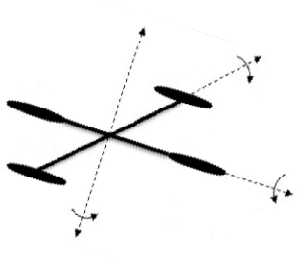
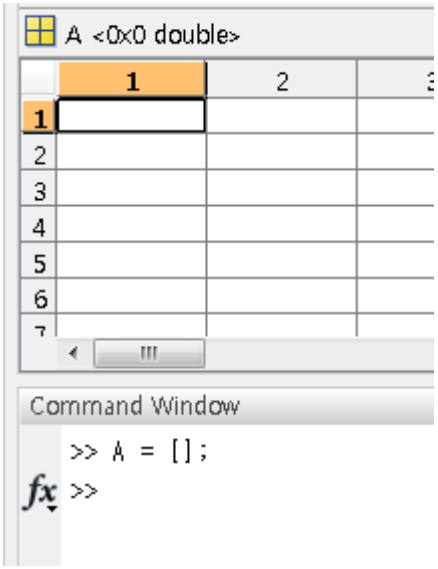
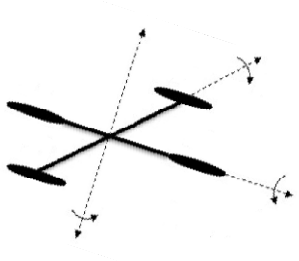
M A T L A B

Simulink의 기초 2



- Structure 데이터 유형





Variable Editor - A

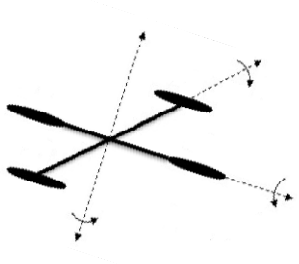
Stack: Base

A <1x1 struct>

Field	Value	Min	Max
name	'Test Structure'		
data	[1,2,3,4]	1	4
date	'10.03.17'		

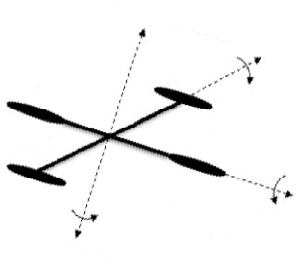
Command Window

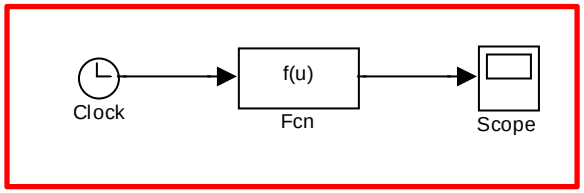
```
>> A = [];
>> A.name = 'Test Structure';
>> A.data = [1 2 3 4];
>> A.date = '10.03.17';
>>
```

