

Practical 4 MATLAB Simulink Toolbox

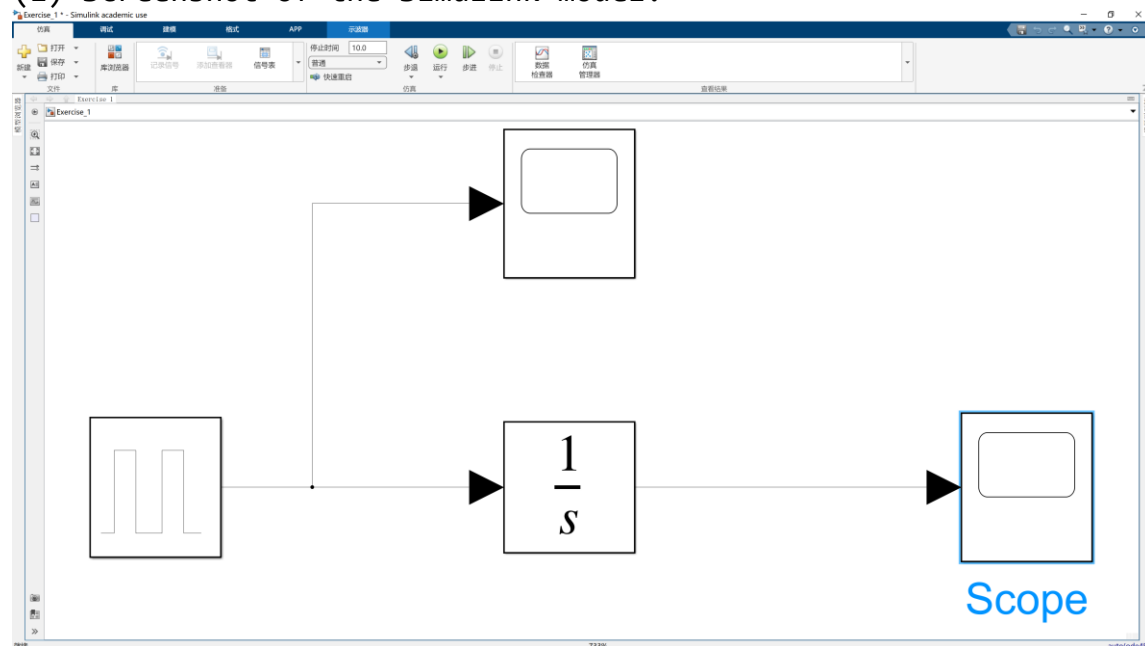


>>Semester: 2022/23 Autumn Semester
>>Course Name: Programming for Engineers (II)
>>Class: AI Communication Engineering 2101
>>Name: Chen yiming
>>Sussex ID: 254321
>>ZJSU ID: 2137020126

