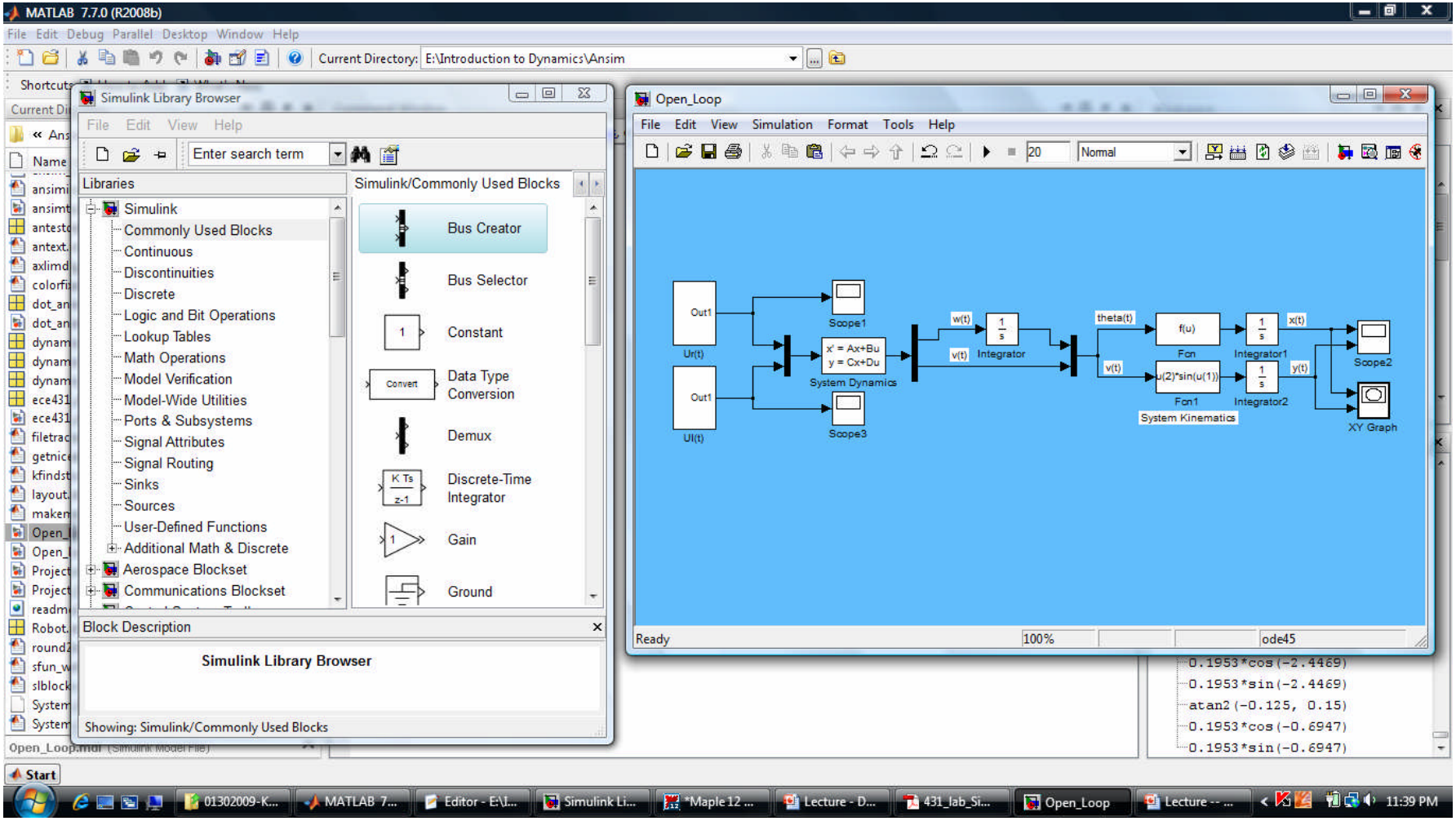
ECE664
Introduction
to Simulink

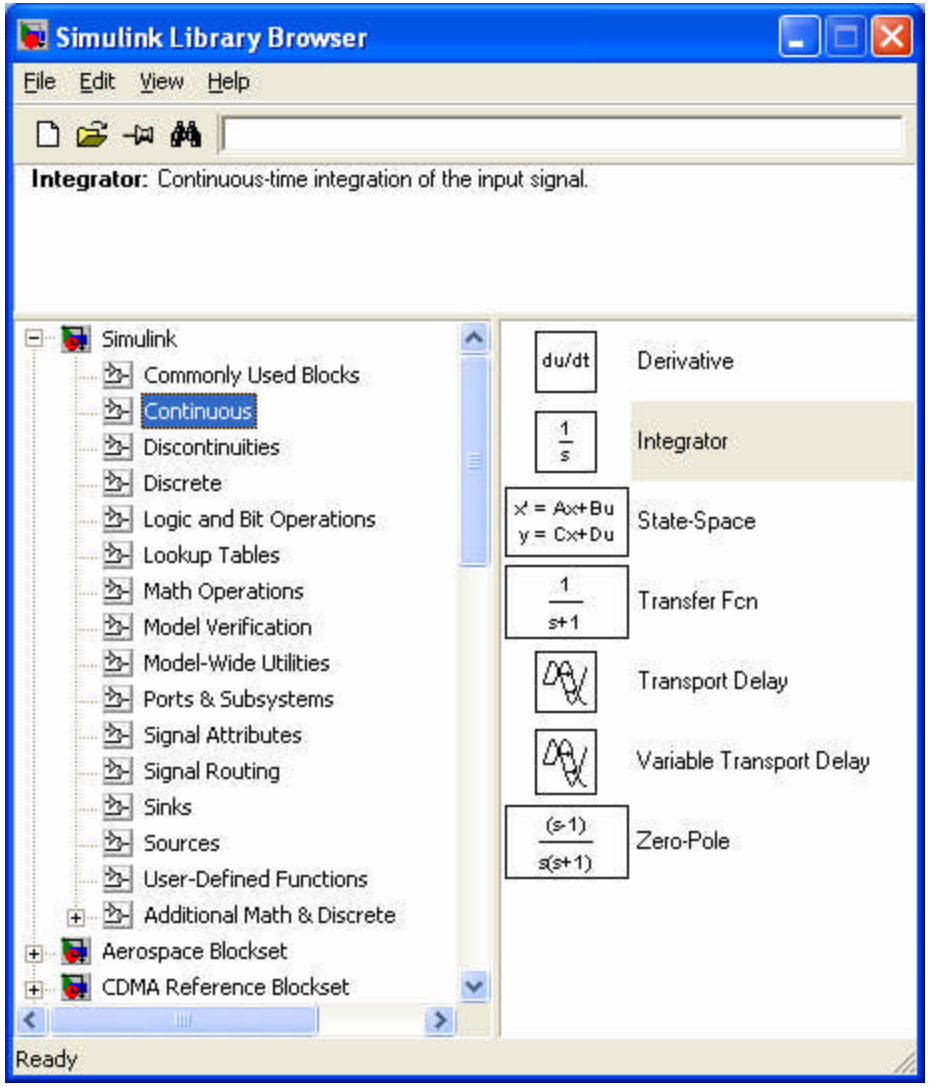