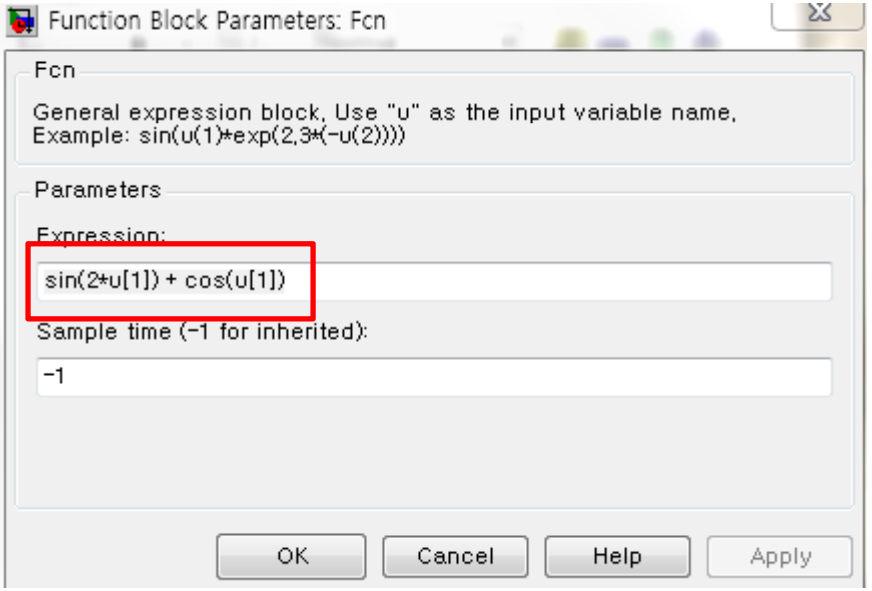


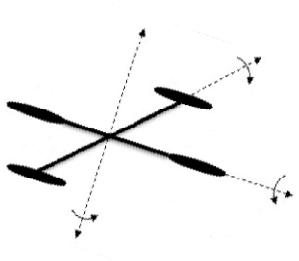
- Fcn 블록과 Gain 블록의 사용

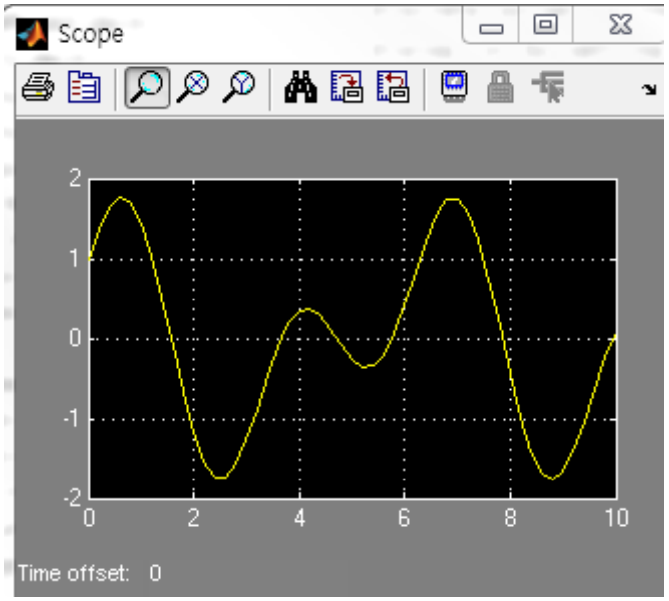
$$y = \sin(2x) + \cos x$$

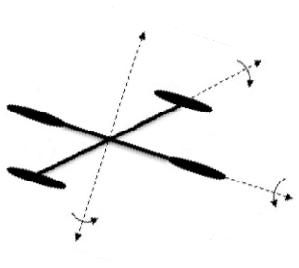



Clock
f(u)
Fcn
Scope

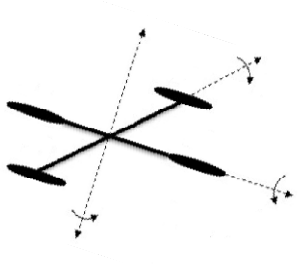

Function Block Parameters: Fcn
Fcn
General expression block. Use "u" as the input variable name.
Example: sin(u(1)*exp(2.3*(-u(2))))
Parameters
Expression:
sin(2*u[1]) + cos(u[1])
Sample time (-1 for inherited):
-1
OK
Cancel
Help
Apply

