





Simulink Tutorial Series - 2

Table of Contents [hide]

1. Simulink Tutorial Series – 2

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- 1.6. Constant Block
- 1.7. Switch Block
- 1.8. Display Block
- 1.9. Build the Simulink Model
- 1.10. Simulink Model Output
- 1.11. Download Sample Model
- 1.12. Summary
- 1.13. Related posts:



Are you new to the world of Model-Based Development? Are you looking for a good working Simulink model examples / Simulink Tutorial to understand how Model-Based Development works?

If yes, then you are on the right page!

In this article, I am going to discuss exactly, what you are looking for.

Matlab/Simulink is the leading software in the industry for model based development.

There are several other online resources, where you can get theoretical knowledge about Matlab/Simulink. But, there are not many resources to explain the theory along with good examples. This is going to be a series of articles. This is the second article in this series.

In every series, I will add real-life working examples and show how to build models for a particular problem.

Learning Goal

In this article, I am going to explain you how you can apply the if-else condition in simulink model. If you are familiar with other programming languages such as C, C++, Java or any other programming languages, you already know that every programming language has if-else logic.

In simulink, we can build a model including if-else logic.

So, if you go through this article, you will be able to build your own Simulink model using if-else logic.

Assumption

I am assuming, you already gone through my previous article – Simulink Tutorial – Series I. If not, you can just take a look at HERE.

What We already know

We already know -

- 1. How to start Matlab
- 2. How to open the Simulink from Matlab
- 3. How to open a Blank Simulink Model
- 4. How to open Simulink Library Browser
- 5. How to find a block in Simulink Library Browser

I have discussed all the above points in my previous post.

If-Else Logic

Most of you, who have previous programming background, you already know what a ifelse logic does and how it works. However, if you do not know if-else logic, here is what it does:

1. The if-else construct evaluates a condition and if the condition outcome is True, the if

path executes

2. If the condition becomes False, the else path executes

```
1. if(rain==1)
2. {
3.          printf("It's a rainy day");
4. }
5. else
6. {
7.          printf("It's a sunny day");
8. }
```

So, when the "rain" variable is set to 1, the printf() function under the if condition will execute. When the condition fails, i.e. rain variable is set to 0, the printf() under the else condition executes.

Simulink Blocks needed for if-else logic implementation

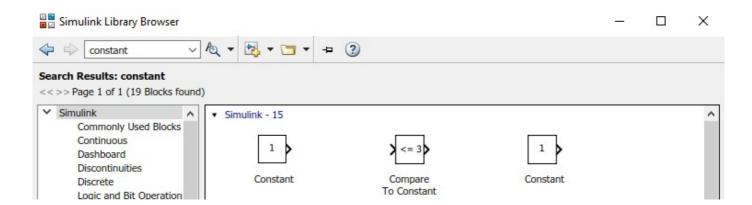
I need the following Simulink blocks to implement the if-else logic:

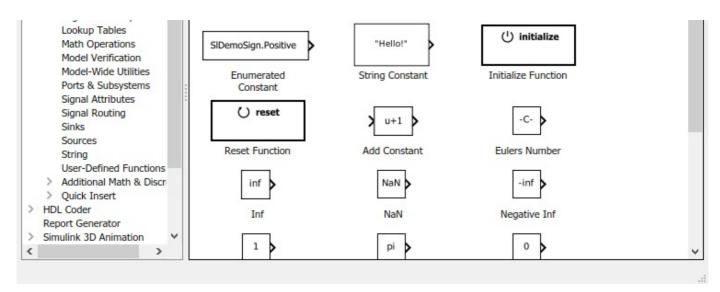
- 1. Constant Block
- 2. Switch Block
- 3. Display block

To be able to show the output, I need a display block. However, this is not needed to implement the core logic of if-else.

Constant Block

You can open the Simulink Library Browser and search for the constant block. Then drag and drop to the Simulink Blank model.





Simulink Model - Constant Block

Switch Block

I can open the Simulink Library Browser and search for the switch block. Then drag and drop to the Simulink Blank model.

