

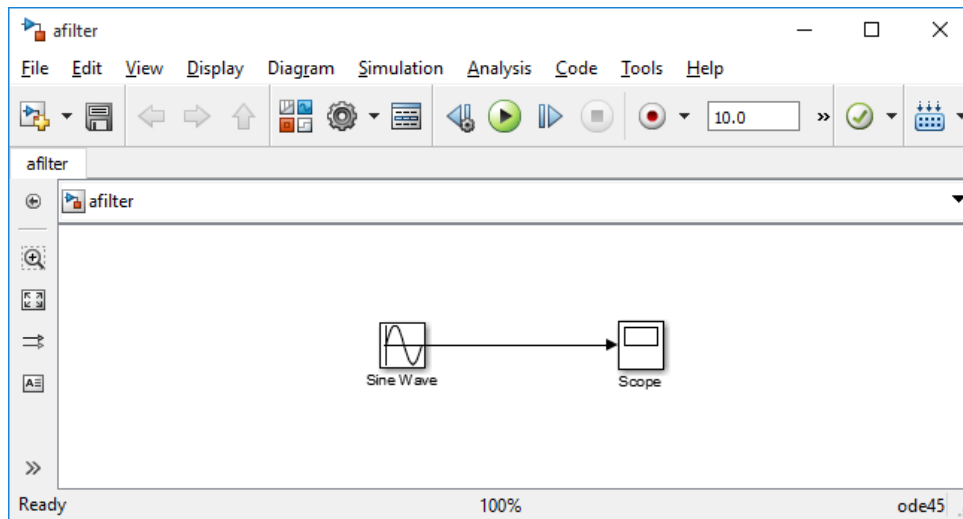
# IRA Gyakorlat 3.

<http://mobil.nik.uni-obuda.hu/tantargyak/ira/segedanyagok/>

*2015. ősz*

- Current folder/ new file / model
- Simulink library

- Simulink / Sources / Sine wave
- Simulink / Sinks / Scope



The dialog box 'Source Block Parameters: Sine Wave' is shown. It contains the following text and fields:

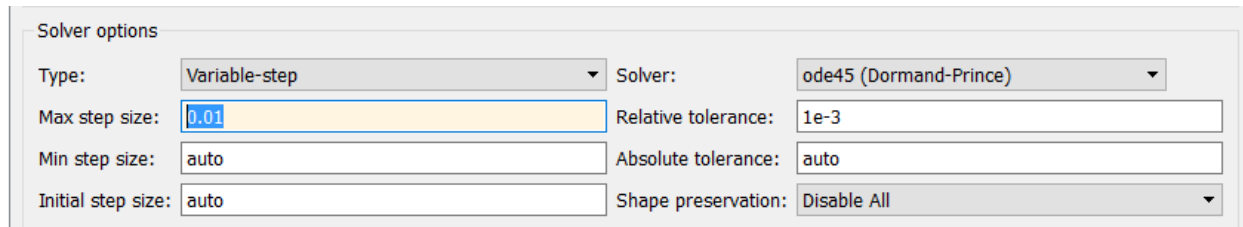
Sine Wave  
Output a sine wave:  
$$O(t) = \text{Amp} * \sin(\text{Freq} * t + \text{Phase}) + \text{Bias}$$
  
Sine type determines the computational technique used. The parameters in the two types are related through:  
Samples per period =  $2 * \pi / (\text{Frequency} * \text{Sample time})$   
Number of offset samples =  $\text{Phase} * \text{Samples per period} / (2 * \pi)$   
Use the sample-based sine type if numerical problems due to running for large times (e.g. overflow in absolute time) occur.

Parameters

Sine type: Time based  
Time (t): Use simulation time  
Amplitude: 1  
Bias: 0  
Frequency (rad/sec):  $2 * \pi$   
Phase (rad): 0  
Sample time: 0  
 Interpret vector parameters as 1-D

Buttons: OK, Cancel, Help, Apply

- Simulation/ Model Configuration Parameters /
  - Solver / Max step size: 0.01



Solver options

Type:	Variable-step	Solver:	ode45 (Dormand-Prince)
Max step size:	0.01	Relative tolerance:	1e-3
Min step size:	auto	Absolute tolerance:	auto
Initial step size:	auto	Shape preservation:	Disable All

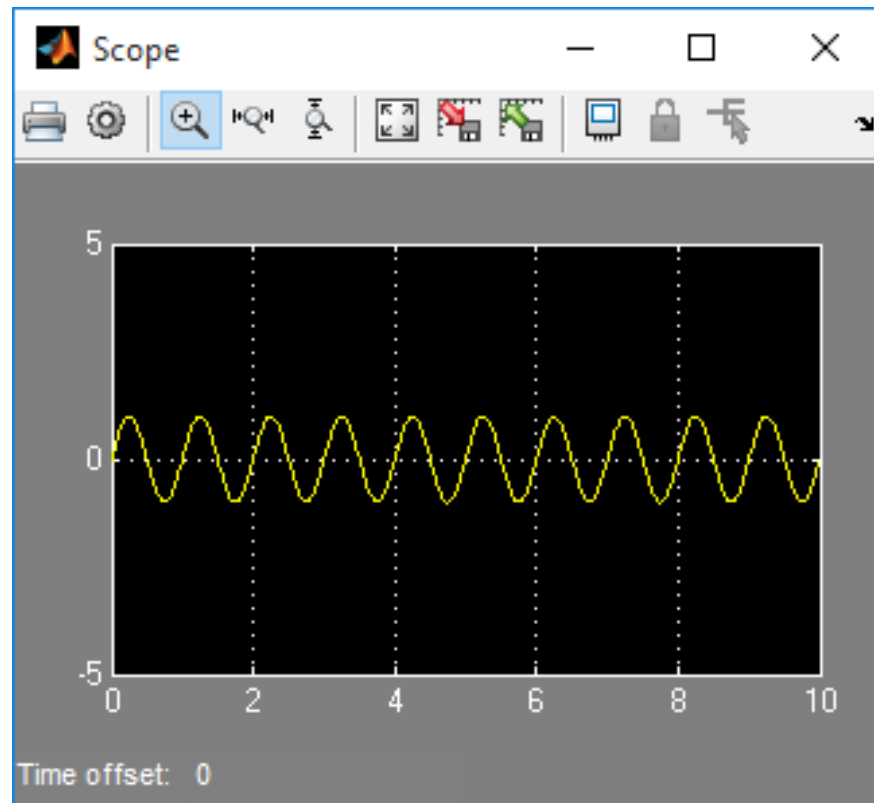
- Diagnostics / Automatic solver parameter selection: none