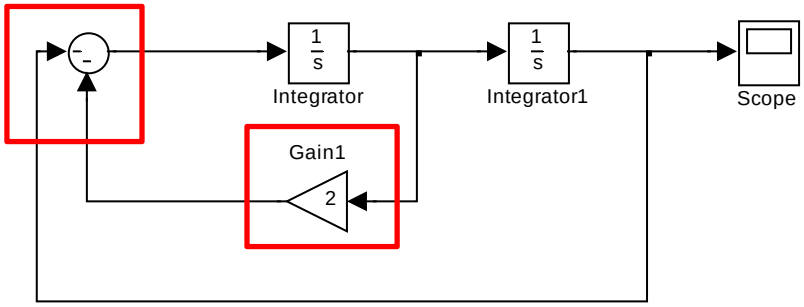


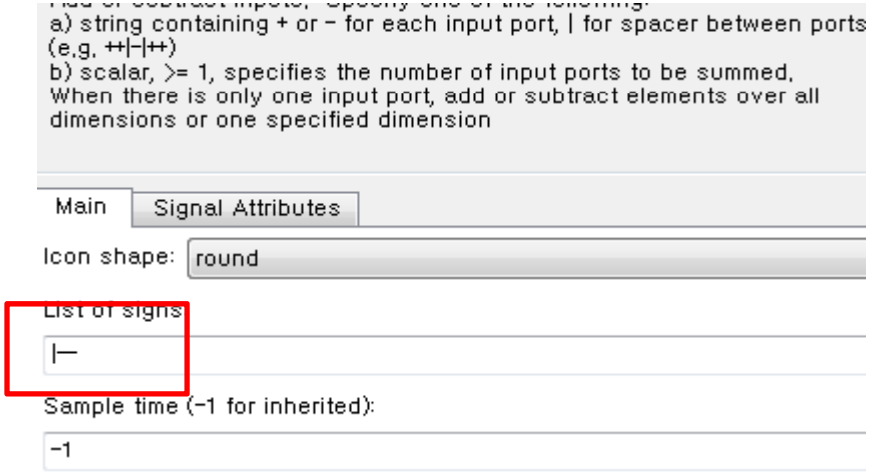

Scope
2
1
0
-1
-2
0
2
4
6
8
10
Time offset: 0

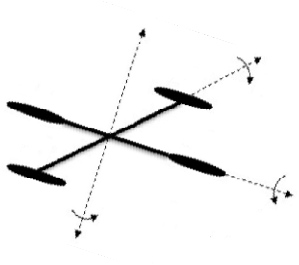


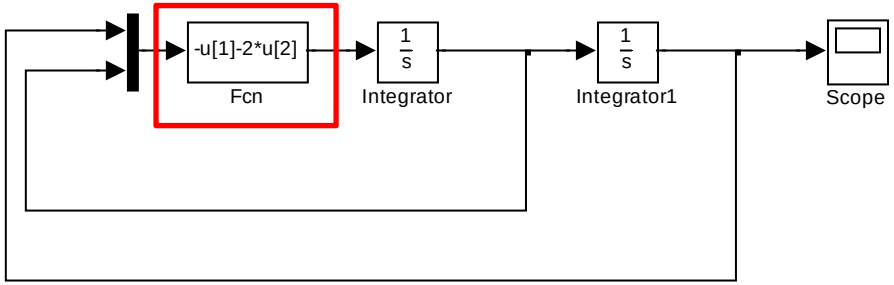
$$\ddot{x} = -2\dot{x} - x$$

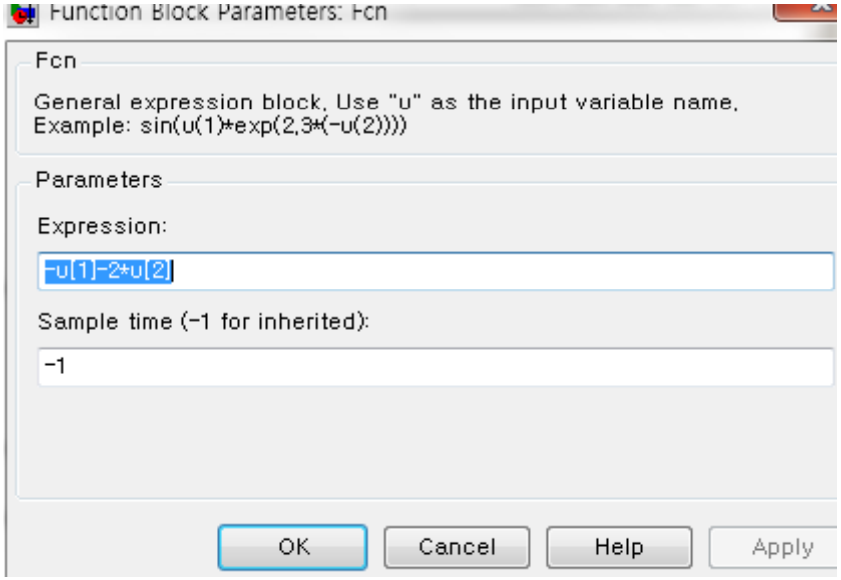


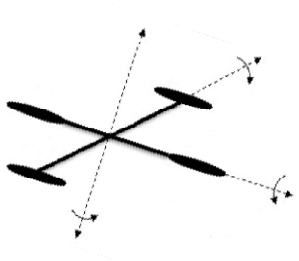

1
s
Integrator
1
s
Integrator1
Scope
Gain1
2

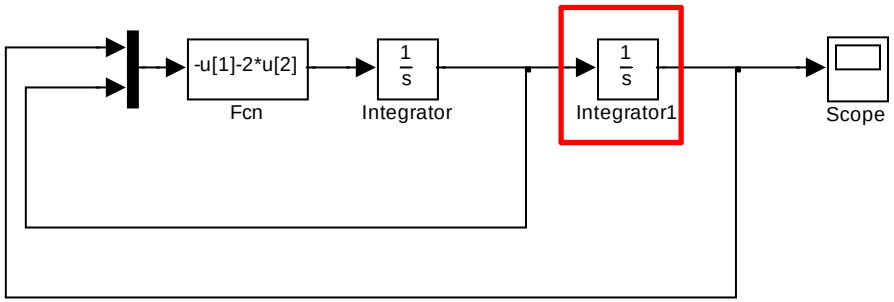

a) string containing + or − for each input port, | for spacer between ports
(e.g. ++|-|++)
b) scalar, >= 1, specifies the number of input ports to be summed.
When there is only one input port, add or subtract elements over all
dimensions or one specified dimension
Main
Signal Attributes
Icon shape:
round
List of signs:
|—
Sample time (-1 for inherited):
-1

