SHWOZ

Railway Train System Simulation
Track Controller Testing

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1. Are The Correct Blocks Being Shown For The Selected Track

Testing Setup:

With the person responsible for the track model, have the Red Line and Green Line configured to have different amount of block numbers.

Steps:

1. Run Program.
2. Select “Load” button from CTC
3. Focus on the Wayside Controller window
4. Select the Red Line.
5. Click on the Block Combo Box, to see drop down list.
6. Write down the last block number
7. Select the Green Line
8. Click on the Block Combo Box, to see drop down list.
9. Write down the last block number
10. Compare the numbers you wrote down with the red_line.txt and green_line.txt files.

Results:

The last block number for the Red Line was 77. The last block number for the Green Line was 153. Both of these numbers matched what the person responsible for the track model configured.

Pass Or Fail:

PASS

2. Data Persistence – “Controlling Block” & “Displaying Block Info” Panels

Testing Setup:

With the person responsible for the track model, configure blocks to contain a default speed of 0 and a default authority of 0. Configure the switch states to all be in their closed state. Configure the railway crossing states to be defaulted to risen positions. Configure track circuit status to be defaulted to “Good Circuit”. Configure block rail status to be defaulted to “Good Rail”.

Steps:

1. Run Program.

2. Make Sure there is no value entered for speed and authority in the CTC
3. Make Sure YOU DO NOT click the “start” button in the CTC
4. Select “Load” Button from CTC
5. Focus on the Wayside Controller Window

2.1 Is Authority being stored in the Block?

Steps:

1. Select a Track Line.
2. Select a Block Number.
3. Write a Authority Value in and write that value down on paper.
4. Click “Push Authority to Block”
5. Select a different Track Line.
6. Select a Block Number on this new Track Line
7. Change Track Line back to the Original
8. Select the Block number you stored the information in before.
9. Write down the Authority value being displayed in the “Displaying Information About Block” Panel.
10. Compare the two numbers your wrote down.

Results:

Both of the numbers written down matched.

Pass Or Fail:

PASS

2.2 Is Speed being stored in the Block?

Steps:

1. Select a Track Line.
2. Select a Block Number.
3. Write a Speed Value in and write that value down on paper.
4. Click “Push Speed to Block”
5. Select a different Track Line.
6. Select a Block Number on this new Track Line
7. Change Track Line back to the Original
8. Select the Block number you stored the information in before.
9. Write down the Speed value being displayed in the “Displaying Information About Block” Panel.

10. Compare the two numbers your wrote down.

Results:
Both of the numbers written down matched.

Pass Or Fail:
PASS

2.3 Is Switch State being held?

Steps:
1. Select a Track Line.
2. Select a Block Number, which contains a switch.
3. Select the “Open Switch” radio button
4. Select a different Track Line.
5. Select a Block Number on this new Track Line
6. Change Track Line back to the Original
7. Select the Block number you changed the Switch State of, previously.
8. View the Switch State information of this block in the “Displaying Information About Block” Panel.

Results:
Switch State, for this block does show it being I the Open state position.

Pass Or Fail:
PASS

2.4 Is Railway Crossing State held?

Steps:
1. Select a Track Line.
2. Select a Block Number, which contains a railway crossing.
3. Select the “Drop Crossbar” radio button
4. Write Down the Crossing Light Color
5. Select a different Track Line.
6. Select a Block Number on this new Track Line
7. Change Track Line back to the Original
8. Select the Block number you changed the Railway Crossing State of, previously.
9. View the Railway Crossing State and Crossing Light information of this block in the “Displaying Information About Block” Panel.

Results:

Railway Crossing State, for this block does show it being in the “Dropped” state. The Crossing light does in fact match that of which had written down before.

Pass Or Fail:

PASS

2.4 Is Track Circuit State being stored?

Steps:

1. Select a Track Line.
2. Select a Block Number..
3. Select the “Bad Circuit” radio button
4. Select a different Track Line.
5. Select a Block Number on this new Track Line
6. Change Track Line back to the Original
7. Select the Block number you changed Previously
8. View the Track Circuit information of this block in the “Displaying Information About Block” Panel.

