# Assignment 5 - Transportation System Part 5

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## 1 Voting

A simple Voting (Elections) can be described as follows :

1. A member proposes a motion.
2. Members vote on a cause based on personal experience.
3. Results.

We have implemented similar kind of system. In our case members are the buses. The motion being that the bus can't handle the current number of passengers so we are in need of new bus. It calculates this by looking at the amount of passenger seen minus the amount of passengers it has dropped and this figure is divided by the capacity of the bus. The idea is that the by dividing by the capacity of the bus we can get an estimate of how many trips it would take to serve the passengers seen for the current bus. This score will be relative to the bus's own capabilities. If this number is greater than the threshold we have defined then a vote for a new bus is proposed.

Only one vote can be initiated per tick. Each bus will receive a vote message and begin to look at it how many passengers it has come across and divided it by their own capacity and sends this result to the bus that initialized the vote. The bus that initialized the vote takes these votes and using the score that was sent to them it calculates which bus is needed. It makes this decision based on the bus's type and the score given which in turn decides the type of bus in the vote. At the end, the most frequent bus that appears in the vote is added as a new bus.

## 2 Dynamic Paths

Buses will asses their usage based on how many passengers they dropped, how many passengers are belonging to their stop and whether their capacity is maxed. This is checked against a threshold and if it falls under it a bus will look to change routes to find a route where it can pick up more passengers.