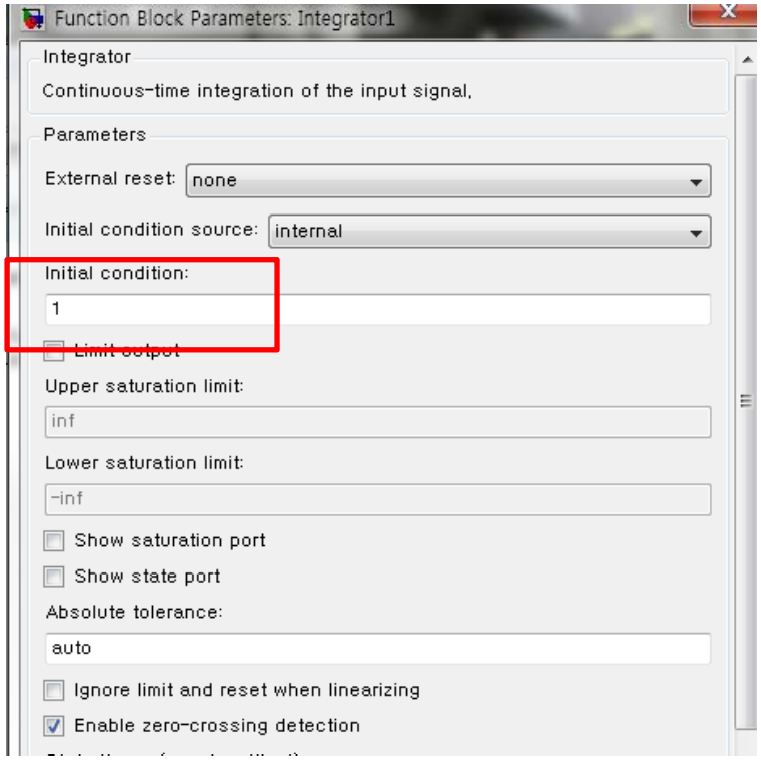


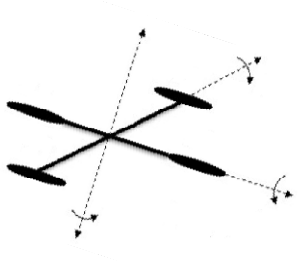

-u[1]-2*u[2]
Fcn
1
s
Integrator
1
s
Integrator1
Scope

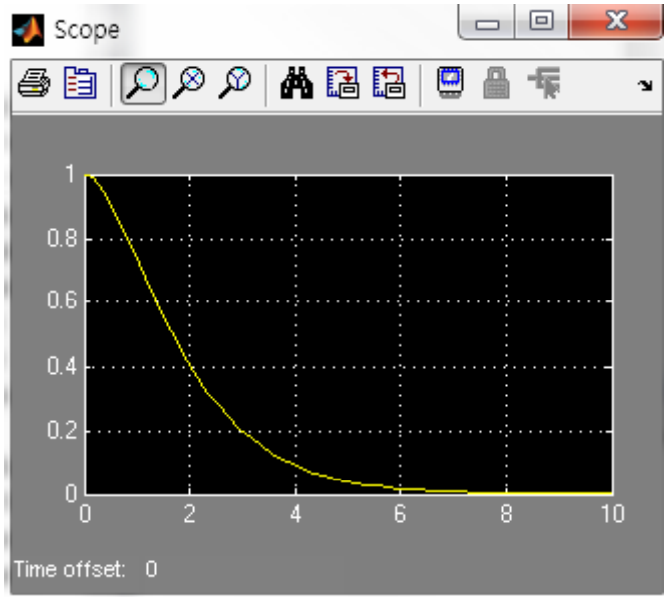

Function Block Parameters: Fcn
Fcn
General expression block. Use "u" as the input variable name.
Example: sin(u(1)*exp(2.3*(-u(2))))
Parameters
Expression:
-u[1]-2*u[2]
Sample time (-1 for inherited):
-1
OK
Cancel
Help
Apply

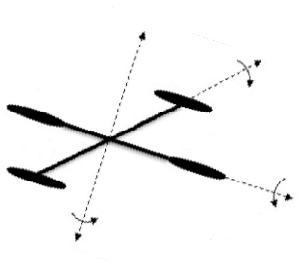



-u[1]-2*u[2]
Fcn
1
s
Integrator
1
s
Integrator1
Scope

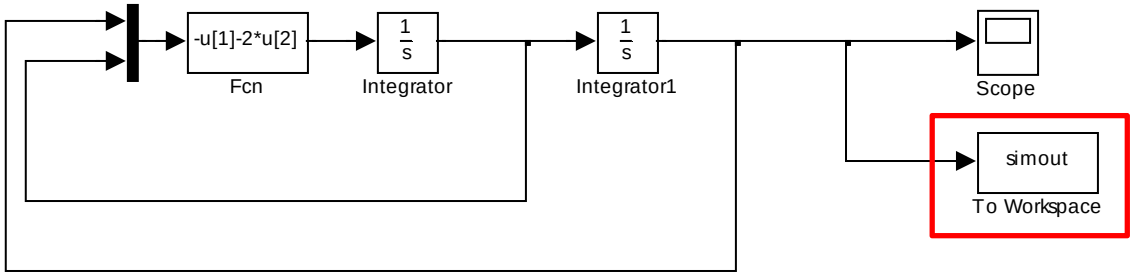

Function Block Parameters: Integrator1
Integrator
Continuous-time integration of the input signal.
Parameters
External reset: none
Initial condition source: internal
Initial condition:
1
Limit output
Upper saturation limit:
inf
Lower saturation limit:
-inf
Show saturation port
Show state port
Absolute tolerance:
auto
Ignore limit and reset when linearizing
Enable zero-crossing detection