Simulink Working Environment



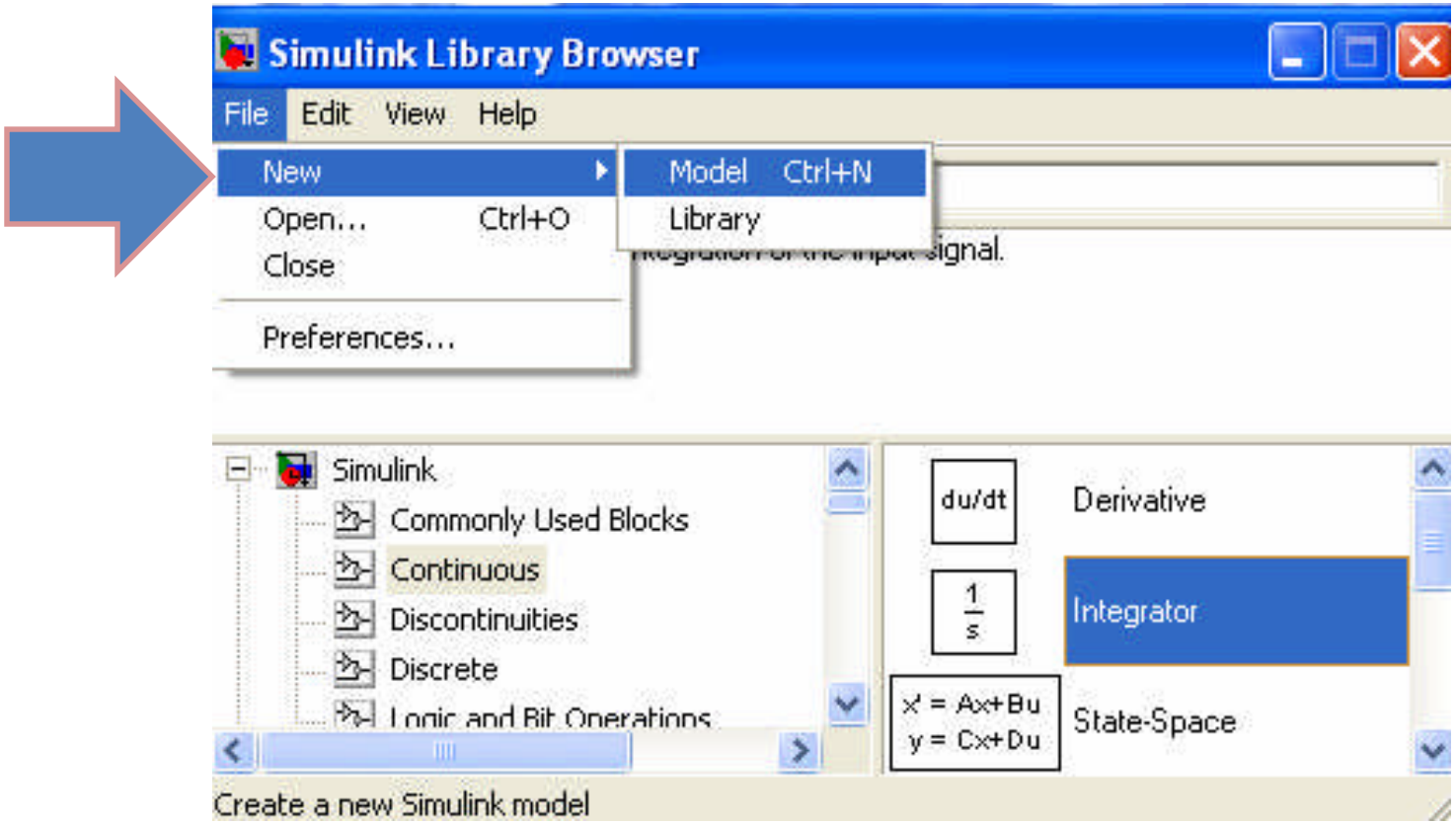
To start Simulink, one has to first SIMULINK double click on the Matlab icon and wait for the Matlab window to open.

