IoT Lab 3

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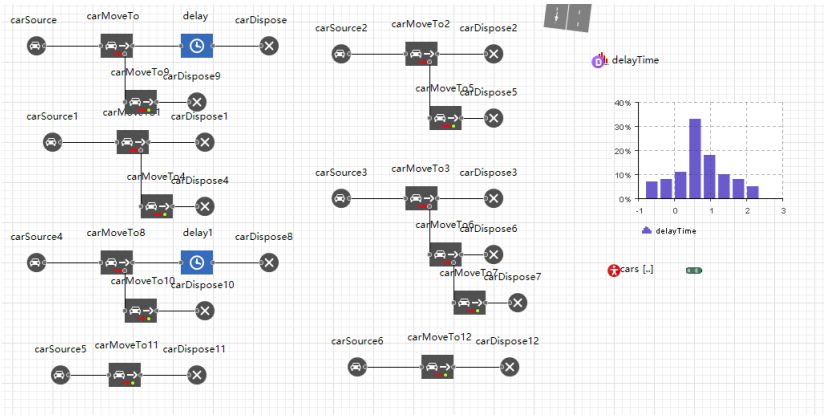
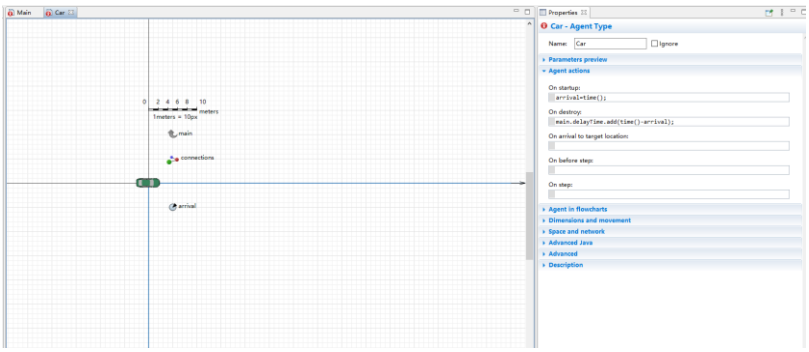
My Photo:

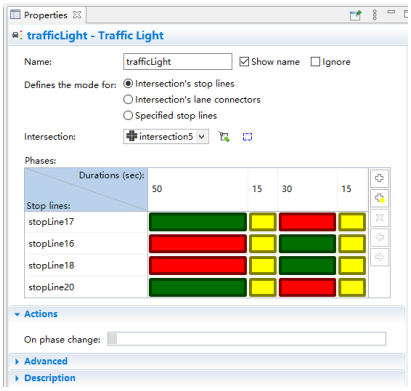
Job issue for the work:

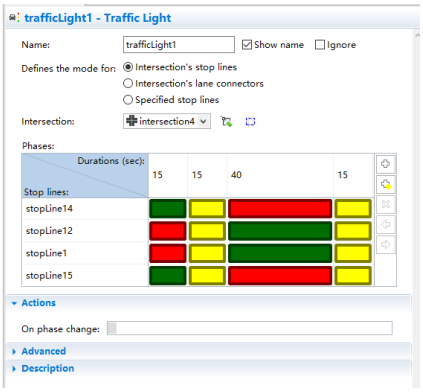
Use the road network built previously during the Work1 and developed at the Work 2.
Add the traffic lights to let manage passing the intersections.
Use the tutorial to make the user interface for varying the traffic light phases.
Perform the experiment to find the traffic lights phases maximizing the road throughput:
a) change the phases durability;
b) adding the yellow phases and their durabilities;
c) adding additional sections onto the traffic lights if necessary

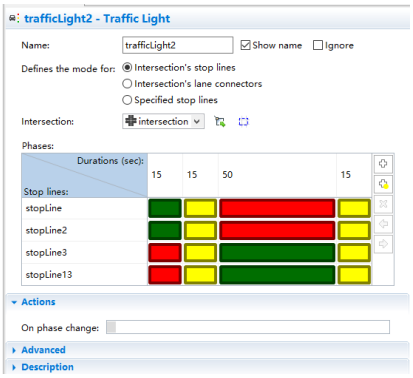
Model with traffic lights:

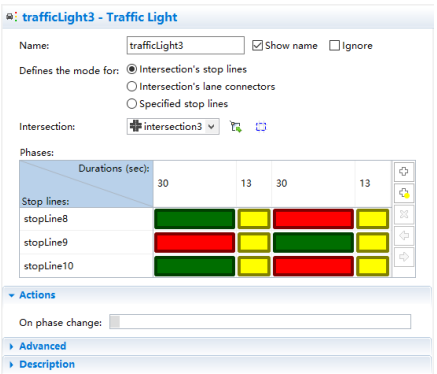

carSource
carMoveTo
delay
carDispose
carSource2
carMoveTo2
carDispose2
delayTime
carMoveTo9
carDispose9
carDispose5
carSource1
carDispose1
carMoveTo4
carDispose4
carSource3
carMoveTo3
carDispose3
carMoveTo6
carDispose6
carSource4
carMoveTo8
delay1
carDispose8
carMoveTo7
carDispose7
carMoveTo10
carDispose10
carSource5
carMoveTo11
carDispose11
carSource6
carMoveTo12
carDispose12
cars [..]