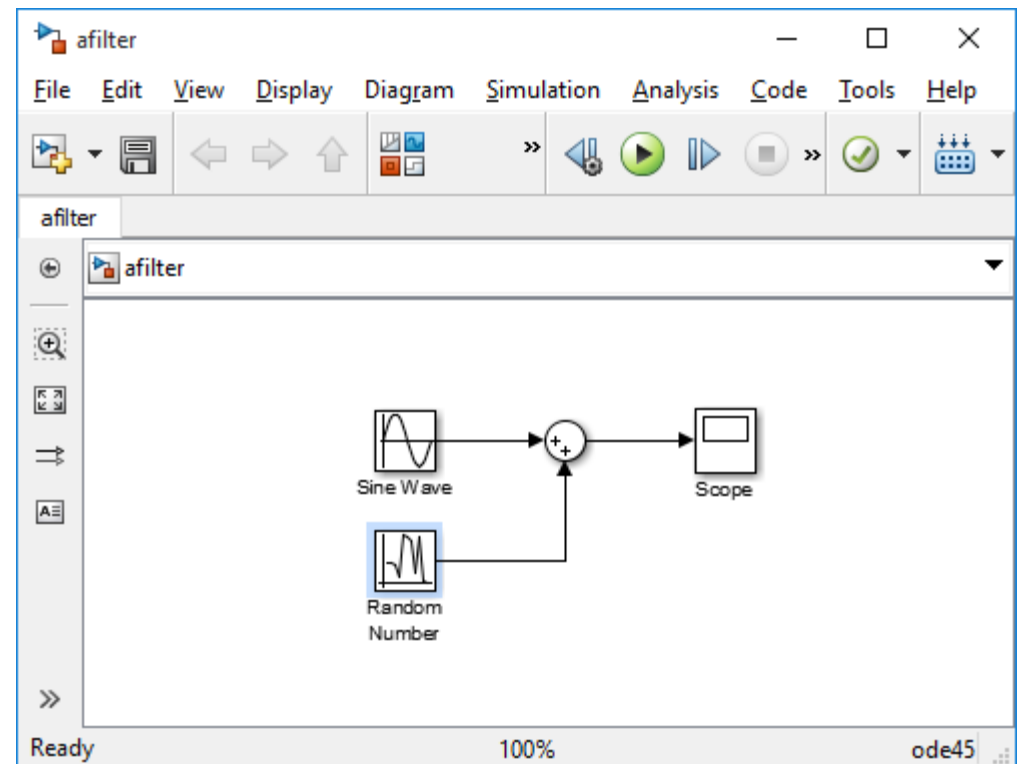
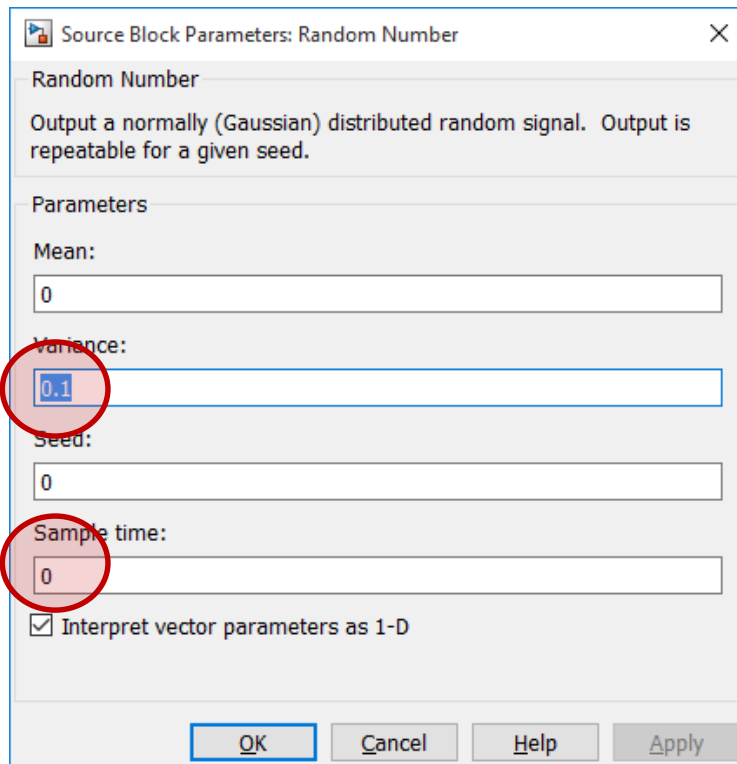
Solver