I can also simply go the Signal Routing section in the Simulink Library Browser window and find the switch block.

Display BlockSimilarly, I can easily find the display block in the Simulink Library Browser by typing the display in the find box.

Simulink Model – Display Block

Build the Simulink Model

Now, I need to just drag and drop all the required blocks from the Simulink Library Browser and put in the blank Simulink model.



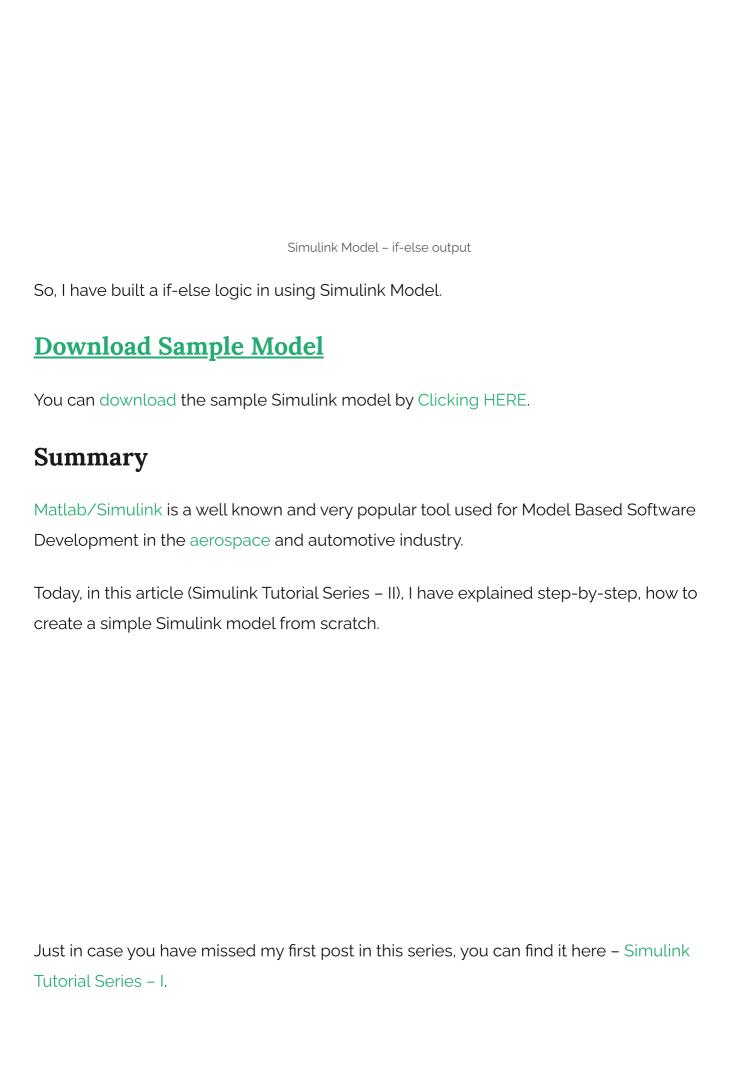
Now, you must be wondering how did I set up the if condition in the switch block. Its's very easy. Just double-click on the switch block and a dialog box will open up to configure the switch block. As you can see below, you need to set the criteria for passing the first input (u2 \sim = 0).

Simulink Model – Switch Block

Simulink Model Output

Now, since I have completed building the model, I just now save the model and execute it by hitting the green play button.

| Simulink Model – if-else output |
|--|
| So, I have got the expected output. The switch condition I have set was u2 \sim =0. Here the u2 is the denoted as constant block – "rain". The "rain" is set to 1. Therefore, the condition (u2 \sim =0) holds True. That's why the first input (i.e. 50) becomes the output of the switch |
| block. |
| |
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| |
| Now, I will set the "rain" to 0 and execute the model again and see the output. My expected output in this case, would be 100. |
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| |
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If you have any questions, please feel free to comment in the comment box below.

I will keep sharing useful real-life Simulink model example here - Simulink Tutorial Series.

Stay Tuned!

Admin

This post was published by Admin.

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✓ Simulink Tutorial Series – 1

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