Comp 2000, Data Structures Application 3/Queue: Train Simulation

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Application

- Simulates a single, linear route train system
- Passengers in the station are held in queues depending on their direction
- More passengers are generated each tick
- When a train reaches a station, passengers destined for that station disembark and passengers at the station board until the train is full
- Trains move one position per tick and move from Inbound/Outbound when reaching a terminal station

Configuration

Ticks: 50
Seed: 12345
Route: Linear with length 20
Stations: [1, 20, 4, 15, 10]
Trains:
  Inbound at location 1 with capacity 20
  Inbound at location 2 with capacity 15
  Inbound at location 6 with capacity 20
  Inbound at location 10 with capacity 20
  Outbound at location 4 with capacity 10
  Outbound at location 20 with capacity 25
Passengers: [50, 5..75]

Issues and Solutions

- How to easily transfer passengers to and from stations?
  - *Methods were added to Station.java to facilitate adding and removing passengers from the station*
- How to determine when a train is at a station
  - *Using getLocation() from the train class and comparing to the list of stations*
- Queue for trains at a station?
  - *Determined to be kind of pointless (station is just another position)*
- NullPointerException with too few passengers at a station
  - *Changed getPassengers() to only return as many passengers are available if the request is greater than that*

Take-aways

- The most useful take-away from this project was more familiarity with using git and code sharing
- The application of Queues and ArrayLists
- Importance of Java documentation when working with others on a program
- Group programming skills and division of labor
- Understanding existing code and building new functionality on top of it
- Writing a log that's as descriptive as necessary