

# **CTC Installation Manual**

## **12/12/2018**

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### **1) Launch the Program**

- Run the file CTC.jar in this directory

### **2) Manually sending a train**

- On the left-hand side, choose which destination to go to, choose the speed, and dispatch. Note that speed must be between 0-70 mph
- To see the output, see step #4

### **3) Loading a schedule and automatically sending trains**

- Click on the Load Schedule button on the top right
- Choose GreenLine.csv, or RedLine.csv (both can be stored at once if needed)
- Mode is set to automatic, and a train is instantly deployed with that schedule
- Change the mode to manual to stop trains being sent out over time
- To see the output, see step #4

### **4) View and approve a dispatched train (Train Model does this)**

- In the XML folder, open "TrainOutputs.xml"
- Find your dispatched train, read the values needed
- To show that the train was sent out, change the 0 before </Dispatch> to a 1
  - View in the CTC module, the status of the train
- To remove the train, change that 1 to a 2 to show it's back at the yard
  - If you close and reopen the XML file, the train will no longer be there

### **5) Change the mode to automatic/manual**

- A schedule must be loaded and selected to be in automatic mode
- Click the dropdown menu, and choose on for automatic, off for manual

### **6) Request to close a block for maintenance**

- Under Close/Open Track, select which line, and type the block number to close
- Choose to open or close the section
- Click to request the change
- In "xml/CTCOutput.xml", check the new request of the following format
  - R1TCR : stands for Red, block 1, Track Close Request
  - G10TOR : stands for Green, block 10, Track Open Request
- The Track Controller then handles this, and should output states
  - I removed my reading of closed sections as we did not get that to work

## **7) Request a manual switch change**

- Under Flip Switch, choose the location of the switch you would like to flip
- View the request for the switch change in “xml/CTCOutput.xml “
- Keep in mind, requests are removed after 15 seconds
- The following format is followed: Line+Switch Number+Request type
  - ex. R1SNR : Red, switch #1, Switch Normal Request
  - ex. G2SRR : Green, switch, #2, Switch Reverse Request
  - Note that all requests have a 1 value
- To act as the Track Controller changing the switch:
  - Open “xml/TrackControllerOutputs.xml”
  - Navigate to your switch number, with SNP on the end (i.e G2SNP)
  - 0 means the switch is reversed, 1 means the switch is normal
  - Switch the value, and view the output on the CTC module

## **8) Request a manual crossing change**

- Follow the same format as requesting a switch change, with:
  - The following “xml/CTCOutput.xml” format to output requests
    - ex. G19UR : Green, crossing in block 19, up request
    - ex. R47DR : Red, crossing in block 47, down request
  - This is the “xml/TrackControllerOutputs.xml” format to edit the display
    - R47C and G19C are the crossings
    - For the values, 0 is for a down crossing, 1 for an up crossing
- Keep in mind, requests are removed after 15 seconds

## **9) Change the group's time multiplier**

- Click on the Time Multiplier drop down menu, select the desired value
- Open “xml/multiplier.txt”, and view the multiplier value here

## **10) View Train Occupancy on the Track**

- Open the file “xml/TrackModelOutputs”
- A 1 associated with each block number means that block is empty
- Change one of those 1's to a 0 to treat it as a train on that block, then check the G Line or R Line on the display to see that the section of track is occupied

## **11) View and test throughput**

- Look at the top left for throughput
- To change throughput value sent by the Track Model
  - Open "xml/TrackModelOutputs.xml"
  - The last variable named throughput, is the value the CTC is getting, change if needed
  - The value is the total number of passengers that have boarded the trains over time from the Track Model

## **12) Test Routing**

- Change the occupancy of one of the following sections of track, to automatically send out switch requests for routing
- Sections that flip switches with some block numbers associated with them
  - Red: B(4), I(46), G(21), K(55), M(61)
  - Green: L(69), M(74), P(89), Q(98), S(102), Y(147), E(17), B(4), H(33), I(36)
  - (change occupancy in step #10)
  - (view switch requests in step #7)