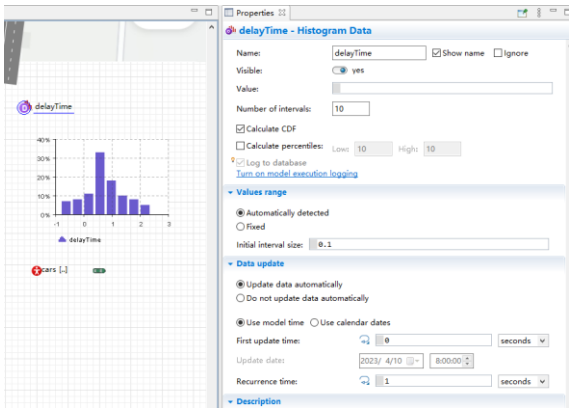


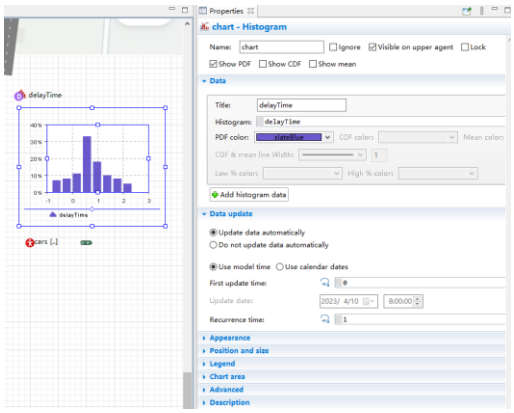

Properties
trafficLight - Traffic Light
Name: trafficLight
Show name
Ignore
Defines the mode for:
Intersection's stop lines
Intersection's lane connectors
Specified stop lines
Intersection: intersection5
Phases:
Durations (sec): 50 15 30 15
Stop lines:
stopLine17
stopLine16
stopLine18
stopLine20
Actions
On phase change:
Advanced
Description


trafficLight1 - Traffic Light
Name: trafficLight1
Show name
Ignore
Defines the mode for:
Intersection's stop lines
Intersection's lane connectors
Specified stop lines
Intersection: intersection4
Phases:
Durations (sec): 15 15 40 15
Stop lines:
stopLine14
stopLine12
stopLine1
stopLine15
Actions
On phase change:
Advanced
Description


trafficLight2 - Traffic Light
Name: trafficLight2
Show name
Ignore
Defines the mode for:
Intersection's stop lines
Intersection's lane connectors
Specified stop lines
Intersection: intersection
Phases:
Durations (sec): 15 15 50 15
Stop lines:
stopLine
stopLine2
stopLine3
stopLine13
Actions
On phase change:
Advanced
Description


trafficLight3 - Traffic Light
Name: trafficLight3
Show name
Ignore
Defines the mode for:
Intersection's stop lines
Intersection's lane connectors
Specified stop lines
Intersection: intersection3
Phases:
Durations (sec): 30 13 30 13
Stop lines:
stopLine8
stopLine9
stopLine10
Actions
On phase change:
Advanced
Description

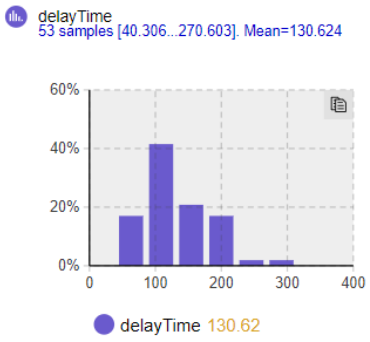

Properties
delayTime - Histogram Data
Name: delayTime
Show name
Ignore
Visible:
yes
Value:
Number of intervals: 10
Calculate CDF
Calculate percentiles:
Log to database
Turn on model execution logging
Values range
Automatically detected
Fixed
Initial interval size: 0.1
Data update
Update data automatically
Do not update data automatically
Use model time
Use calendar dates
First update time:
seconds
Update date:
2023/ 4/10
8:00:00
Recurrence time:
Description