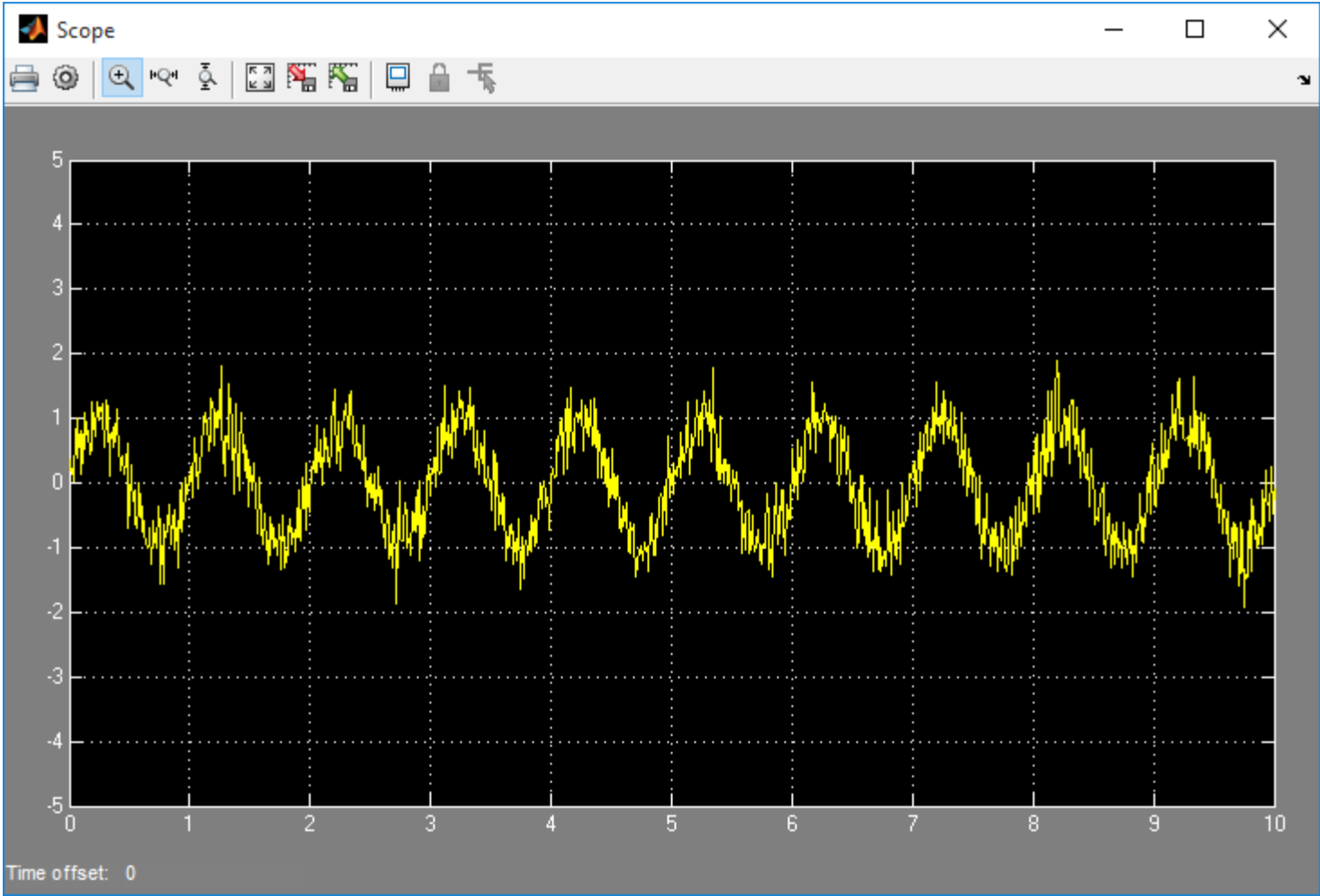
Algebraic loop:	warning
Minimize algebraic loop:	warning
Block priority violation:	warning
Min step size violation:	warning
Sample hit time adjusting:	none
Consecutive zero crossings violation:	error
Unspecified inheritability of sample time:	warning
Solver data inconsistency:	none
Automatic solver parameter selection:	none