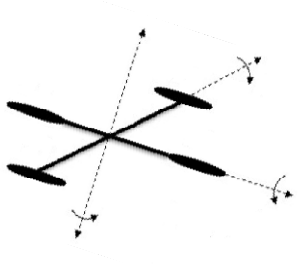


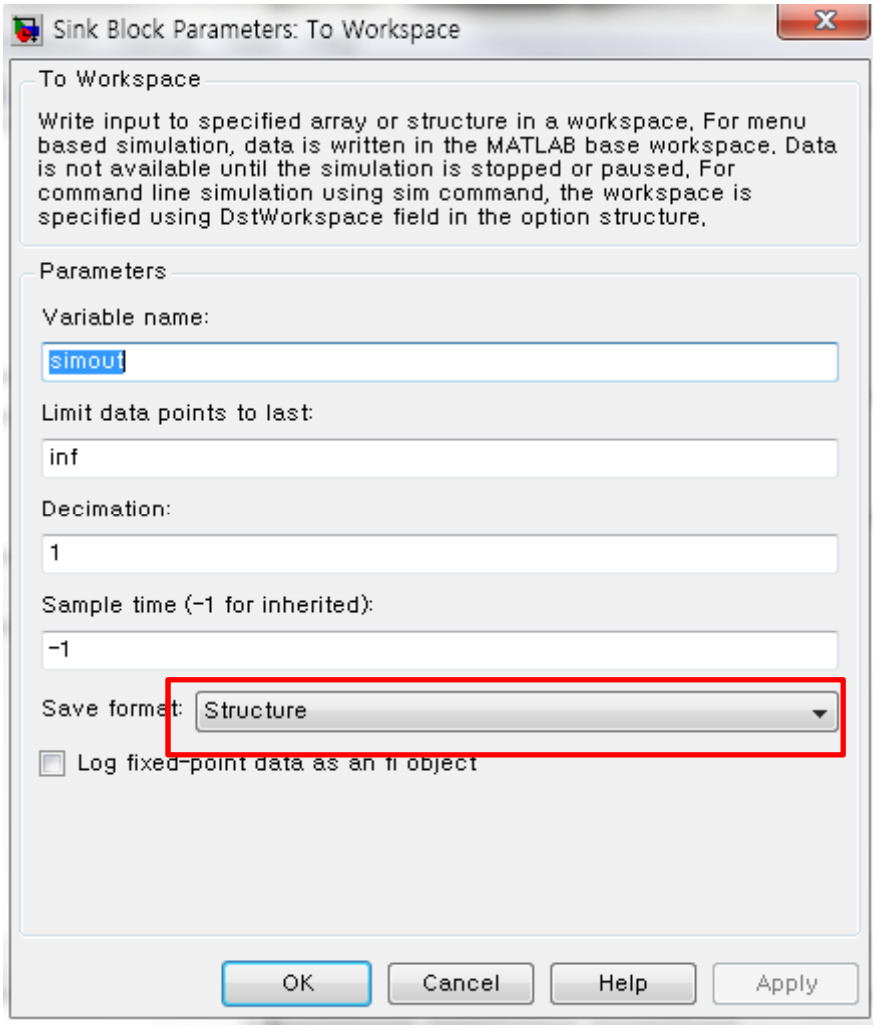

Scope
1
0.8
0.6
0.4
0.2
0
0
2
4
6
8
10
Time offset: 0

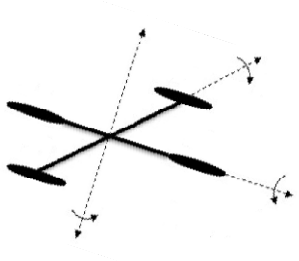


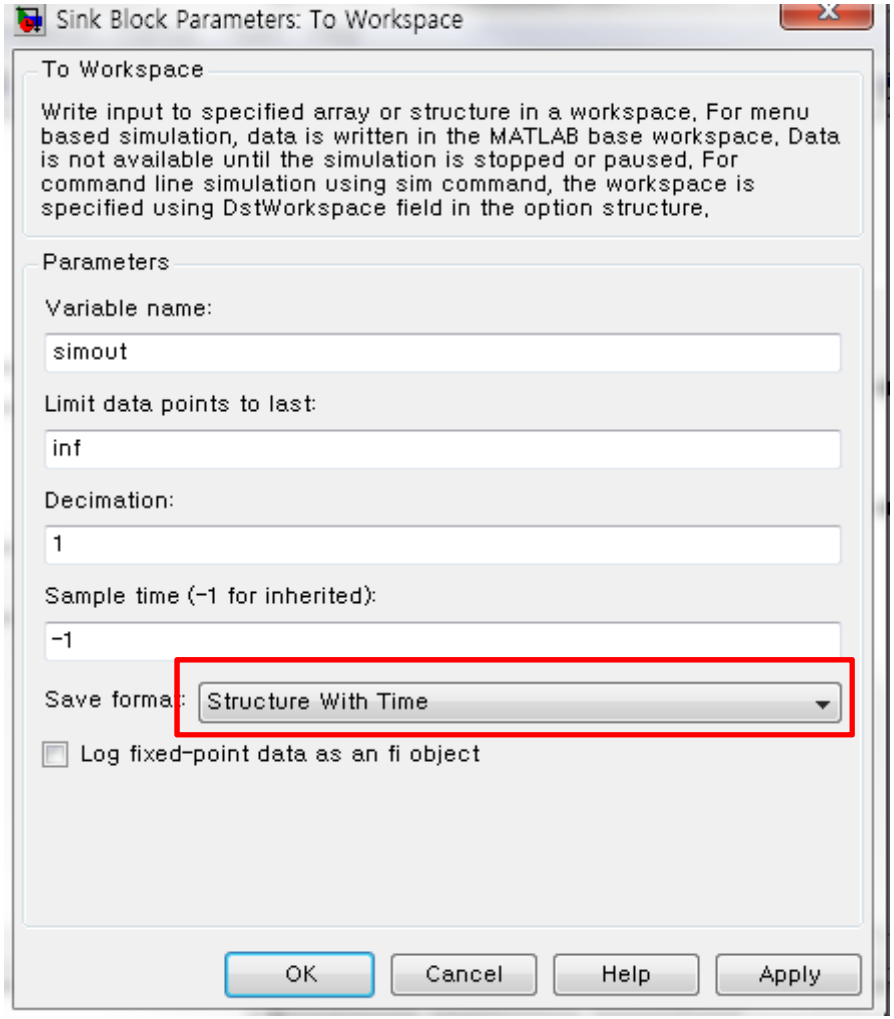
- Simulink 데이터의 workspace 저장

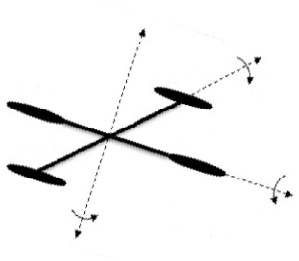


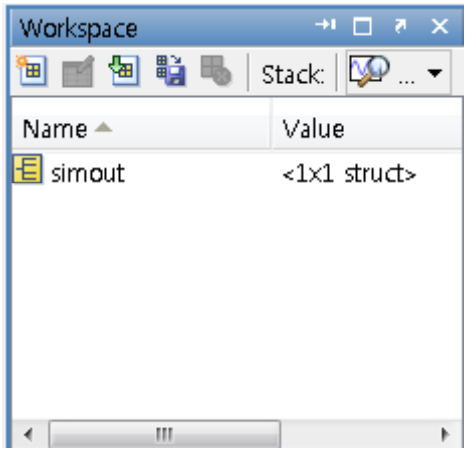


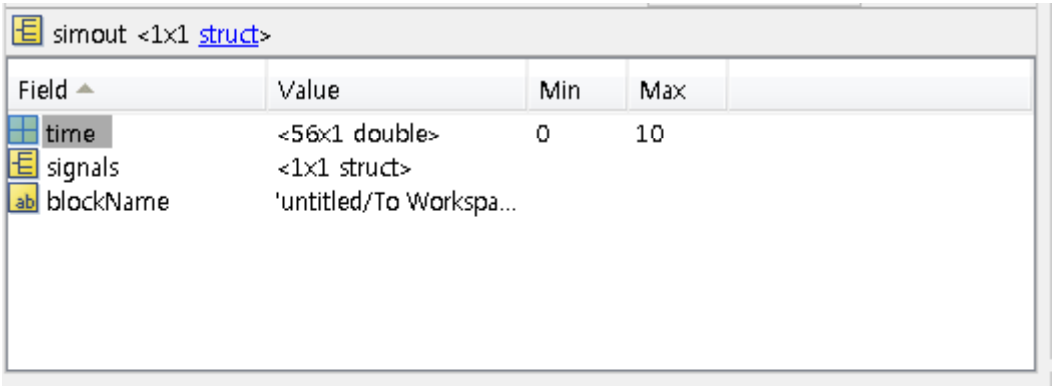

Sink Block Parameters: To Workspace
To Workspace
Write input to specified array or structure in a workspace. For menu based simulation, data is written in the MATLAB base workspace. Data is not available until the simulation is stopped or paused. For command line simulation using sim command, the workspace is specified using DstWorkspace field in the option structure.
Parameters
Variable name:
simout
Limit data points to last:
inf
Decimation:
1
Sample time (-1 for inherited):
-1
Save format:
Structure
Log fixed-point data as an fi object
OK
Cancel
Help
Apply

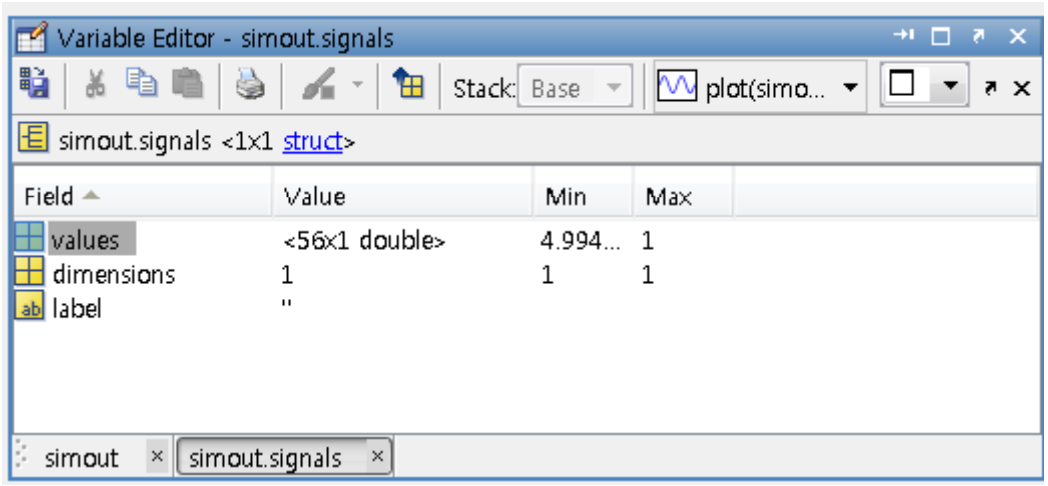


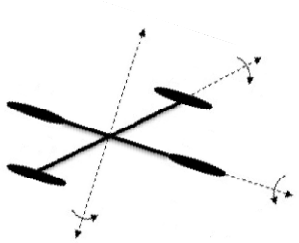

Sink Block Parameters: To Workspace
To Workspace
Write input to specified array or structure in a workspace, For menu based simulation, data is written in the MATLAB base workspace, Data is not available until the simulation is stopped or paused, For command line simulation using sim command, the workspace is specified using DstWorkspace field in the option structure.
Parameters
Variable name:
simout
Limit data points to last:
inf
Decimation:
1
Sample time (-1 for inherited):
-1
Save format:
Structure With Time
Log fixed-point data as an fi object
OK
Cancel
Help
Apply