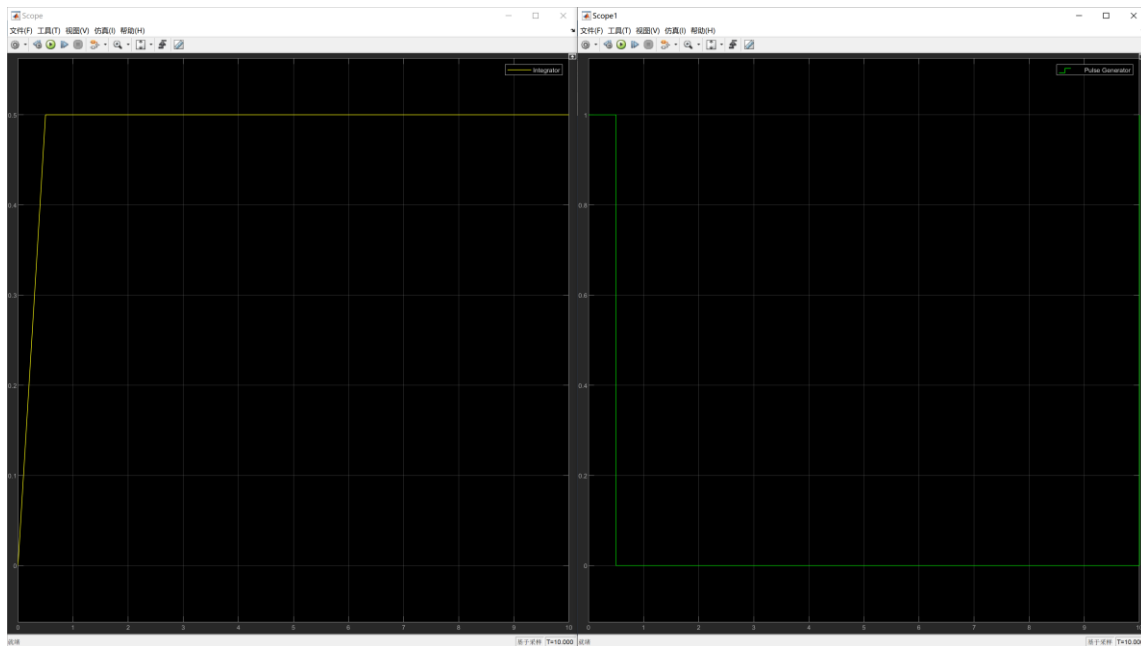
Exercise 1

Answer:

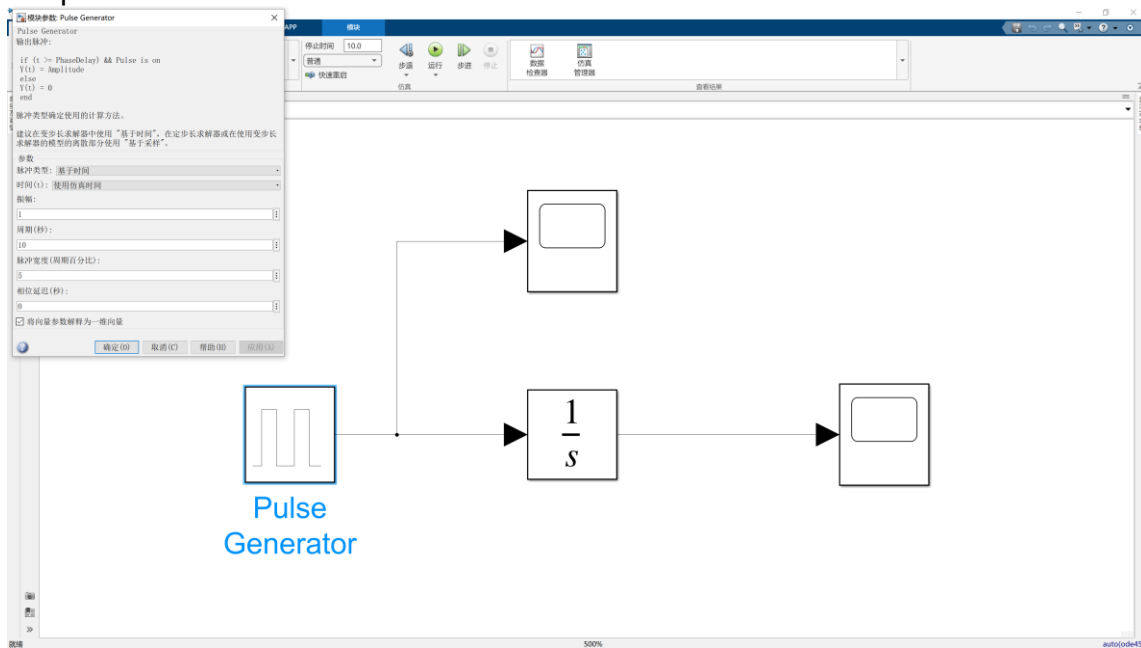
(1) Screenshot of the Simulink model.