- Run

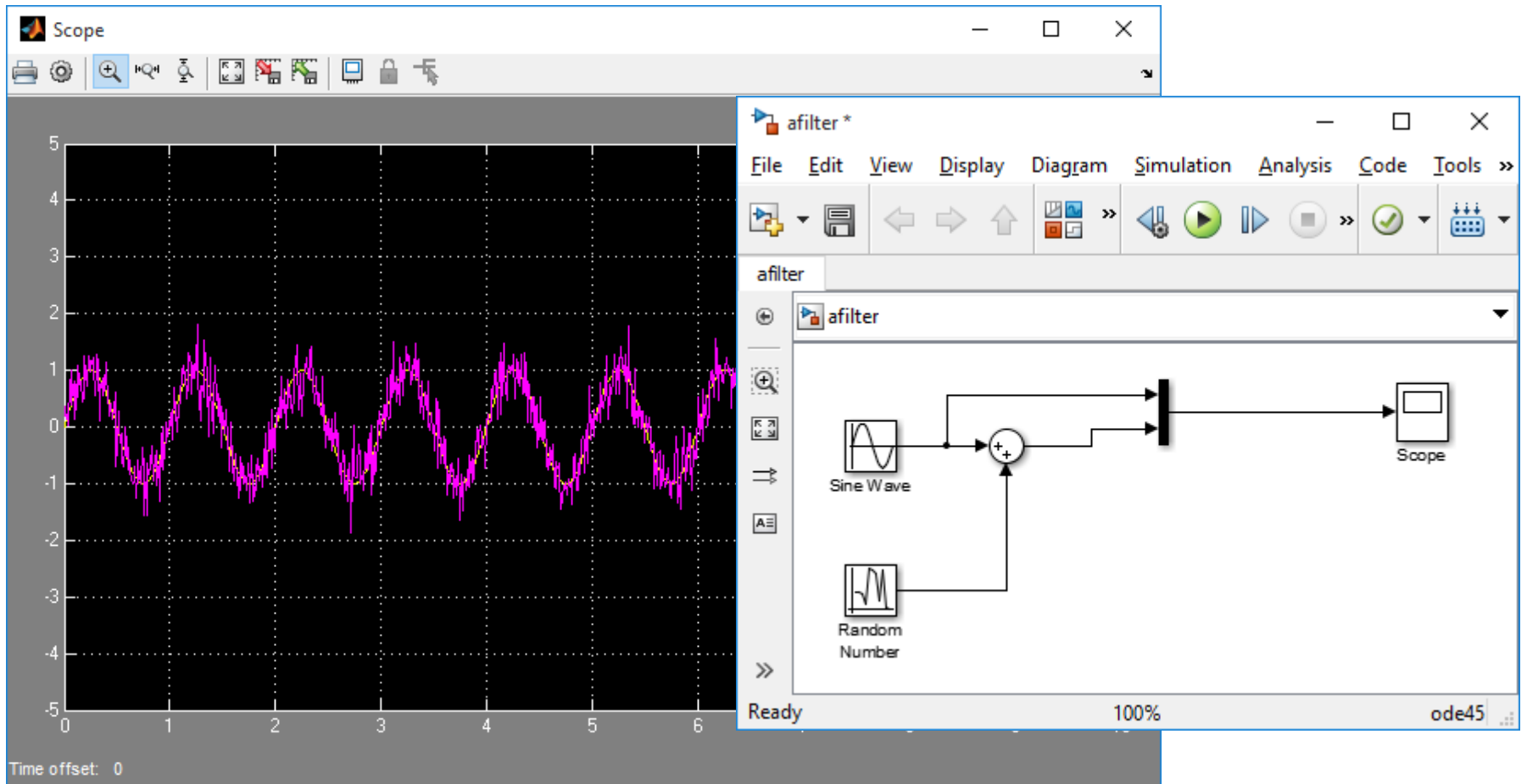


- Math operations / sum
- Sources / random number

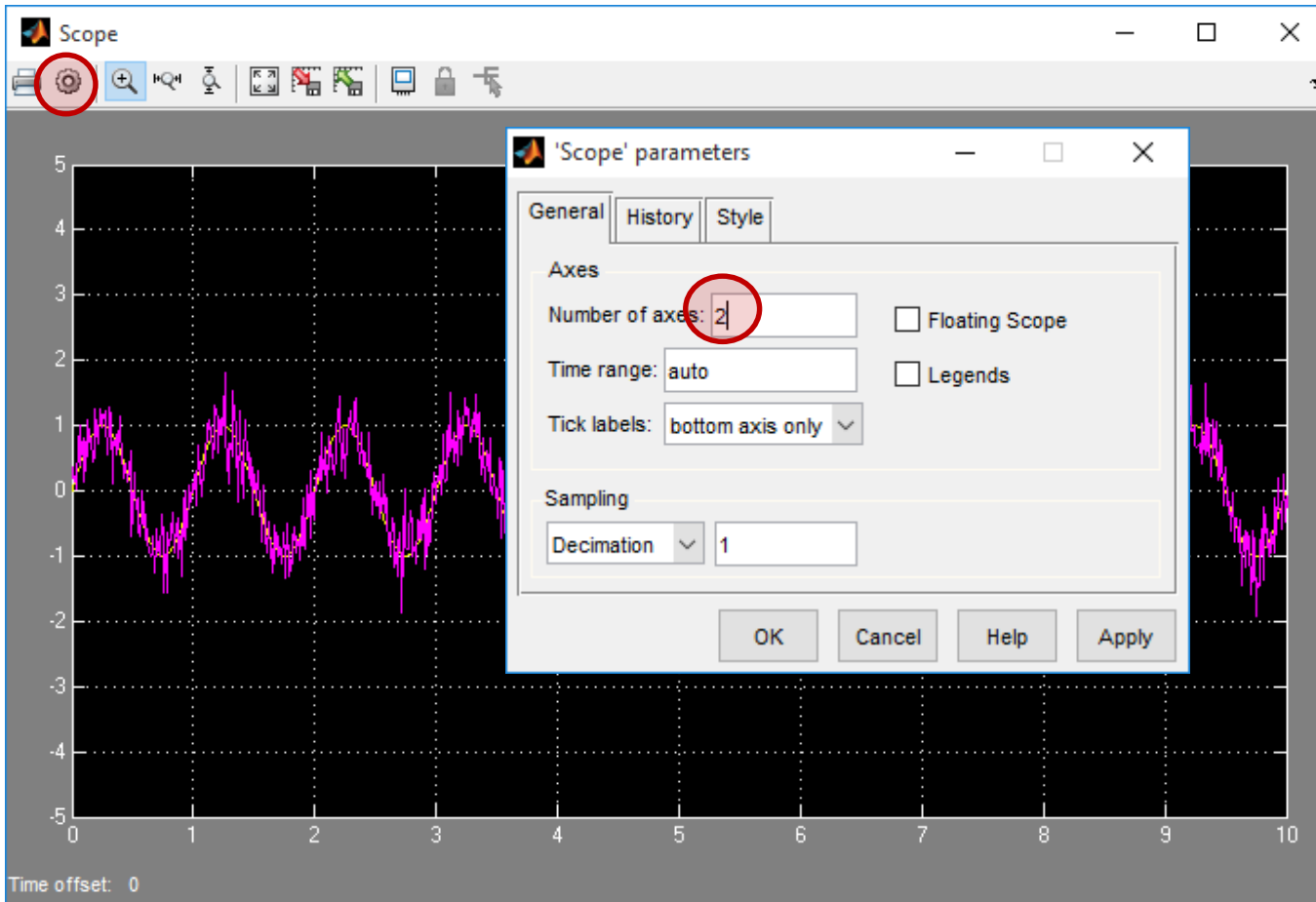