Then, click on the "Simulink" icon

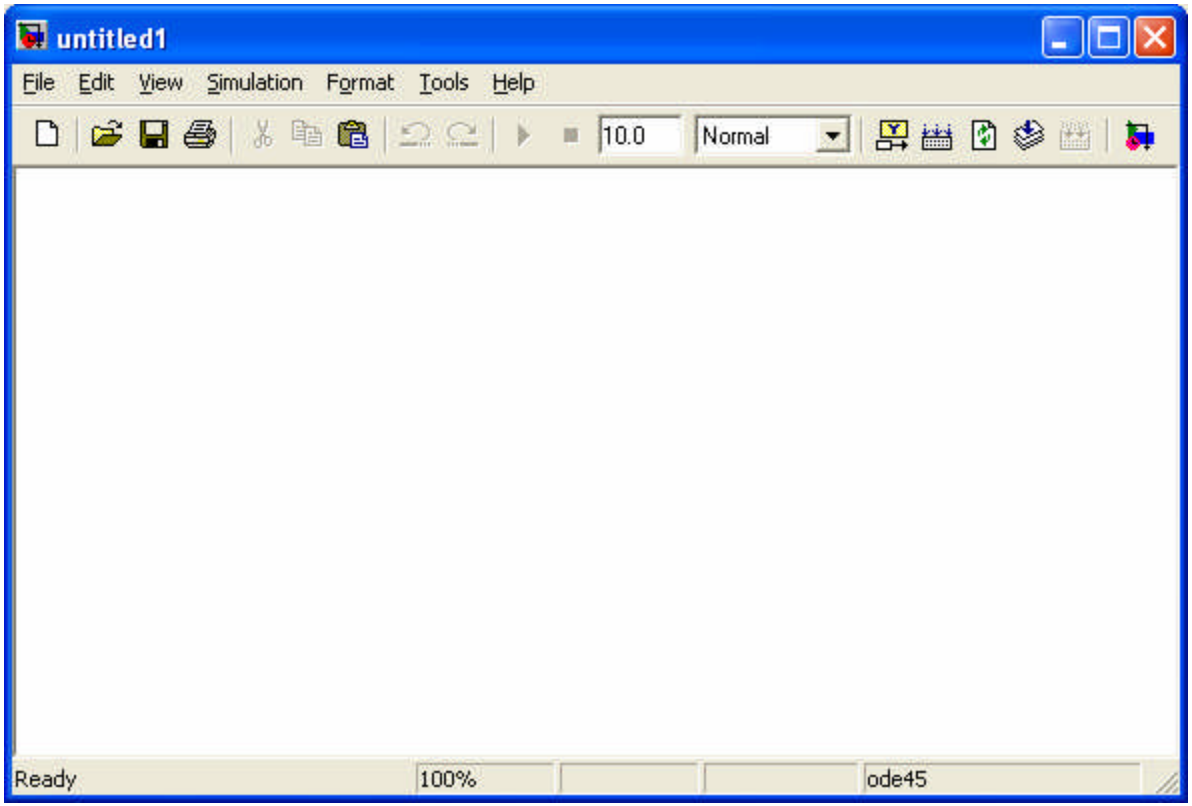
“Simulink Library Browser”



Click on the “File” menu item. Select “New” and then click on “Model”

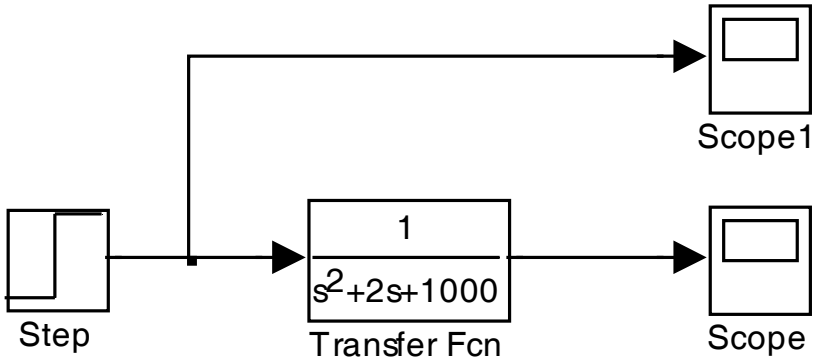


A clean window is going to open. New Simulink model is to be built on this window.



- **Solution to Differential Equation**
  - **Laplace Domain:**
    Find the unit step response for the following system