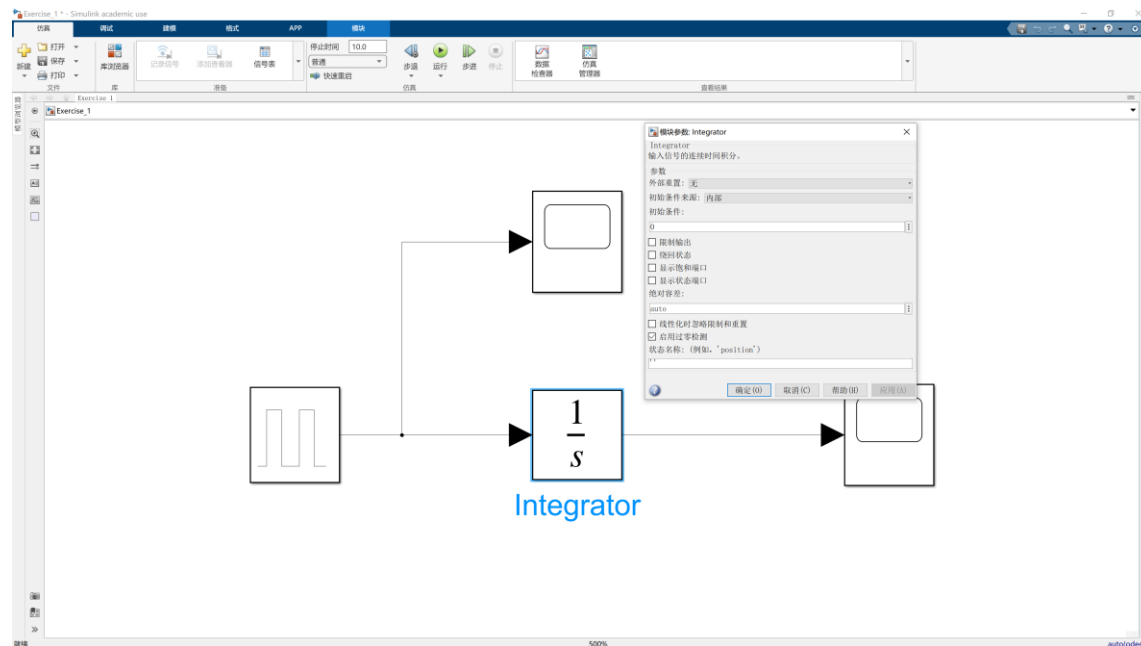


(2) Screenshots of the scopes on all the signals.



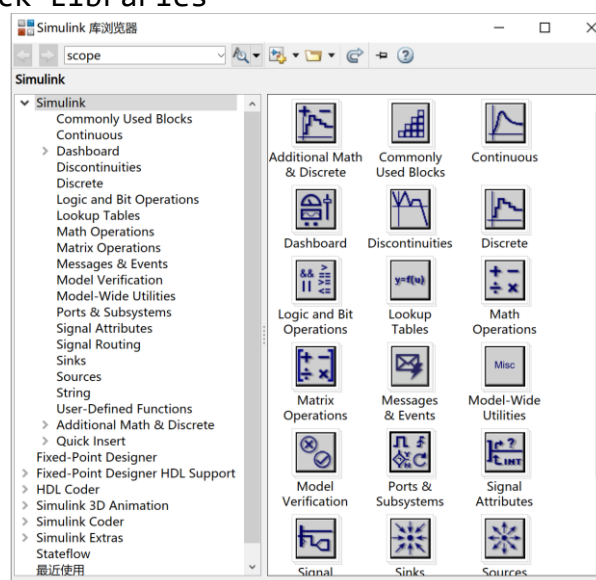
(3) Screenshots of the properties (parameters) of blocks other than scopes.





(4) Where did you find each of the blocks?

