Simulink Design Verifier Report

Vehicle_Speedometer_Module

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19-Mar-2023 02:54:03

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Chapter 1. Summary

Analysis Information

Model:	Vehicle_Speedometer_Module
Release:	R2022a Update 2
Checksum:	4081228814 4271405805 3120410839 383593881
Mode:	Test generation
Model Representation:	Built on 19-Mar-2023 02:52:11
Test Generation Target:	Model
Status:	Completed normally
PreProcessing Time:	19s
Analysis Time:	60s

Objectives Status

Number of Objectives:	**14**	
Objectives Satisfied:	14	(100%)

Chapter 2. Analysis Information

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2.1. Model Information

File:	Vehicle_Speedometer_Module
Version:	1.29
Time Stamp:	Sun Mar 19 02:09:56 2023
Author:	jamesbond

2.2. Analysis Options

Mode:	TestGeneration
Rebuild Model Representation:	IfChangeIsDetected
Test Generation Target:	Model
Test Suite Optimization:	Auto
Maximum Testcase Steps:	10000time steps
Test Conditions:	UseLocalSettings
Test Objectives:	UseLocalSettings
Model Coverage Objectives:	MCDC
Add tests for the missing coverage:	off
Include Relational Boundary Objectives:	off
Maximum Analysis Time:	300s
Block Replacement:	off
Parameters Analysis:	off
Include expected output values:	off
Randomize data that do not affect the outcome:	off
Additional analysis to reduce instances of rational approximation:	on
Save Data:	on
Save Harness:	off
Save Report:	off

2.3. User Artifacts

Coverage Data: n/a
Test Data: n/a

2.4. Constraints

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2.4.1. Design Min Max Constraints

Name	Design Min Max Constraint
Avg_VehicleSpeed	[0..280]
In_MainFilt_SpeedValue	[1..3]
In_AuxFilt_SpeedValue	[1..3]

Chapter 3. Test Objectives Status

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3.1. Objectives Satisfied

Simulink Design Verifier generated test cases that exercise these test objectives.

#	Type	Model Item	Description	Analysis Time (sec)	Test Case
1	Decision	Speedometer_Module/Input_Processing/Saturation	input >= lower limit **true**	28	1
2	Decision	Speedometer_Module/Input_Processing/Saturation	input >= lower limit **false**	28	1
3	Decision	Speedometer_Module/Input_Processing/Saturation	input > upper limit **true**	28	1
4	Decision	Speedometer_Module/Input_Processing/Saturation	input > upper limit **false**	28	1
5	Condition	Speedometer_Module/Compare To Zero/Compare	RelationalOperator: input1 == input2 **true**	28	1
6	Condition	Speedometer_Module/Compare To Zero/Compare	RelationalOperator: input1 == input2 **false**	28	1
7	Decision	Speedometer_Module/Main_Data_Filtering	Enable control activated **true**	28	1
8	Decision	Speedometer_Module/Main_Data_Filtering	Enable control activated **false**	28	1
9	Decision	Speedometer_Module/Auxilliary_Data_Filtering	Enable control activated **true**	28	1
10	Decision	Speedometer_Module/Auxilliary_Data_Filtering	Enable control activated **false**	28	1
11	Condition	Speedometer_Module/Display_Speed_Output/Relational Operator	RelationalOperator: input1 > input2 **true**	28	1
12	Condition	Speedometer_Module/Display_Speed_Output/Relational Operator	RelationalOperator: input1 > input2 **false**	53	2
13	Decision	Speedometer_Module/Display_Speed_Output/Switch	logical trigger input **false (output is from 3rd input port)**	53	2
14	Decision	Speedometer_Module/Display_Speed_Output/Switch	logical trigger input **true (output is from 1st input port)**	28	1

Chapter 4. Model Items

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This section presents, for each object in the model defining coverage objectives, the list of objectives and their individual status at the end of the analysis. It should match the coverage report obtained from running the generated test suite on the model, either from the harness model or by using the sldvruntest command.