Results:

Track Circuit Status information in the “Displaying Information About Block” Panel does report that this Track Circuit is Bad.

Pass Or Fail:

PASS

2.5 Is Rail State being stored?

Steps:

1. Select a Track Line.
2. Select a Block Number..
3. Select the “Broken Rail” radio button
4. Select a different Track Line.
5. Select a Block Number on this new Track Line
6. Change Track Line back to the Original
7. Select the Block number you changed Previously
8. View the Track Rail information of this block in the “Displaying Information About Block” Panel.

Results:
Track Rail information in the “Displaying Information About Block” Panel does report that the rail is broken.

Pass Or Fail:
PASS

3. Displaying Information About Block

Testing Setup:

With the person responsible for the track model, configure the appropriate blocks to contain Tran Station Names. Configure the switch states to all be in their closed state. Configure the railway crossing states to be defaulted to risen positions. Configure track circuit status to be defaulted to “Good Circuit”. Configure block rail status to be defaulted to “Good Rail”.

Steps:
1. Run Program.
2. Focus on the Wayside Controller Window

3.1 Is The Block Being Monitored By The Correct Controller

Steps:
1. Select a Track Line.
2. Select a Block Number.
3. Write down the Monitoring Wayside Controller Number from the “Displaying Information About Block” Panel.
4. View Track Model’s Algorithm for assigning Wayside Controller Identification Numbers.

Results:

Wayside Controller Identification Number written down was the correct number for that given block.

Pass Or Fail:

PASS

3.2 Is The Block Properly Conveying a Train Is On It?

Steps:

1. Set the Speed in the CTC to 20.
2. Set the Authority in the CTC to 20.
3. Push the Speed and Authority in CTC.
4. Click “start” in the CTC.
5. View the CTC and Wayside Controller Side by Side
6. Select the Red Track Line
7. Select a Block Number 9.
8. Monitor the “Displaying Information About Block” Panel inside the Wayside Controller window. Look at the line “Train is on me”.
9. Monitor the current block the train is on, inside the CTC Window.
10. When CTC shows the current block is 8, switch focus to Wayside Controller Window.
11. Did “Train is on me” change to “Yes” and then back to “No”

Results:

“Train is on me” did change from “No” to “Yes”, and then back to “No”

Pass Or Fail:

PASS

3.3 Is The Block On The Correct Track?

Steps:

1. Select a Track Line.
2. Select a Block Number.
3. View the “Track I am On” line in the “Displaying Information About Block” Panel.
4. Does the “Track I am on” match that of the track line you selected in the “Select Block to Control and Inspect” Panel.

Results:

Yes, the “Track I am on” is displaying the correct track line.

Pass Or Fail:

PASS

3.4 Is The Correct Block Number Being Displayed?

Steps:

1. Select a Track Line.
2. Select a Block Number.
3. View the “My Block Number” line in the “Displaying Information About Block” Panel.
4. Does the block number match that of the block number you selected in the “Select Block to Control and Inspect” Panel.

Results:

Yes, the “My Block Number” is displaying the correct block number.

Pass Or Fail:

PASS

3.5 Properly picking up if a block is a Train Station and displaying its name?

Steps:

1. Select a Track Line.
2. Select a Block Number, that is a Train Station.
3. View the Train Station Name: in the “Displaying Information About Block” Panel.
4. Does it display the correct Train Station Name?

Results:

Yes, the train station name matches that in the red line configuration file.

Pass Or Fail:

PASS

3.6 Properly picking up if a block has a switch on it?

Steps:

1. Select a Track Line.
2. Select a Block Number, which has a switch located on it.
3. View the switch information on the “Displaying Information About Block” Panel.
4. Does its State match that in the configuration file (default)?
5. Does its switch connection match that, that is in the configuration file and the data the professor gave us?

Results:

Yes, the switch state and switch connection is correct.