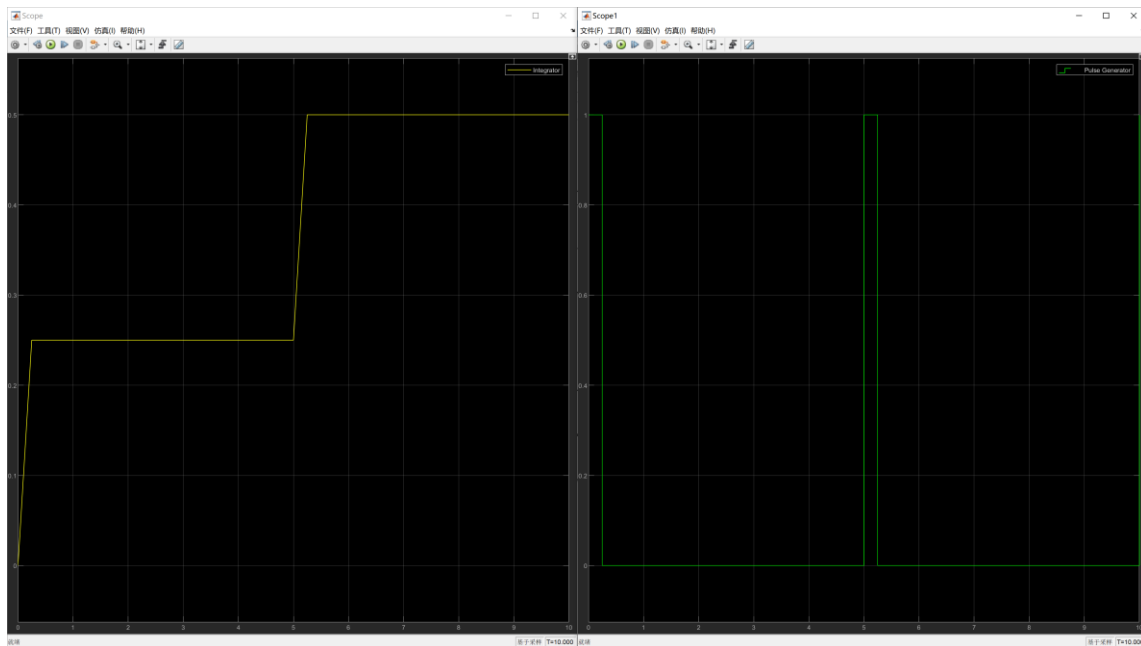
>>Simulink Block Libraries



(5) What do you observe about the system? Change the parameters and run the model again.

>>The pulse generator outputs a signal with a period of 10 seconds and an amplitude of 1 parameter to the integrator, which integrates this signal and outputs it to the scope.

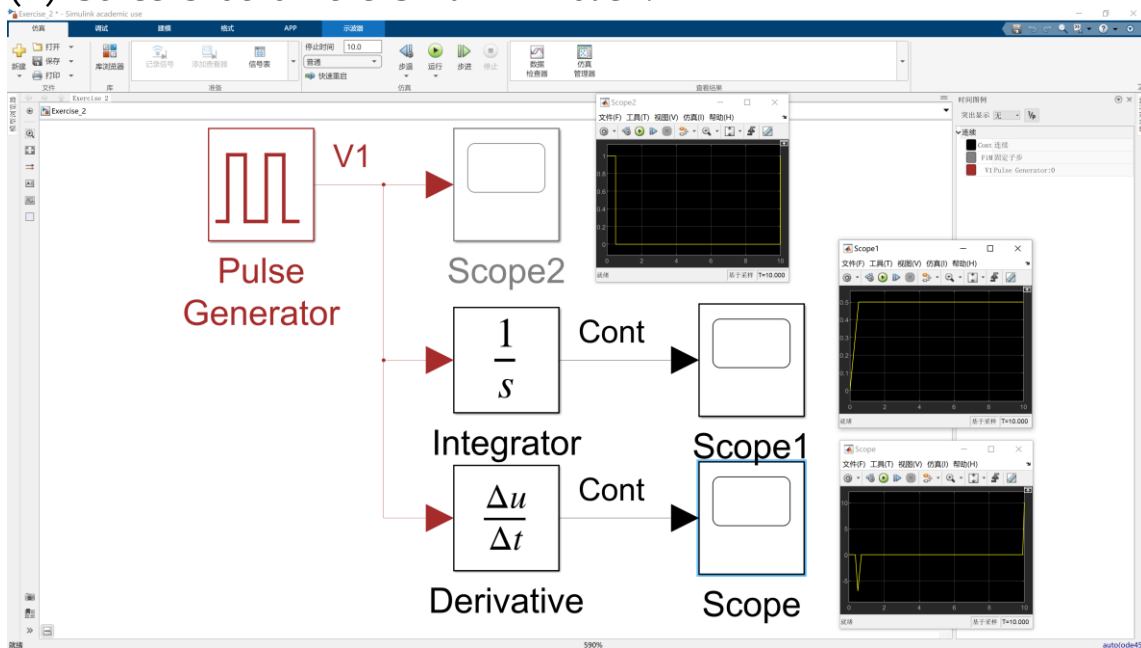
>>After the period of the pulse generator was changed to 5 seconds, we found that the integration times of the integrator changed and two piecewise integrations were performed.(As shown below)



