CarParkr

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March 24, 2023

1 Team Members

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2 What Made Us Choose This Idea

Yahya and Hiba are two struggling freshman at Habib University who drive to campus daily and mostly get late for our early morning classes because we are forced to waste time in finding empty spaces to park our cars. Our lives as university students are tough already-circling around the parking lot everyday is just the tip of the iceberg. We have decided to end our misery by this project.

3 The Idea

The project aims to design and implement a parking management system for Habib University's two-level underground parking. The system will generate the position of the closest empty parking space for students to park in, and update in real-time as spaces become available.

4 The Novelty

The proposed system is unique and innovative as it utilizes a combination of hashing and graphing algorithms to optimize the parking experience for students and the real-time updating of the system ensures that students do not waste time searching for parking spaces, and the use of an alphanumeric code ensures that the parking spaces are easy to locate.

5 Data Structure We Aim To Use

The system will use a graph data structure to represent the layout of the parking spaces. Each parking space will be a node in the graph, and the edges will represent the paths between spaces (each edge consists of neighboring parking slots and their distances). A separate hash table will contain the parking status of the slots.

6 Algorithm We Aim To Implement

The system will use a combination of a hashing algorithm and Dijkstra's shortest path algorithm. The hashing algorithm will generate an alphanumeric code for each parking space, which will be stored in a hash table along with the corresponding parking space node and its parking status (whether full or empty). When a student arrives at the parking entrance, the system will use Dijkstra's algorithm to find the shortest path to the closest empty parking space, and generate a slip with the alphanumeric code for the student to use.

7 Details Of Our Application

The system will consist of a parking entrance machine that generates slips with the alphanumeric codes for students to use, and a central server that stores the graph data structure and the hash table. The server will update in real-time as spaces become available or are occupied.

8 The Outcomes We Expect

The proposed system is expected to significantly reduce the time students spend searching for parking spaces, and improve the overall parking experience at Habib University. The use of an alphanumeric code will also make it easier for students to locate their vehicles after a tiring day of studying.

9 So, In Conclusion

The proposed parking management system is an innovative solution to the parking problem at Habib University. It has the potential to significantly improve the parking experience for students, and we believe it can be applied to other parking facilities as well.

10 References

1. Dijkstra, E. W. (1959). A note on two problems in connexion with graphs. Numerische mathematik, 1(1), 269-271.
2. Cormen, T. H., Leiserson, C. E., Rivest, R. L., and Stein, C (2009). Introduction to algorithms. MIT press.