4.1. Speedometer_Module/Input_Processing/Saturation

View

#:	Type	Description	Status	Test Case
1	Decision	input >= lower limit true	Satisfied	1
2	Decision	input >= lower limit false	Satisfied	1
3	Decision	input > upper limit true	Satisfied	1
4	Decision	input > upper limit false	Satisfied	1

4.2. Speedometer_Module/Compare To Zero/Compare

View

#:	Type	Description	Status	Test Case
5	Condition	RelationalOperator: input1 == input2 true	Satisfied	1
6	Condition	RelationalOperator: input1 == input2 false	Satisfied	1

4.3. Speedometer_Module/Main_Data_Filtering

View

#:	Type	Description	Status	Test Case
7	Decision	Enable control activated true	Satisfied	1
8	Decision	Enable control activated false	Satisfied	1

4.4. Speedometer_Module/Auxilliary_Data_Filtering

View

#:	Type	Description	Status	Test Case
9	Decision	Enable control activated true	Satisfied	1
10	Decision	Enable control activated false	Satisfied	1

4.5. Speedometer_Module/Display_Speed_Output/Relational Operator

View

#:	Type	Description	Status	Test Case
11	Condition	RelationalOperator: input1 > input2 true	Satisfied	1
12	Condition	RelationalOperator: input1 > input2 false	Satisfied	2

4.6. Speedometer_Module/Display_Speed_Output/Switch

View

#:	Type	Description	Status	Test Case
13	Decision	logical trigger input false (output is from 3rd input port)	Satisfied	2
14	Decision	logical trigger input true (output is from 1st input port)	Satisfied	1

Chapter 5. Test Cases

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This section contains detailed information about each generated test case.

5.1. Test Case 1

Summary

Length: 0.03 second (4 sample periods)
Objectives Satisfied: 12

Objectives

Step	Time	Model Item	Objectives
1	0	Speedometer_Module/Input_Processing/Saturation Speedometer_Module/Input_Processing/Saturation Speedometer_Module/Compare To Zero/Compare Speedometer_Module/Main_Data_Filtering Speedometer_Module/Auxilliary_Data_Filtering Speedometer_Module/Display_Speed_Output/Relational Operator Speedometer_Module/Display_Speed_Output/Switch	2. input >= lower limit false 4. input > upper limit false 6. RelationalOperator: input1 == input2 false 8. Enable control activated false 10. Enable control activated false 11. RelationalOperator: input1 > input2 true 14. logical trigger input true (output is from 1st input port)
2	0.01	Speedometer_Module/Compare To Zero/Compare Speedometer_Module/Main_Data_Filtering Speedometer_Module/Auxilliary_Data_Filtering	5. RelationalOperator: input1 == input2 true 7. Enable control activated true 9. Enable control activated true
3	0.02	Speedometer_Module/Input_Processing/Saturation	1. input >= lower limit true
4	0.03	Speedometer_Module/Input_Processing/Saturation	3. input > upper limit true

Generated Input Data

Time	0	0.01	0.02
Step	1	2	3
In_MainFilt_SpeedValue	1	3	3

Time	0	0.01	0.02
Step	**1**	**2**	**3**
In_AuxFilt_SpeedValue	3	3	3
Avg_VehicleSpeed	0.979999999999999982236431605997495353221893310546875	1.689999999999999946709294817992486059665679931640625	5.639999
Timer_Input	69	0	0

5.2. Test Case 2

Summary

Length: 0.01 second (2 sample periods)
Objectives Satisfied: 2

Objectives

Step	Time	Model Item	Objectives
2	0.01	Speedometer_Module/Display_Speed_Output/Relational Operator Speedometer_Module/Display_Speed_Output/Switch	12. RelationalOperator: input1 > input2 false 13. logical trigger input false (output is from 3rd input port)

Generated Input Data

Time	0	0.01
Step	**1**	**2**
In_MainFilt_SpeedValue	1	2
In_AuxFilt_SpeedValue	3	3
Avg_VehicleSpeed	159.180000000000006821210263296961784362792968750	25.420000000000001705302565824240446090698242187500
Timer_Input	310	311