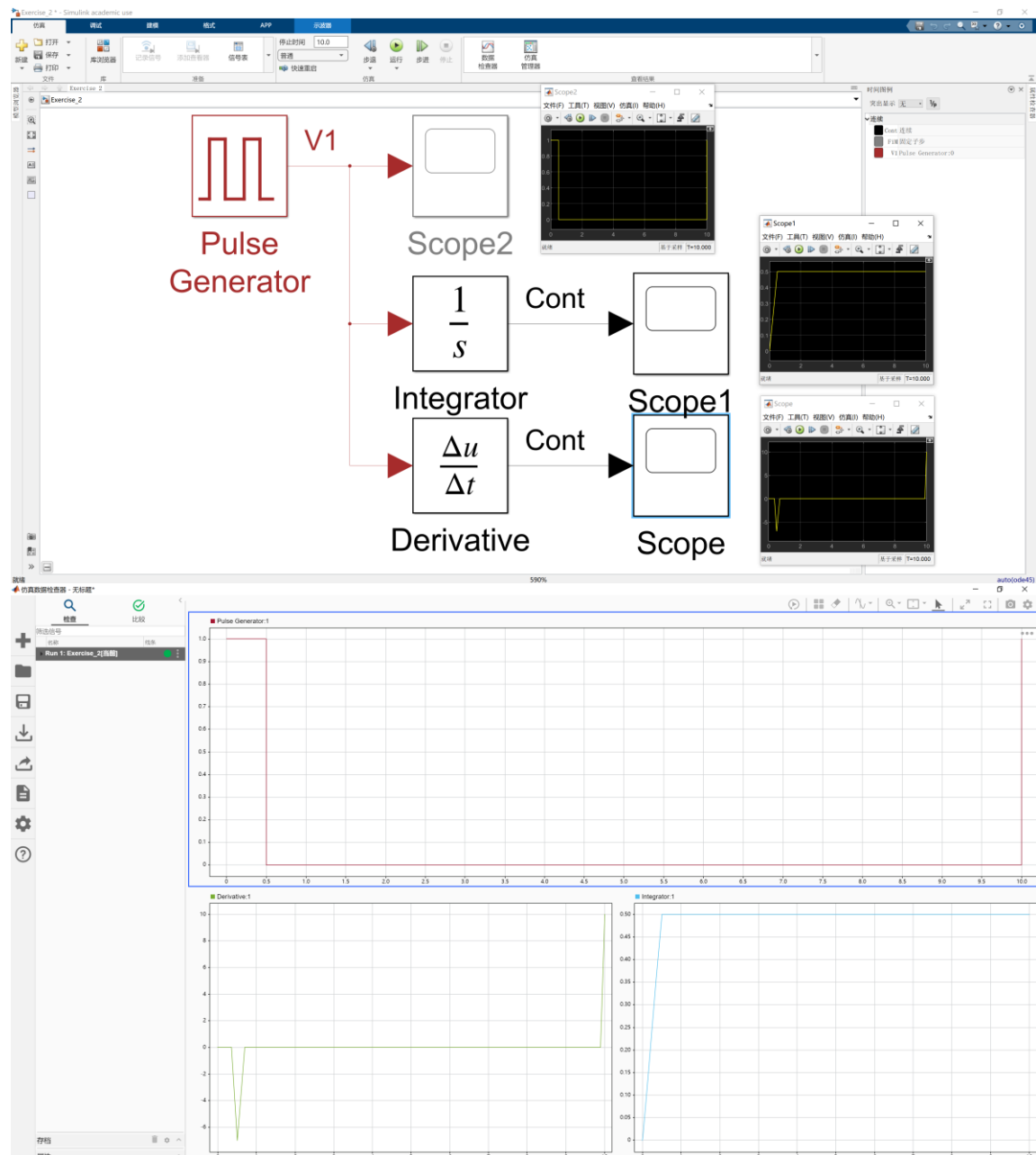
Exercise 2

Answer:

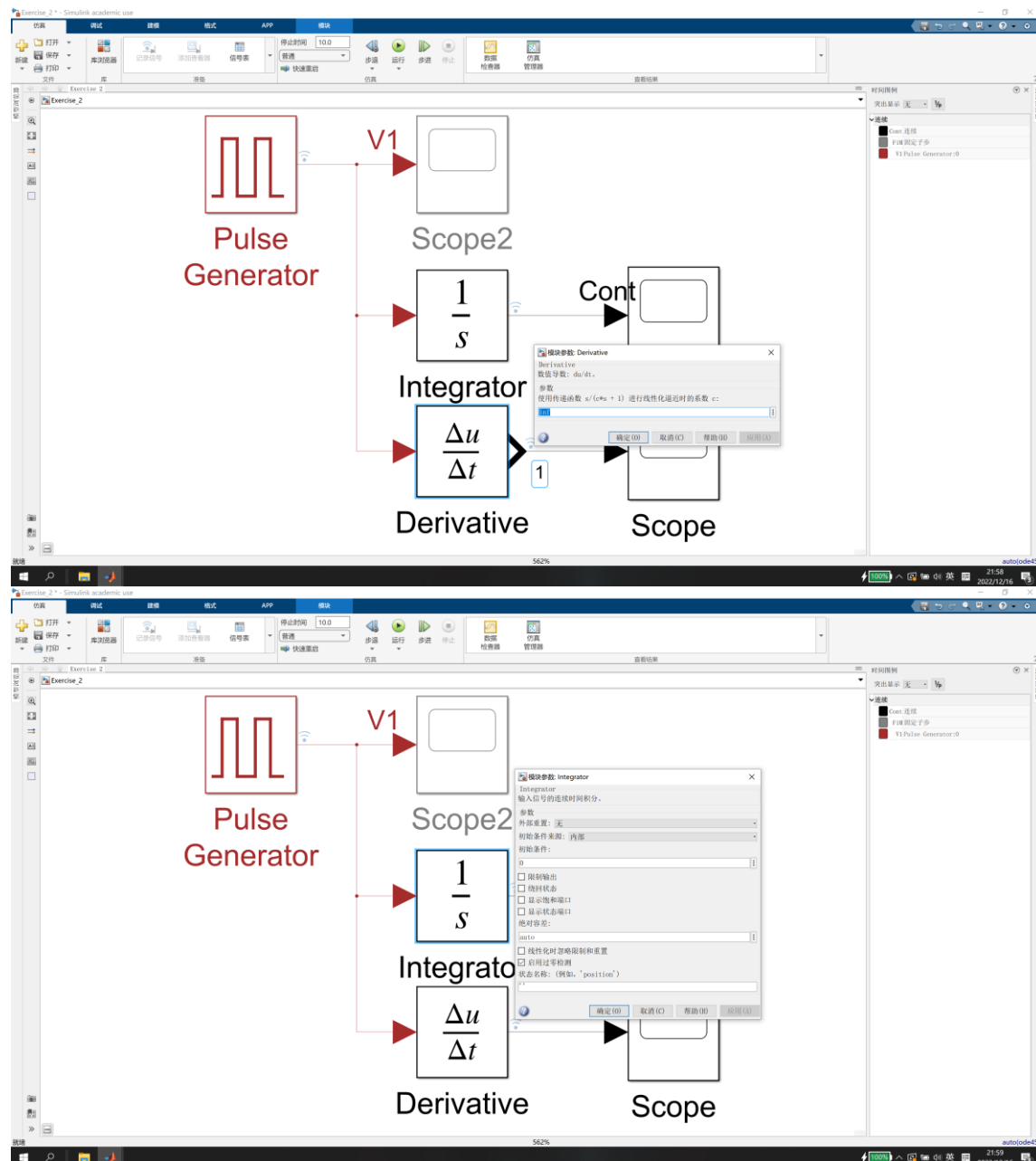
(1) Screenshot of the Simulink model.



(2) Screenshots of the scopes on all the signals.

