementSystem |
| Student Name | David Uche |
| Project website | davista123.github.io/ParkingManagementSystem |
| My project will | Enable drivers to locate available parking spaces and handle automatic parking ticket payment without the need for human interference. |
| The database will store | Sensor ID, Sensor Location, Car number plate, Driver’s personal details such as username, password, parking space presence flag(either true or false) and relevant credit card information(Transactions will be handled via stripe) |
| The mobile device functionality will  include | Be able to see real time availability of parking spaces, most likely in a graphical format. It should also be able to process credit card payments. The driver will also be able to interact with the Parking Management System(PMS) in terms of updating personal information, webview interactions and so on. |
| I will be collaborating with the following company/department | Humber College Capital Development and Facilities Management Department |
| My group in the winter semester will include | I’m still in the process of finding a group for the winter semester |
| 50 word problem  statement | The Parking management system will be able to detect the presence of a car in a specific position in the parking lot that the driver navigates to in the case that it is unoccupied. When an available parking space has been occupied, a camera module will read the number plate of the car and record the time that it stays parked in the specific location. When the space is unoccupied, the driver’s time is logged and their credit card is charged for the time they stayed parked and relevant billing information is sent to the driver’s device. |
| 100 words of  background | Proximity Sensors can detect the presence of nearby objects in a certain proximity. For instance, consider the alarms that go off on a car when it is about to hit a nearby object when it is in the state of reversing. Proximity sensors are used in that case to detect when an object is close by, and then trigger corresponding logic (alarms) to alert the driver of the situation. Proximity sensors are useful in regard to this project because they have good distance ranges and can easily be configured to work with the raspberry pi in terms of reading input such as distance and triggering other logic only in the case that certain distance thresholds are met. |
| Current product APA  citation | Westfalia Parking control (2016, June 01). IoT-Enabled Smart Parking Meter with IBM Bluemix and Pubnub. Retrieved September 6, 2018 from:  https://www.pubnub.com/blog/2016-06-01-iot-enabled-smart-parking-meter-ibm-bluemix-pubnub/ |
| Existing research IEEE paper APA citation | R. S. S. Devi, V. R. V. Kumar and S. Sridevi, "Application development for reservation based parking slot allotment and management system using Android," *2017 International Conference on Innovations in Information, Embedded and Communication Systems (ICIIECS)*, Coimbatore, 2017, pp. 1-5.  doi: 10.1109/ICIIECS.2017.8275983  keywords: {Android (operating system);microcontrollers;mobile computing;traffic control;reservation based parking slot allotment;management system;motor vehicles;smart car parking technique;time consuming car parking;GSM;Automobiles;Radiofrequency identification;Integrated circuit modeling;Mobile applications;Logic gates;Microcontrollers;Car parking;Proximity sensor;ATMEGA Controller;GSM and RFID},  URL: <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8275983&isnumber=8275826> |
| Brief description of  planned purchases | Raspberry Pi - Hub of the project to host the sensor. RapsberryPi Camera module - camera to capture number plate. Proximity sensor - main sensor for the project(0x13) |
| Solution description | .The solution can be used in parking lots, city wide parking spaces, colleges and universities or even in homes as niche opportunity in the smart city movement. |