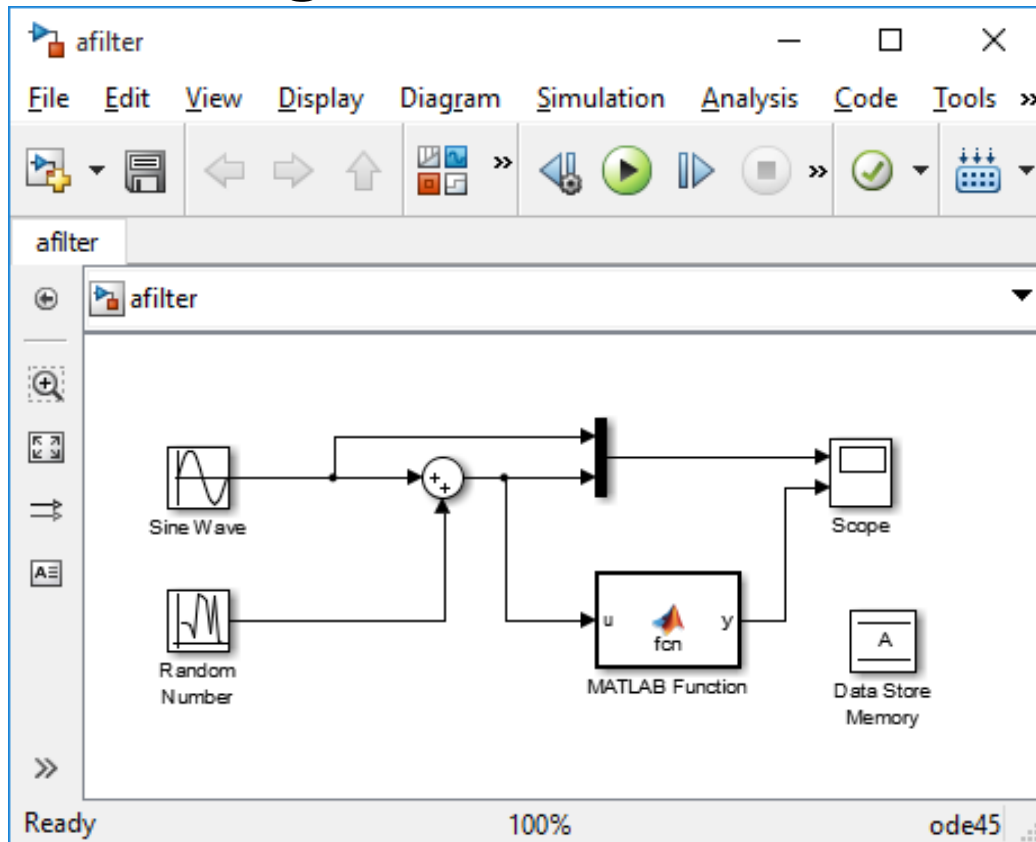
- Signal routing / Mux



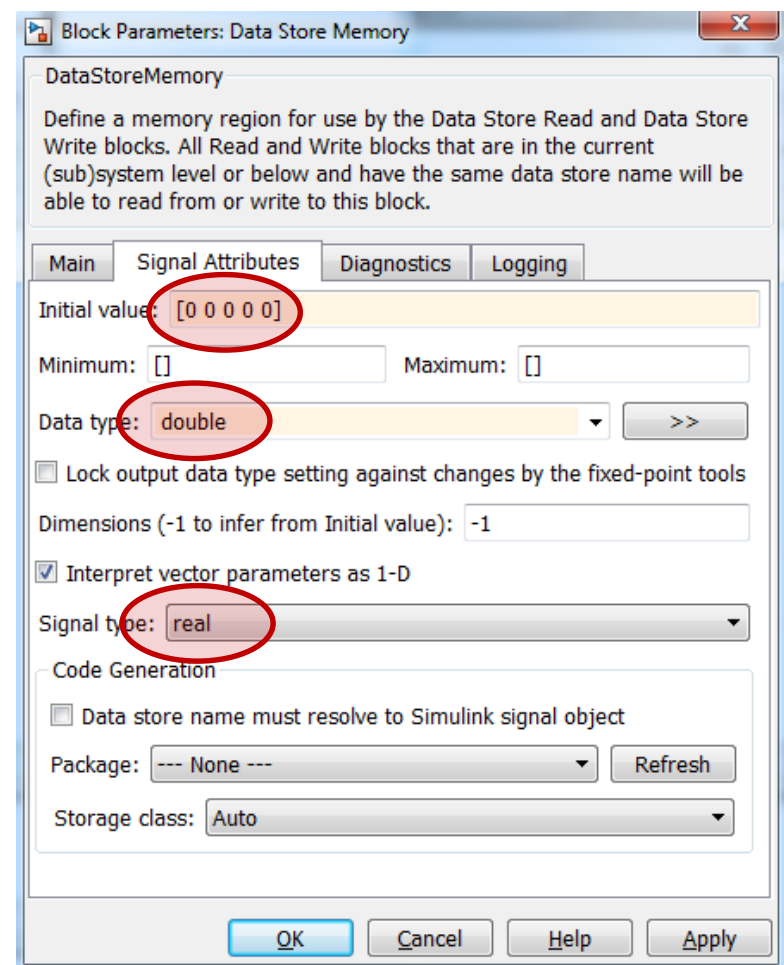
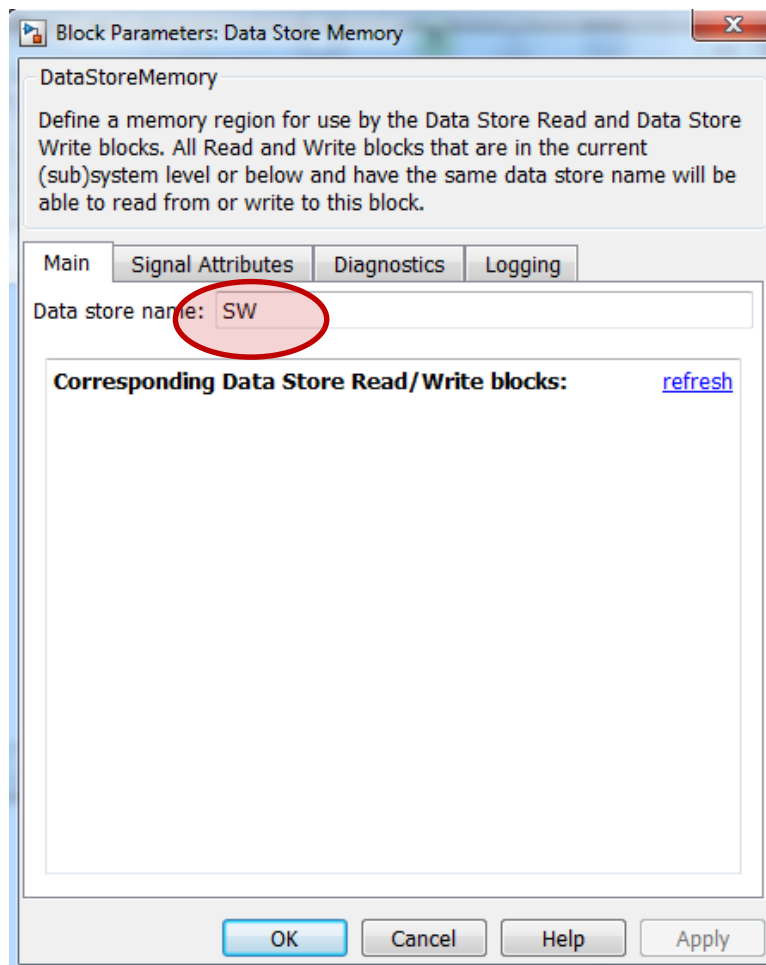