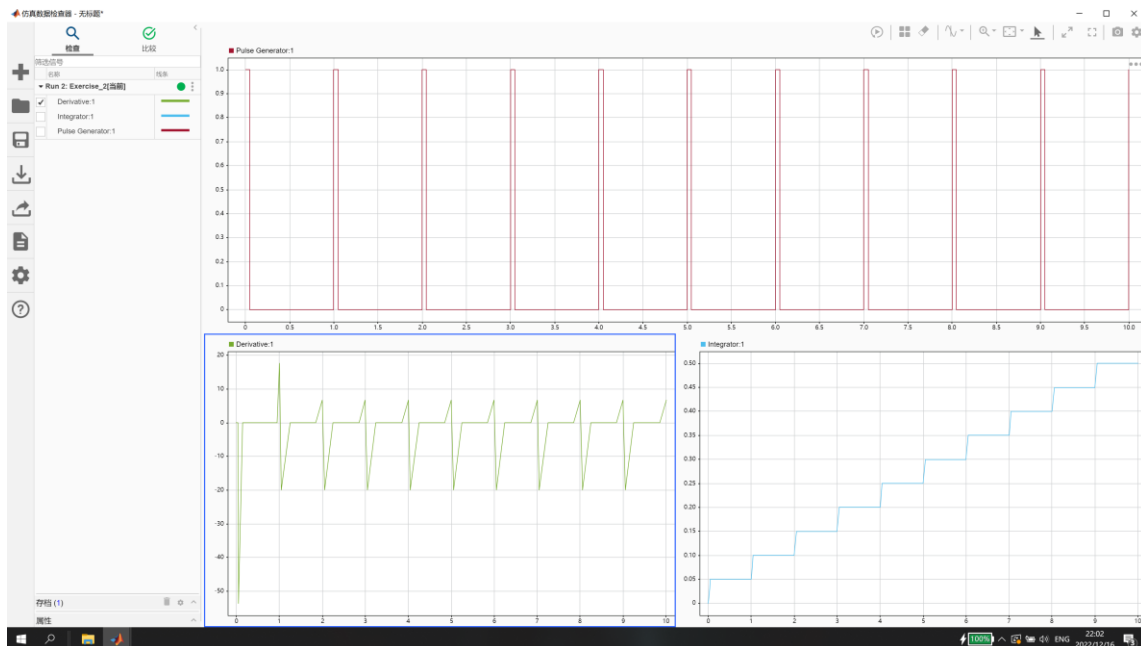


(3) Screenshots of the properties (parameters) of blocks other than scopes.

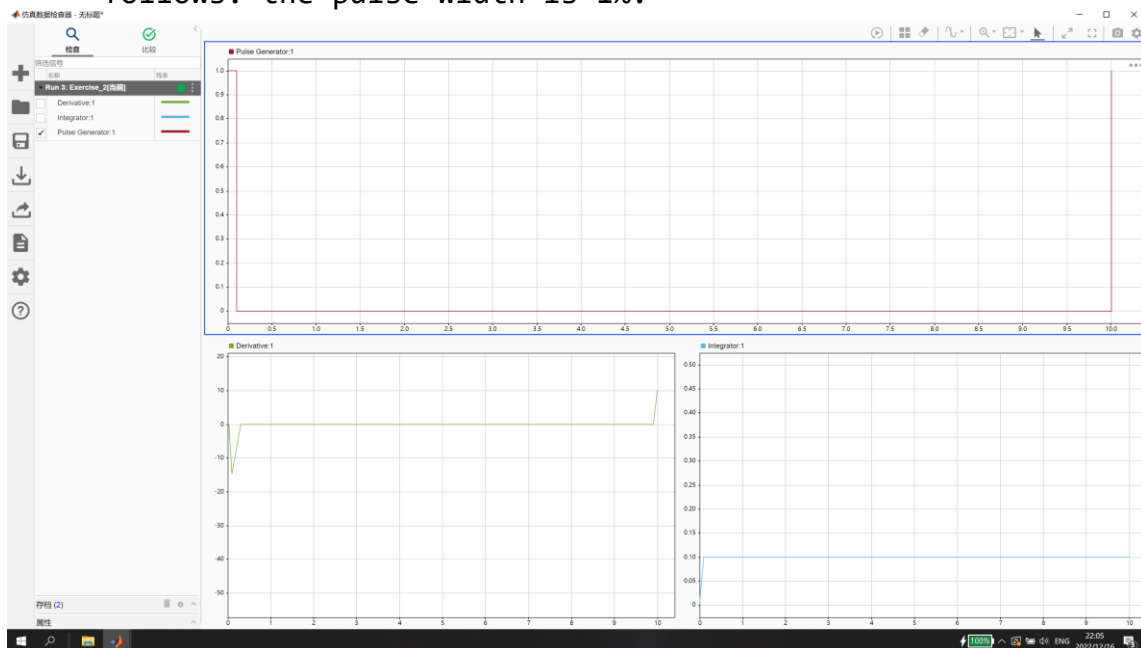


(4) Compile your model and have a look at all the signals on the scopes. Change the parameters of the Pulse Generator and observe the changes to the output signals.

