Assignment 4 - Transportation System Part 4

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1 Coordination

We use a schedule to keep track off what passengers are waiting for each station. Using this we created a sorted list which is sorted by the amount of passengers waiting to go to a particular stop. It chooses the next available set of stops from this list.

Each bus sends a message to any new bus that is introduced. The bus will send it's current path to the bus. Each bus records the a list if the buses it has already notified. When a new bus is introduced, they will decode their message which is the path the sender bus is taken and record that path for each bus. Using this information, a bus will select a route to ensure that the bus does not have the same start and end stop as another bus.

2 Intersection

If we take the paths of two buses and we find that they intersect at certain stops, we can then pick up passengers on the current buses path that want to go to a station on another buses path. We can create a list of all the stops that intersect with the current bus and we can now pickup the passengers which are going to any of the stops on any of the paths where the bus intersects the current path(ie the Union). For example Bus 1 is taking a path (3,1,4,5,2) and Bus 2 (9,10,3,11). Here the intersection is happening at stop 3. So Bus 1 can pick the passengers who are not only on its own path but on the path of Bus 2 as well.

At the moment, buses only make sure that they are not going to the same start and end stations. However the both buses can still go the the same station as they travel from their start station to their end station. Using this we can identify passengers at each station on our path who are going to a station on the current buses path and going to stations on any buses path that has an inspecting station with the current bus. We can then give priority to these passengers when boarding. Any passengers currently on the bus that are going to a station on a different buses path then they will be dropped at the intersecting station.