Simulation Design:

ArriveEvent: A car will arrive at a randomly generated time. If the parking lot is 90% full (calculated by a Boolean method), the car has a 20% chance (also calculated by a Boolean method) of driving away. If that chance is true, the car leaves. Otherwise, it will park.

ParkEvent: If the car can park (determined by canPark Boolean method), it will eventually leave by use of the LeaveEvent. The time frame it stays is calculated randomly between a starting duration and ending duration based upon its arrival time.

LeaveEvent: Utilizes the leave() method and accepts a parameter that represents time. The vehicle will leave the parking lot at the specific interval passed to the method.

Conducted Tests:

The simulation starts off using the runSimulation() method that takes two parameters. The first parameter is the starting size of the parking lot. The second parameter is used to set the ending size of the parking lot. If you pass in runSimulation(30, 50), the parking lot size will start at 30 and be increased by 1 space until it reaches 50. Overall, the simulation will run 20 times.

The simulation will find the first instance where the lowest percentage is turned away and then test that number using the testBestNumberSpaces(int numberDays) method. If you want to test a particular size for an entire year, you would pass in 365 for numberDays and the simulation will run with that particular size 365 times.

Starting size = 30

Stopping size = 50

Test run 3650 times (10 years):

SUMMARY OF ENTIRE SIMULATION

Simulation ran 3650 times.

Total % turned away = 2055.250036577854

Average % turned away = 0.5630822018021518

Lowest percentage of customers turned away = 0.0

was with 30 number of spaces.

SUMMARY OF ENTIRE SIMULATION

Simulation ran 3650 times.

Total % turned away = 1888.0854640484524

Average % turned away = 0.5172836887803979

Lowest percentage of customers turned away = 0.0

was with 30 number of spaces.

SUMMARY OF ENTIRE SIMULATION

Simulation ran 3650 times.

Total % turned away = 1980.1204377948964

Average % turned away = 0.5424987500807935

Lowest percentage of customers turned away = 0.0

was with 30 number of spaces.

I set it back to 365 days as default.