$$G(s)=\frac{1}{s^2+2s+1000}$$

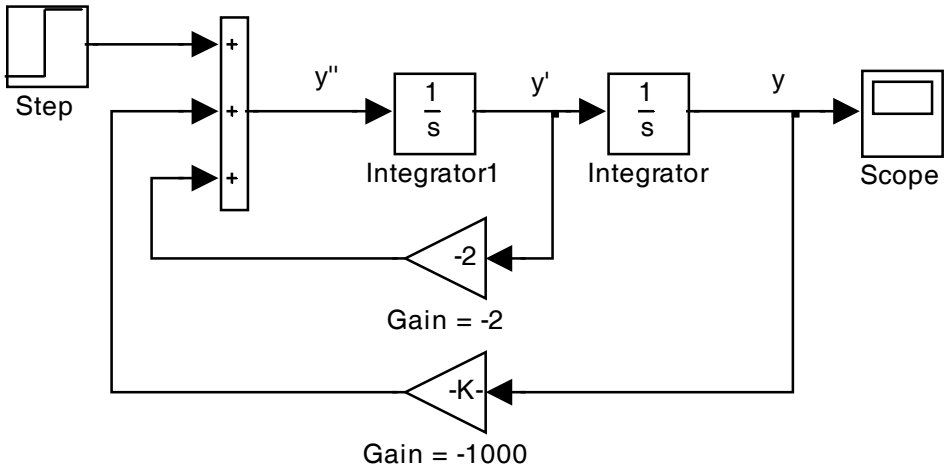


- **Time Domain:**
  Find the unit step response for the following system

$$\ddot{y}(t)+2\dot{y}(t)+1000y(t)=u(t)$$

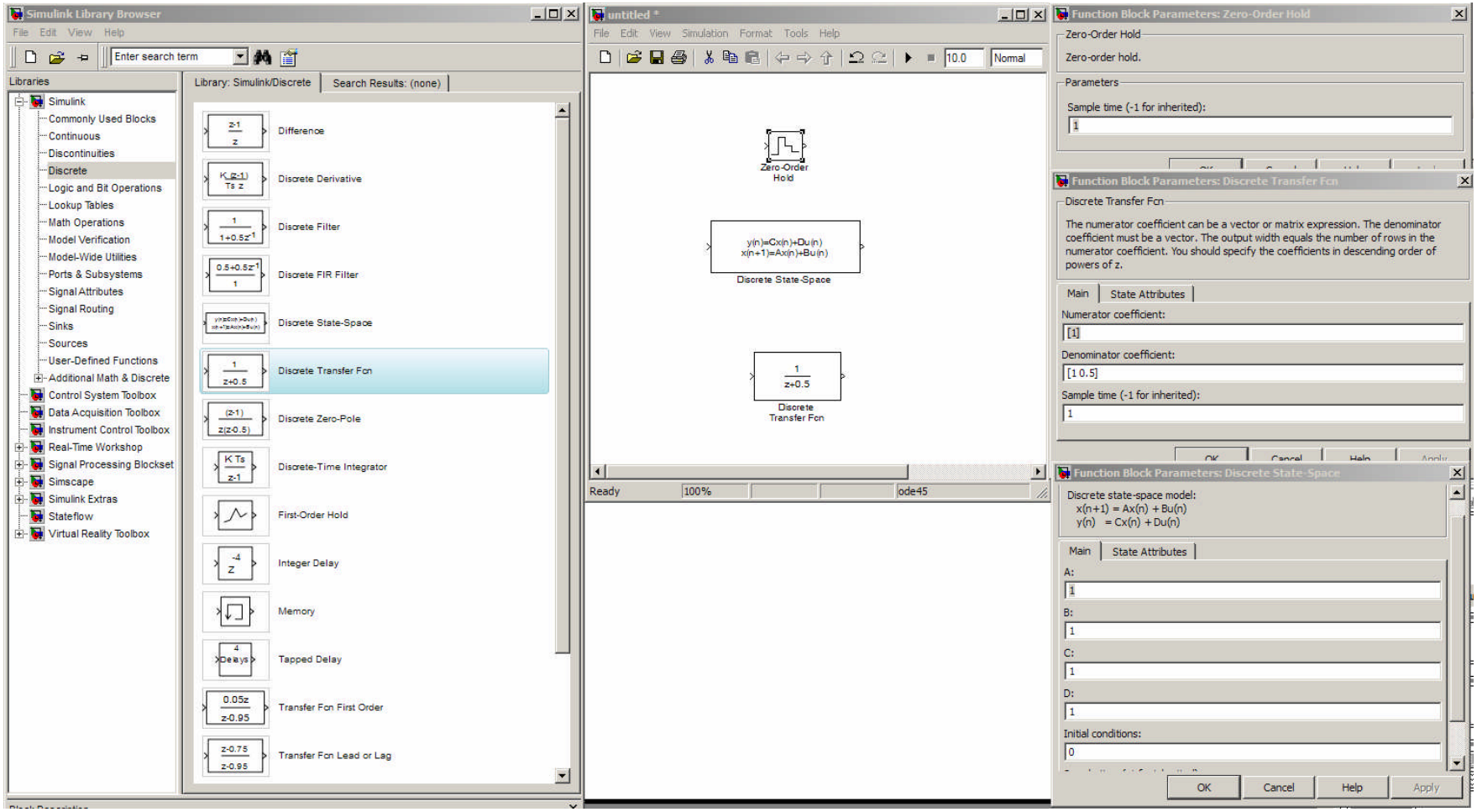
Rewrite

$$\ddot{y}(t)=-2\dot{y}(t)-1000y(t)+u(t)$$



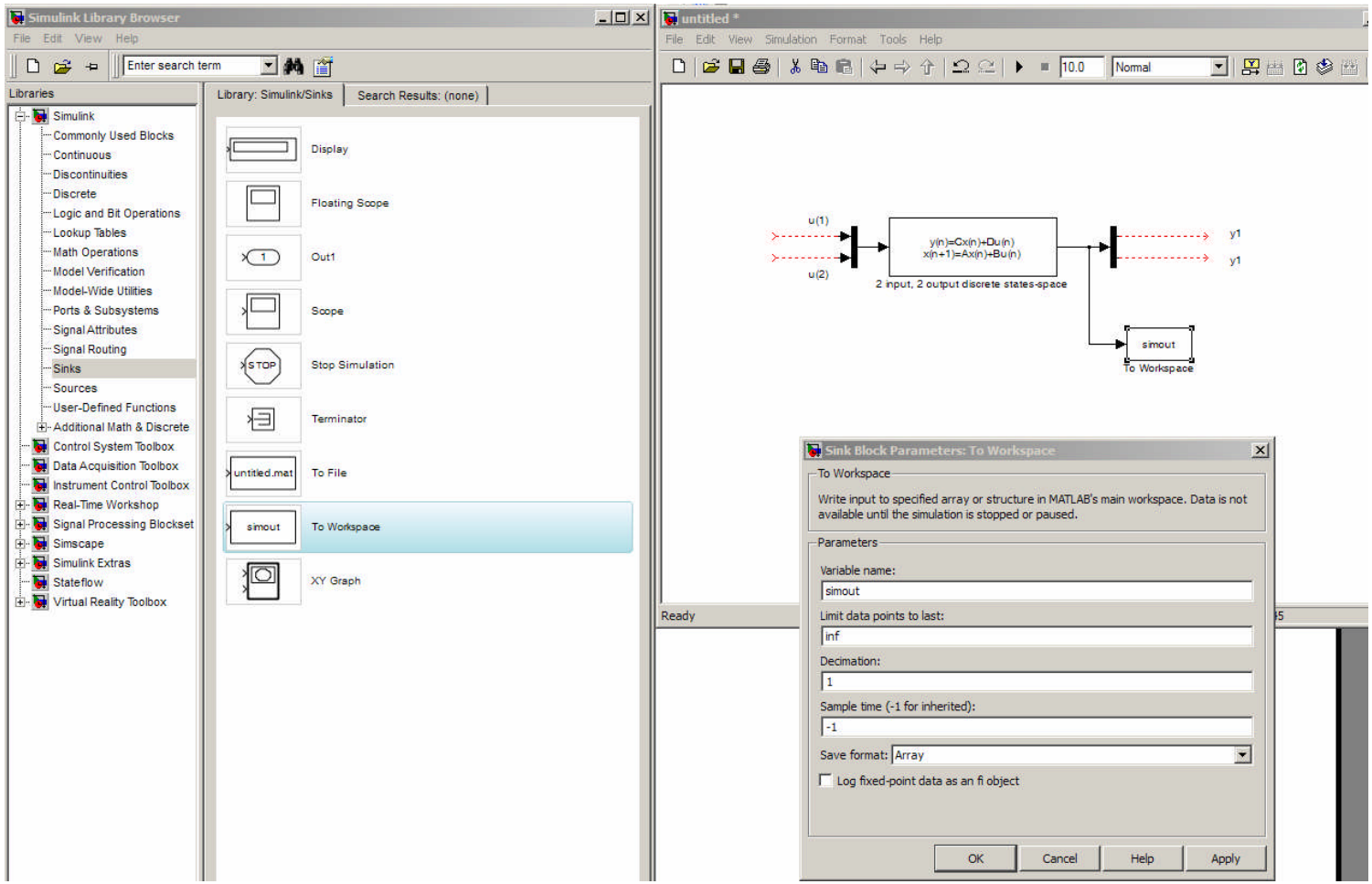
Useful discrete time blocks

- To implement linear discrete time controllers



Signal routing and capture

- Use “array” instead of “structure” to save data into workspace



Use of function block to code equations

- For example,
- z=sin(x)*exp(2.3*(-y))
- Set u(1) as x, u(2) as y
- code up: sin(u(1)*exp(2.3*(-u(2))))
- Use multiplexer to route x into the first port (i.e. u(1)) and y into the second port (i.e. u(2))