

# Find Your Van

Team Oak

## Team members:

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## Project description:

Freshmen tend to face numerous troubles settling into their university routines. One of the routines is commuting to and from university especially if the distances are long.

Our aim is to develop a program that will help new students to choose the most suitable van for commuting to and from university.

Given an input of a specific location by a student, our program will output a van number that will take the student to the given location at the earliest. Our program will make decisions based on the time it takes to reach a given location. If there is only one van that goes to the location in question then the answer is simple. If there is more than one van the program will output the best of the lot and will list the second and third best with their respective times if there are any. Another reason to provide a list of 3 vans instead of just one is to provide a second or third best alternative for the student given that the best van has no seats left for booking as vans have limited seating capacity.

In order to achieve this goal our project will be divided into two stages. In the first stage our aim is to collect relevant data about Habib University's van service. We will be collecting data about the number of vans, their daily routes and the locations that they visit along with the times they take to reach each location on their routes. We will be mapping these routes on Google maps or any other relevant source in order to retrieve the approximate distance covered in all the routes. On the second stage we will begin to design and implement a program that will achieve the aforementioned goal. Additionally we can challenge the heuristics in play in the present allocation of van number and their routes.

## Constraints:

Our program will not take the real time traffic into account.

## Concepts of Data Structures and Algorithms:

- 1) Graph Theory.
- 2) Dijkstra algorithm.

## Additional libraries:

- 1) Google Maps.
- 2) Matplotlib. (Optional for visualization)
- 3) Networkx. (Optional for visualization)