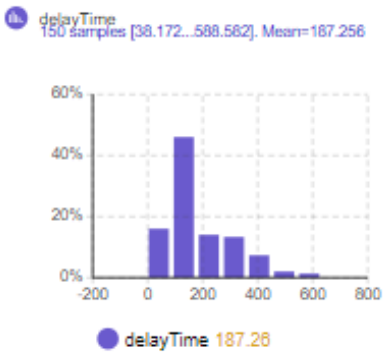

Properties
chart - Histogram
Name: chart
Ignore
Visible on upper agent
Lock
Show PDF
Show CDF
Show mean
Data
Title: delayTime
Histogram: delayTime
PDF color:
CDF colors:
Mean colors:
CDF & mean line Width:
Low % color:
High % color:
Add histogram data
Data update
Update data automatically
Do not update data automatically
Use model time
Use calendar dates
First update time:
Update date:
2023/ 4/10
8:00:00
Recurrence time:
Appearance
Position and size
Legend
Chart area
Advanced
Description

Run time:


路桥泰隆
德润大厦
金宸花园北区
金宸花园南区
38%到达
南门
繁华里
50米

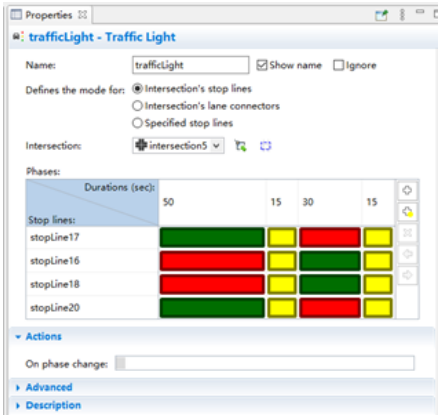

路桥泰隆
德润大厦
金宸花园北区
金宸花园南区
38%到达
南门
繁华里


delayTime
53 samples [40.306...270.603]. Mean=130.624
60%
40%
20%
0%
0
100
200
300
400
delayTime 130.62
cars
Car [203]


delayTime
150 samples [38.172...588.582]. Mean=187.256
60%
40%
20%
0%
-200
0
200
400
600
800
delayTime 187.26
cars
Car [319]

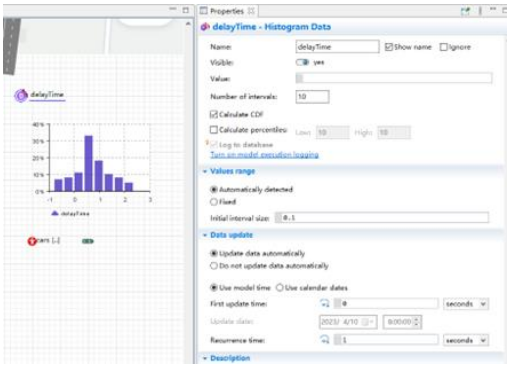
Parameters and its function:

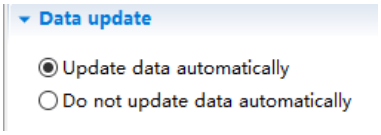
Traffic lights: Set traffic lights and related parameters



Intersection: Choose the appropriate intersection
Phases: Set traffic lights and their corresponding times

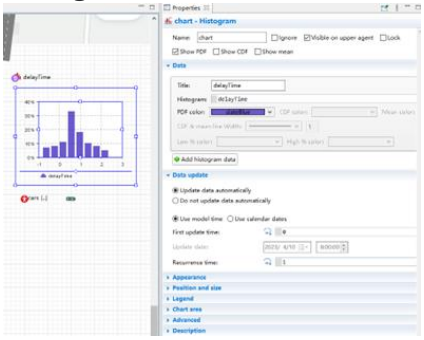
Histogram Data: Used to collect the corresponding data



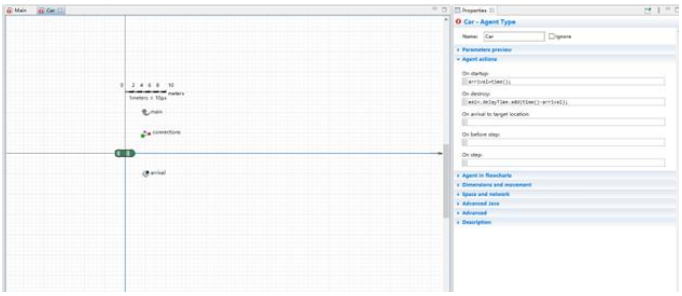


Update data automatically: To update data automatically.

Histogram: Turn the collected information into a graph



Agent Type: A custom created object



On startup: The event that is fired at the beginning
On destroy: The event that is fired at the end

Conclusion:

In this task, we learned how to set up traffic lights in the AnyLogic model and how long the traffic lights will last. We also learned how to create an Agent Type and introduce it into the original model. At the same time, we use Histogram Data to automatically collect and visualize information about vehicle flow.