Pass Or Fail:

PASS

3.7 Properly picking up if a block has a railway crossing on it?

Steps:

1. Select a Track Line.
2. Select a Block Number, which has a railway crossing located on it.
3. View the railway crossing information on the “Displaying Information About Block” Panel.
4. Does its state match that in the configuration file (default)?
5. Does its Crossing Light color match correctly with the stat it is in. Green, if raised. Red, if dropped.

Results:

Yes, the railway Crossing state is correct and its crossing light corresponds with the state correctly.

Pass Or Fail:

PASS

4. Validating PLC Logic

Testing Setup:

With the person responsible for the track model, configure the appropriate blocks to contain Tran Station Names. Configure the switch states to all be in their closed state. Configure the railway crossing states to be defaulted to risen positions. Configure track circuit status to be defaulted to “Good Circuit”. Configure block rail status to be defaulted to “Good Rail”. Make sure all the 4 necessary files stated in the Track Controller’s User Manual/Installation Guide are present in the same directory as the TrainSimulator.jar file.

Steps:

1. Run Program.
2. Select “Load” button from CTC
3. Set the speed to 20 in CTC
4. Set the authority to 20 in CTC

5. Click the Start button in CTC

4.1 Change Switch State From Open to Close?

Steps:

1. Place the CTC Window and the Wayside Controller Window side by side.
2. Select the red line in the Wayside Controller.
3. Select block number nine in the Wayside Controller Window.
4. Wait until the CTC reads that the Train is on block 8, and then click the stop button in the CTC window.
5. From the Wayside Controller window, click the “open switch” radio button from the “Controlling Block Information” Panel.
6. The Switch should not change states.

Results:

The Switch does not change states and remains in the closed state. This test is repeated in the following scenarios: When train is on the same block as the switch. When train is on the block after the switch. When train is on the block that the switch connects to in the open state. Switch does not change state for those scenarios as well.

Pass Or Fail:

PASS

4.2 Change Switch State From Close to Open?

Steps:

1. Place the CTC Window and the Wayside Controller Window side by side.
2. Select the red line in the Wayside Controller.
3. Select block number nine in the Wayside Controller Window.
4. Click on the “Open Switch” Radio Button, in the “Controlling Block Information” Panel.
5. Wait until the CTC reads that the Train is on block 8, and then click the stop button in the CTC window.
6. From the Wayside Controller window, click the “close switch” radio button from the “Controlling Block Information” Panel.
7. The Switch should not change states.

Results:

The Switch does not change states and remains in the opened state. This test is repeated in the following scenarios: When train is on the same block as the switch. When train is on the block after the switch. When train is on the block that the switch connects to in the close state. Switch does not change state for those scenarios as well.

Pass Or Fail:

PASS

4.3 Drop Railway Cross Bar

Steps:

1. Place the CTC Window and the Wayside Controller Window side by side.
2. Select the red line in the Wayside Controller.
3. Select block number forty-seven in the Wayside Controller Window.
4. Wait until the CTC reads that the Train is on block forty-six, and then click the stop button in the CTC window.
5. The railway Crossing Bar should be dropped
6. The Crossing light should be Red.
7. From the Wayside Controller window, click the “Raise Crossbar” radio button from the “Controlling Block Information” Panel.
8. The Crossbar should stay dropped.

Results:

The Railway Crossing bar does not change states and remains in the dropped state. This test is repeated in the following scenarios: When train is on the same block as the crossing bar.

Pass Or Fail:

PASS

4.4 Raise Railway Cross Bar

Steps:

1. Place the CTC Window and the Wayside Controller Window side by side.
2. Select the red line in the Wayside Controller.
3. Select block number forty-seven in the Wayside Controller Window.

4. Wait until the CTC reads that the Train is on block forty-eight, and then click the stop button in the CTC window.
5. The railway Crossing Bar should be raised now, in the Wayside Controller Window.
6. The Crossing light should be Green.

Results:

The railway-crossing bar does get raised once the train enters block 48.

Pass Or Fail:

PASS