Transportation System Part 2

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February 25, 2018

0.1 Communication

For now, the agents in the transportation system (buses) have a certain knowledge about the world. This knowledge includes the various possible bus routes, the bus schedules and which passengers are waiting at which bus stops. This knowledge alone is not enough for the agents to coordinate with each other so that people get to their destination faster. To set the foundation for this, the agents must also communicate with each other to gather extra knowledge. Such knowledge includes which passengers the bus is carrying at the moment, where the bus is and where they are going.

0.2 Protocol

To let the agents communicate with each other, a certain protocol needs to be designed for the agents to understand each other. When an agent receives a message, it is stored in the inbox of that agent. According to the assignment this contains the tick, sender and the message. This message within the message can either be a *request* or a *response*. Both these messages are accompanied by the nature of the *request* or *response* and possibly a value if applicable. This value may have the form of a single integer or a list of integers. The resulting message has a structure of a tuple with the elements in the order of mentioning. Possible addition: give an expiration date with the message or a date of when it was sent, so buses may infer how reliable the information in the message still is.

0.3 Requests and Responds

0.3.1 Passengers in the bus

The protocol for messages about passengers will be to write "passengers" as the nature of the message in the message. This then leaves two options: either to request the passenger information or to respond with the passenger information. The former will leave the value empty and the latter would contain a list of passenger information tuples.

0.3.2 Location of the bus

Other possibly helpful information would be to share your current location. This works similarly to the method described for messages about passengers, "passengers" is substituted by "location" and the value in the response message can be either one integer denoting the current bus stop or a list containing the previous and next bus stop when travelling.

0.3.3 Schedule of the bus

The buses probably will also need to check with other buses where they are going, therefore messages about their schedule are implemented. This works by sending "schedule" to denote the nature of the message and then the value in a response message is limited to a single integer containing the ID of the schedule.