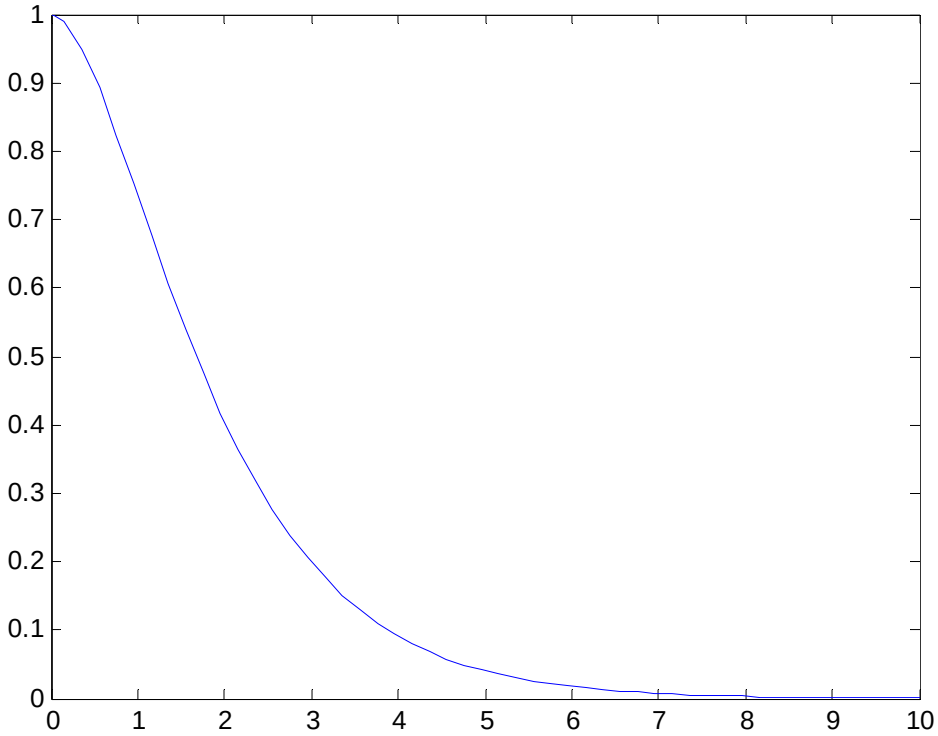

Workspace
Stack:
Name
Value
simout
<1x1 struct>

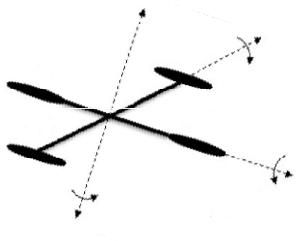

simout <1x1 struct>
Field
Value
Min
Max
time
<56x1 double>
0
10
signals
<1x1 struct>
blockName
'untitled/To Workspa...

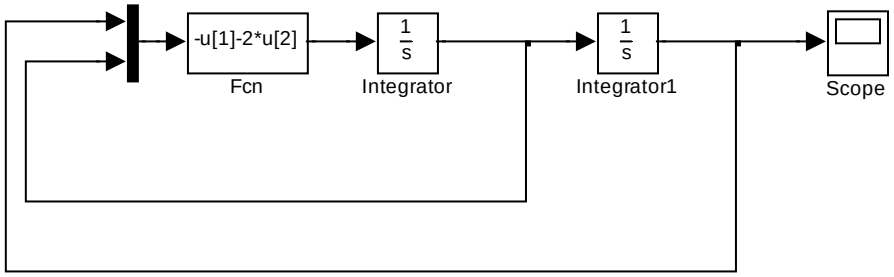

Variable Editor - simout.signals
Stack:
Base
plot(simo...
simout.signals <1x1 struct>
Field
Value
Min
Max
values
<56x1 double>
4.994...
1
dimensions
1
1
1
label
''
simout
simout.signals

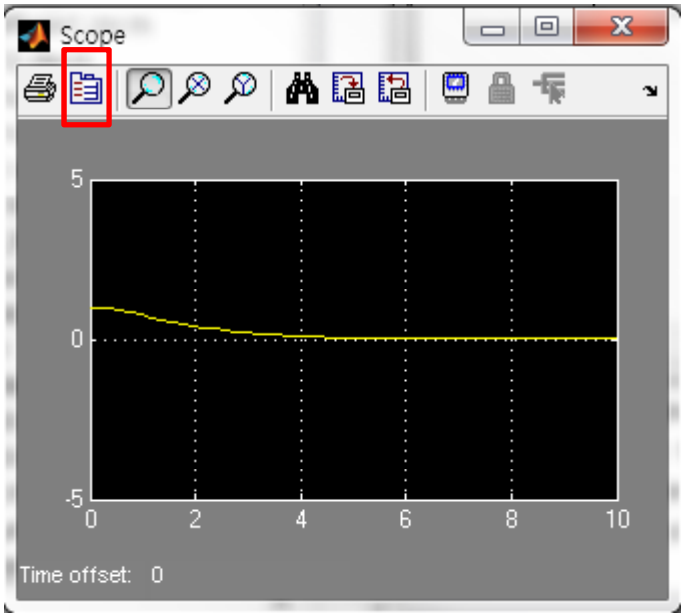


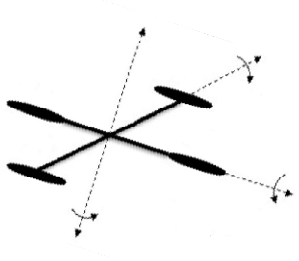
>> plot(simout.time, simout.signals.values)