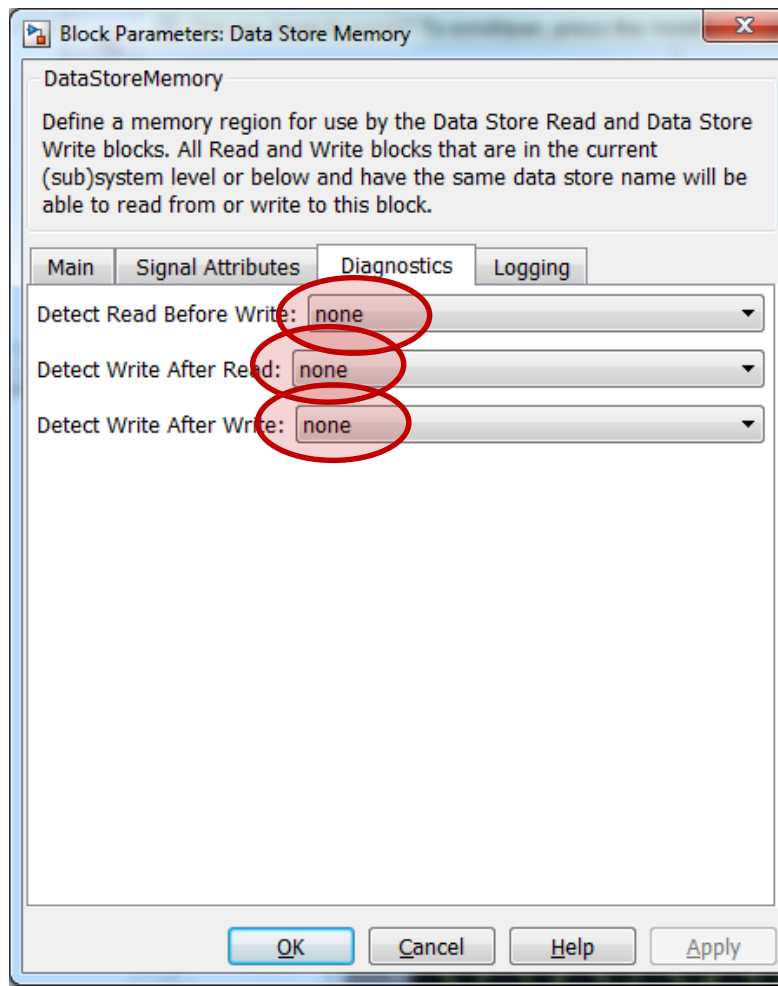
- User-defined functions / MATLAB fcn
- Signal Routing / Data Store Memory



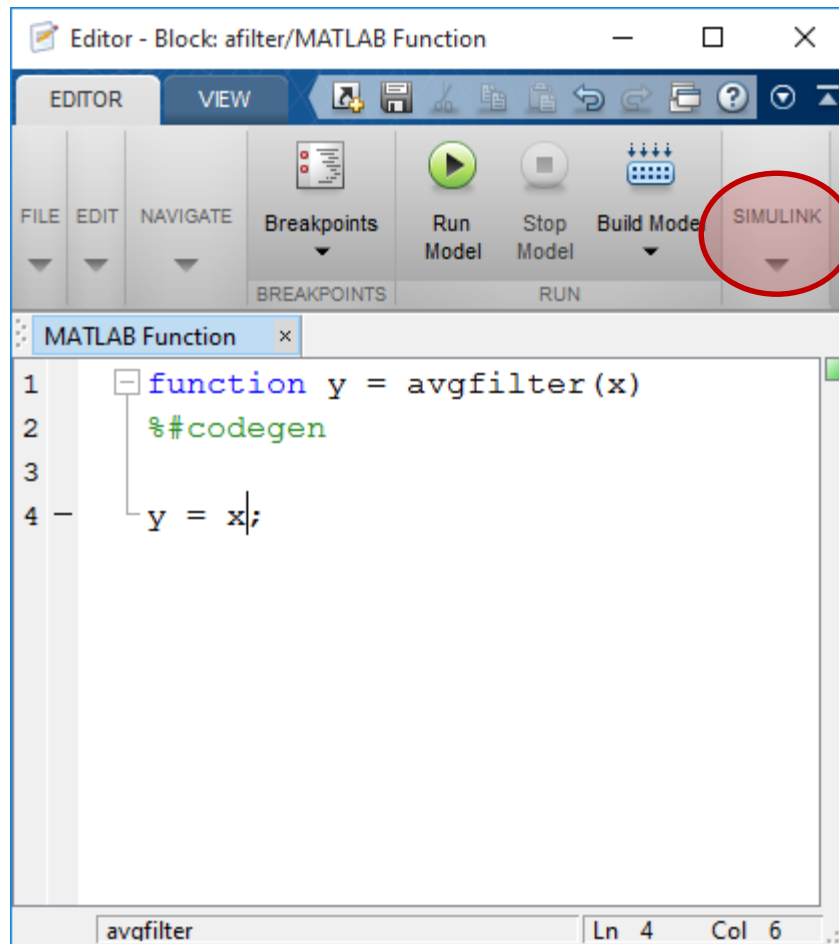
- Nyissuk meg a Data Store Memory-t



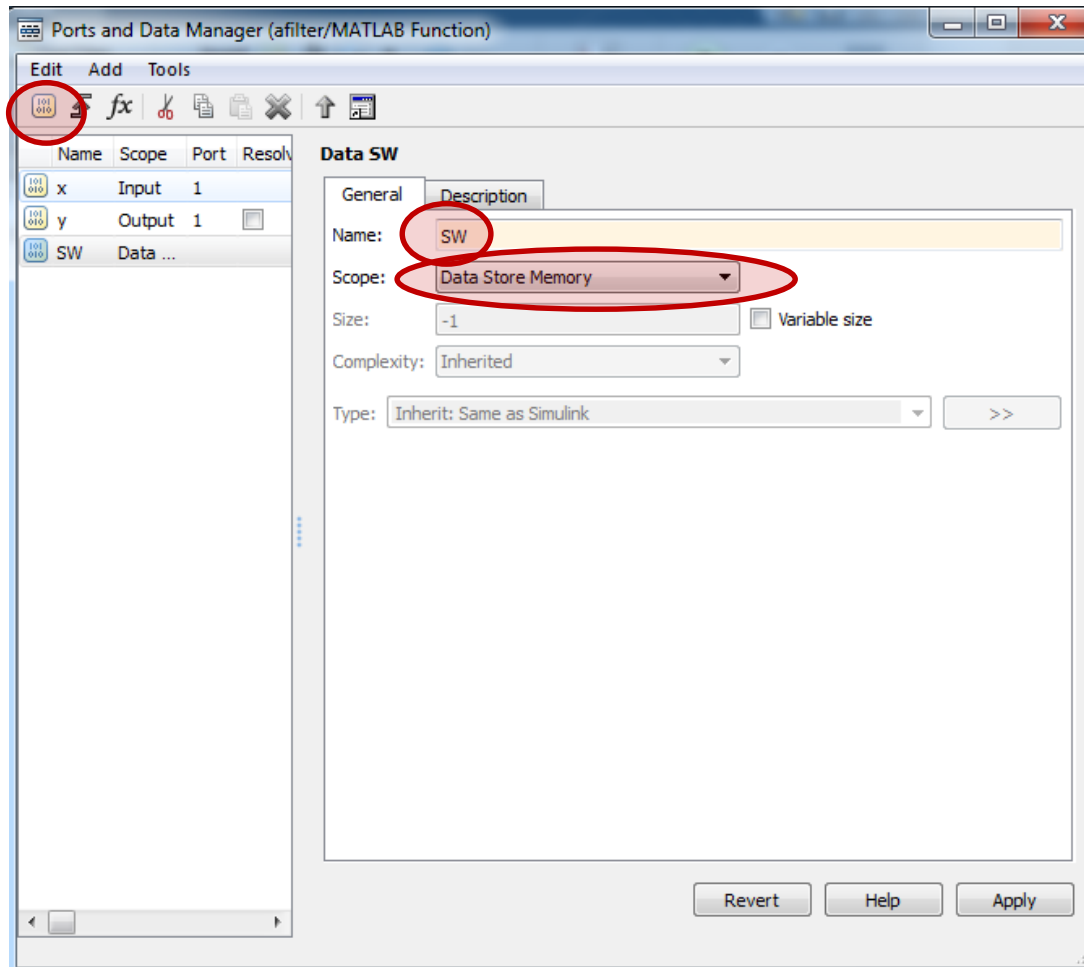
- Nyissuk meg a Data Store Memory-t



- A blokkot megnyitva előjön egy editor:



- SIMULINK / Edit Data



The image shows a MATLAB Editor window titled "Editor - Block: afilter/MATLAB Function". The window contains a MATLAB function definition for `avgfilter`. The code is as follows:

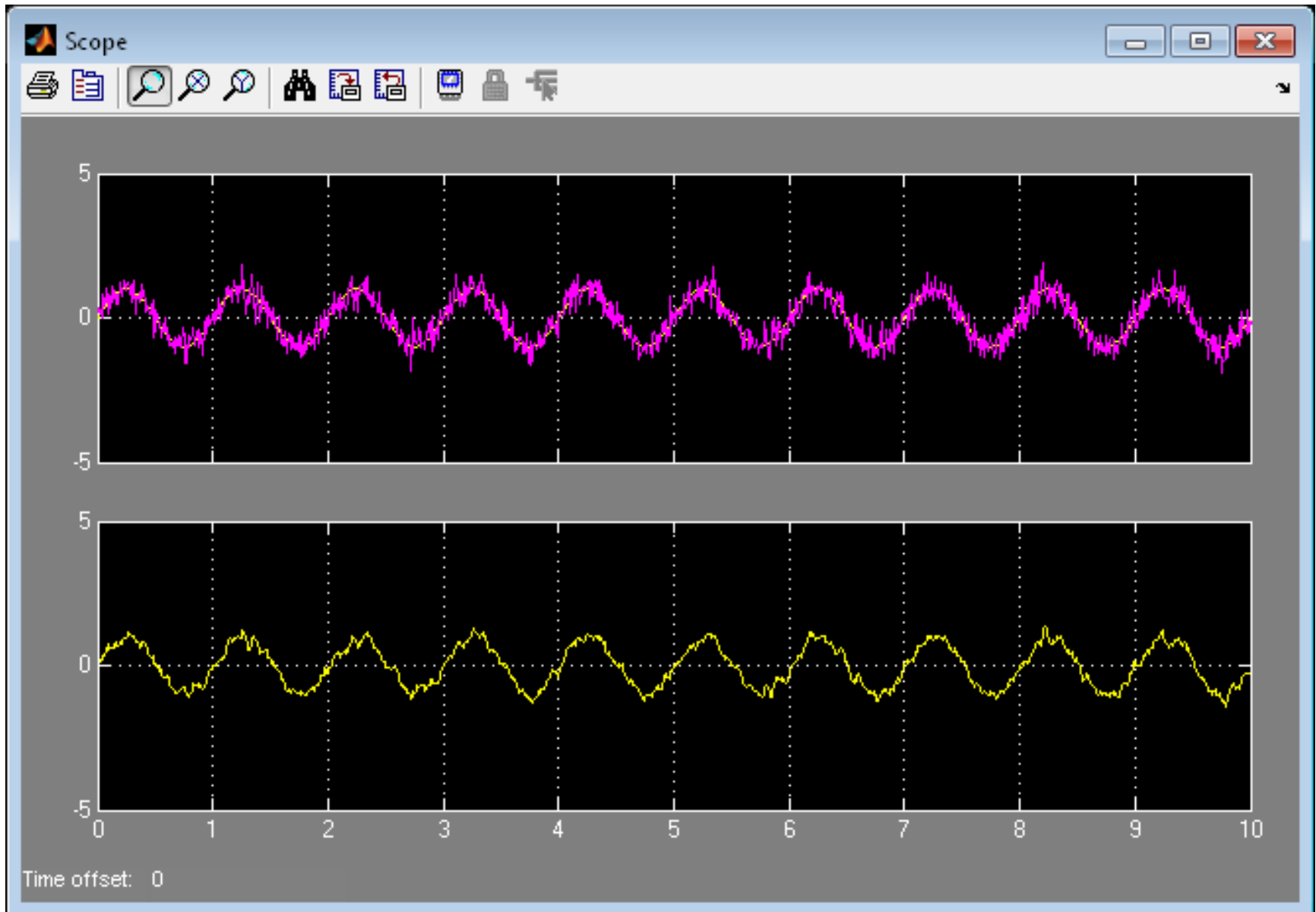
```
1 function y = avgfilter(x)
2
3 global SW
4
5
6
7
8 y =
```

The code is displayed in a light blue font on a white background. The line numbers 1 through 8 are visible on the left side of the editor. A blue rectangular selection box covers the area from line 4 to line 8, starting from the beginning of the line and extending to the right. The status bar at the bottom of the window shows "avgfilter" on the left, "Ln 3" in the middle, and "Col 1" on the right.

```
Editor - Block: afilter/MATLAB Function  
EDIT... VI...  
MATLAB Function x +  
1 function y = avgfilter(x)  
2  
3 global SW  
4 for i=1:4  
5     SW(i)=SW(i+1);  
6 end  
7 SW(5)=x;  
8 y = mean(SW);  
avgfilter Ln 3 Col 1
```