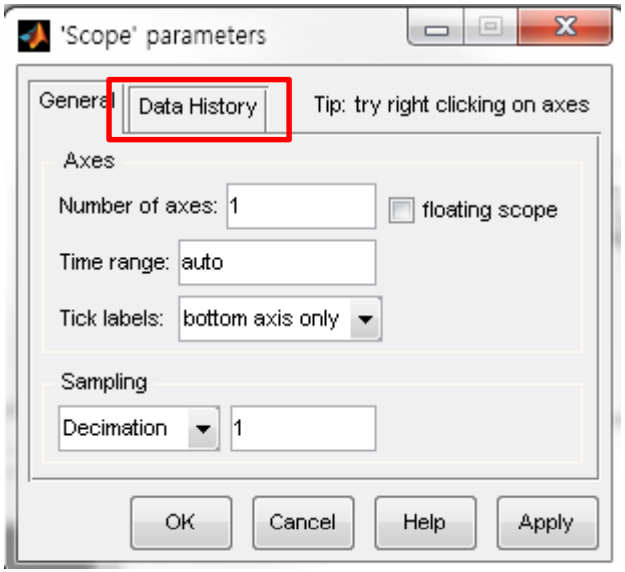


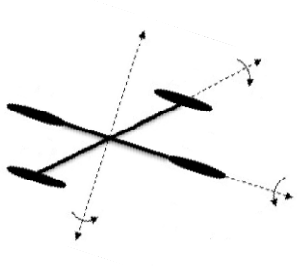


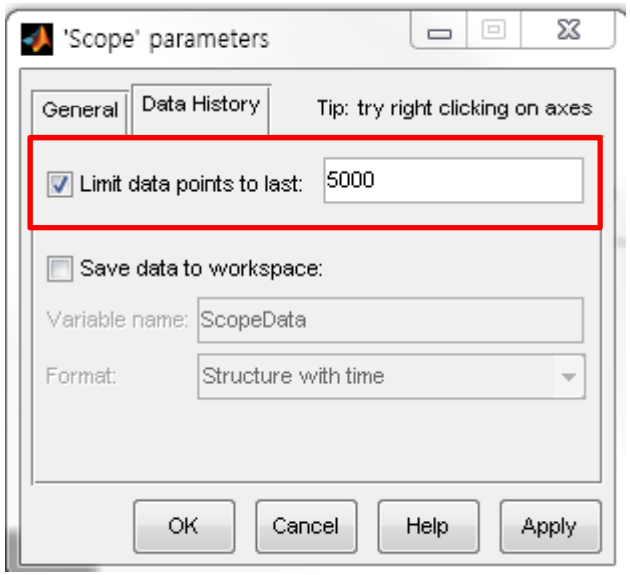

-u[1]-2*u[2]
Fcn
1
s
Integrator
1
s
Integrator1
Scope

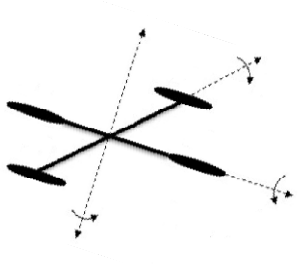

Scope
5
0
-5
0
2
4
6
8
10
Time offset: 0

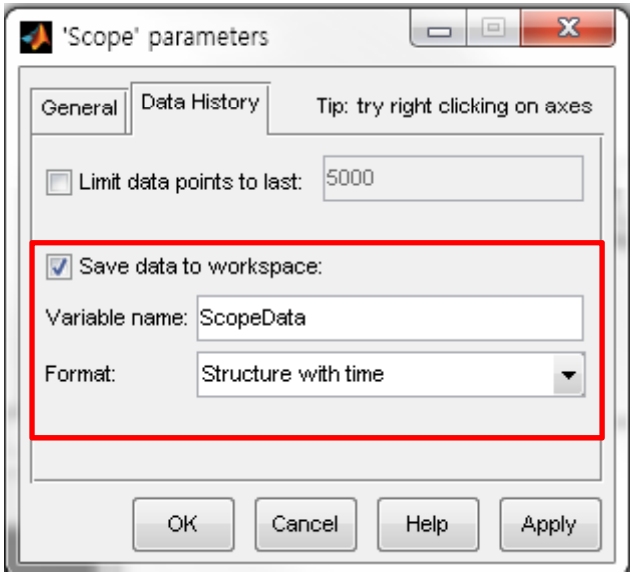



'Scope' parameters
General
Data History
Tip: try right clicking on axes
Axes
Number of axes: 1
floating scope
Time range: auto
Tick labels: bottom axis only
Sampling
Decimation
1
OK
Cancel
Help
Apply




'Scope' parameters
General
Data History
Tip: try right clicking on axes
Limit data points to last:
5000
Save data to workspace:
Variable name:
ScopeData
Format:
Structure with time
OK
Cancel
Help
Apply




'Scope' parameters
General
Data History
Tip: try right clicking on axes
Limit data points to last:
5000
Save data to workspace:
Variable name:
ScopeData
Format:
Structure with time
OK
Cancel
Help
Apply