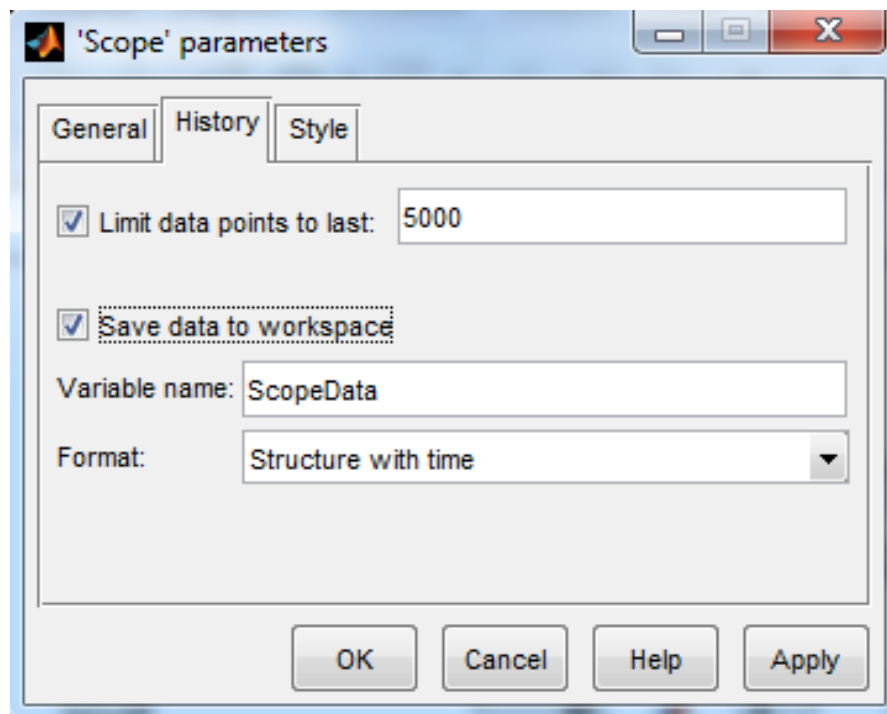


# Run

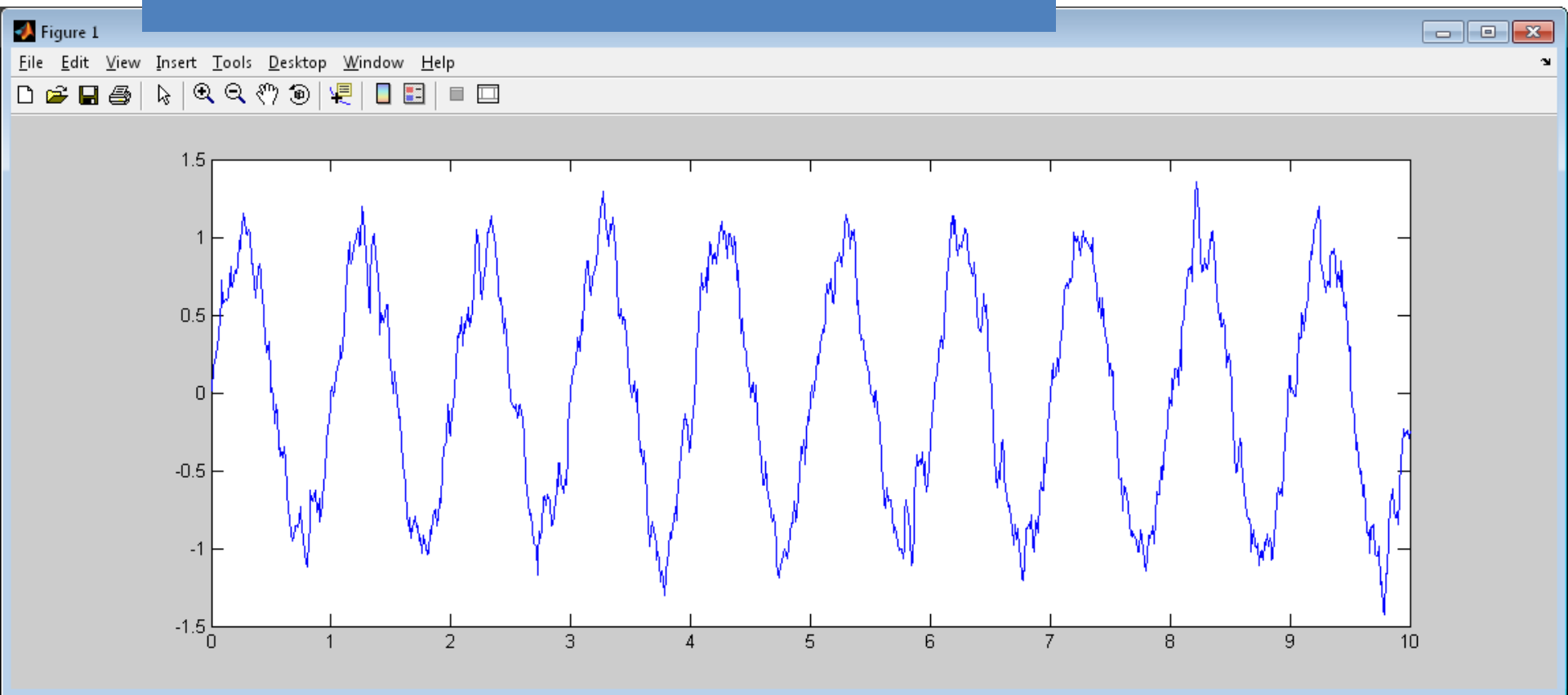


# Hogyan lehet $n$ hosszú csúszóablakot kezelni?

- `Length(sw)?`



- `ScopeData.signals(1).values`
- `ScopeData.signals(1).values(:,1)`
- `ScopeData.signals(1).values(:,2)`
- `ScopeData.signals(2).values`
- `ScopeData.time`



- `plot(ScopeData.time, ScopeData.signals(2).values)`