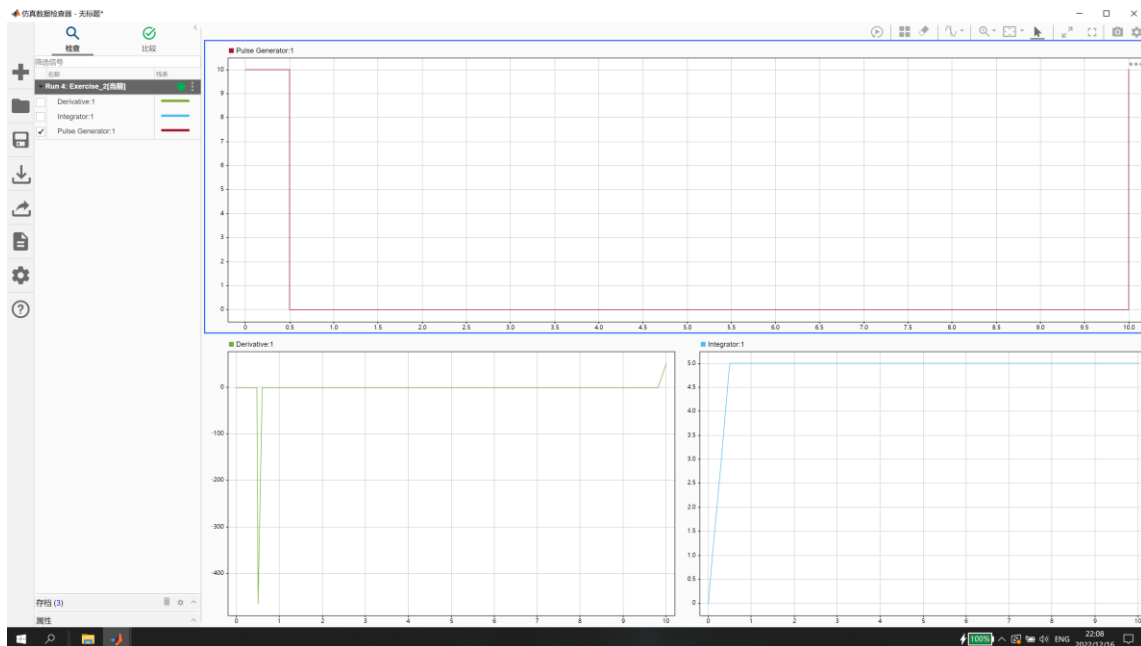
>>The parameters of the pulse generator are modified as follows:
the period is 1 second.



>>The parameters of the pulse generator are modified as follows: the pulse width is 1%.



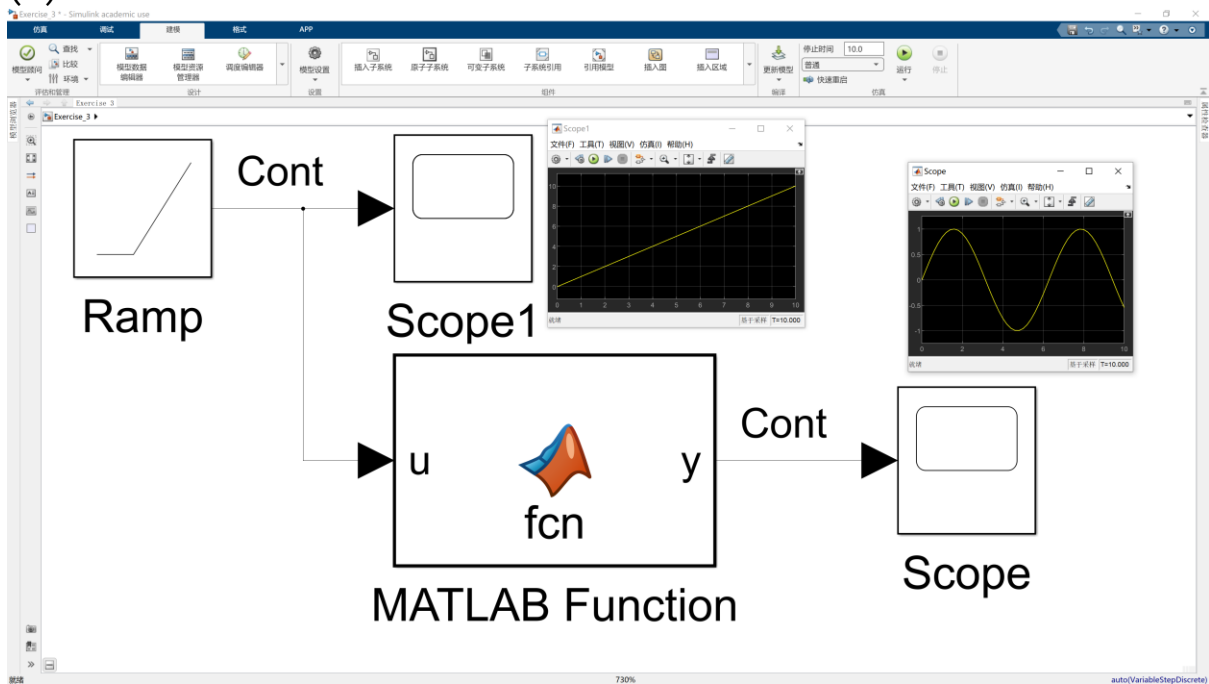
>>The parameters of the pulse generator are modified as follows: the amplitude is 10.



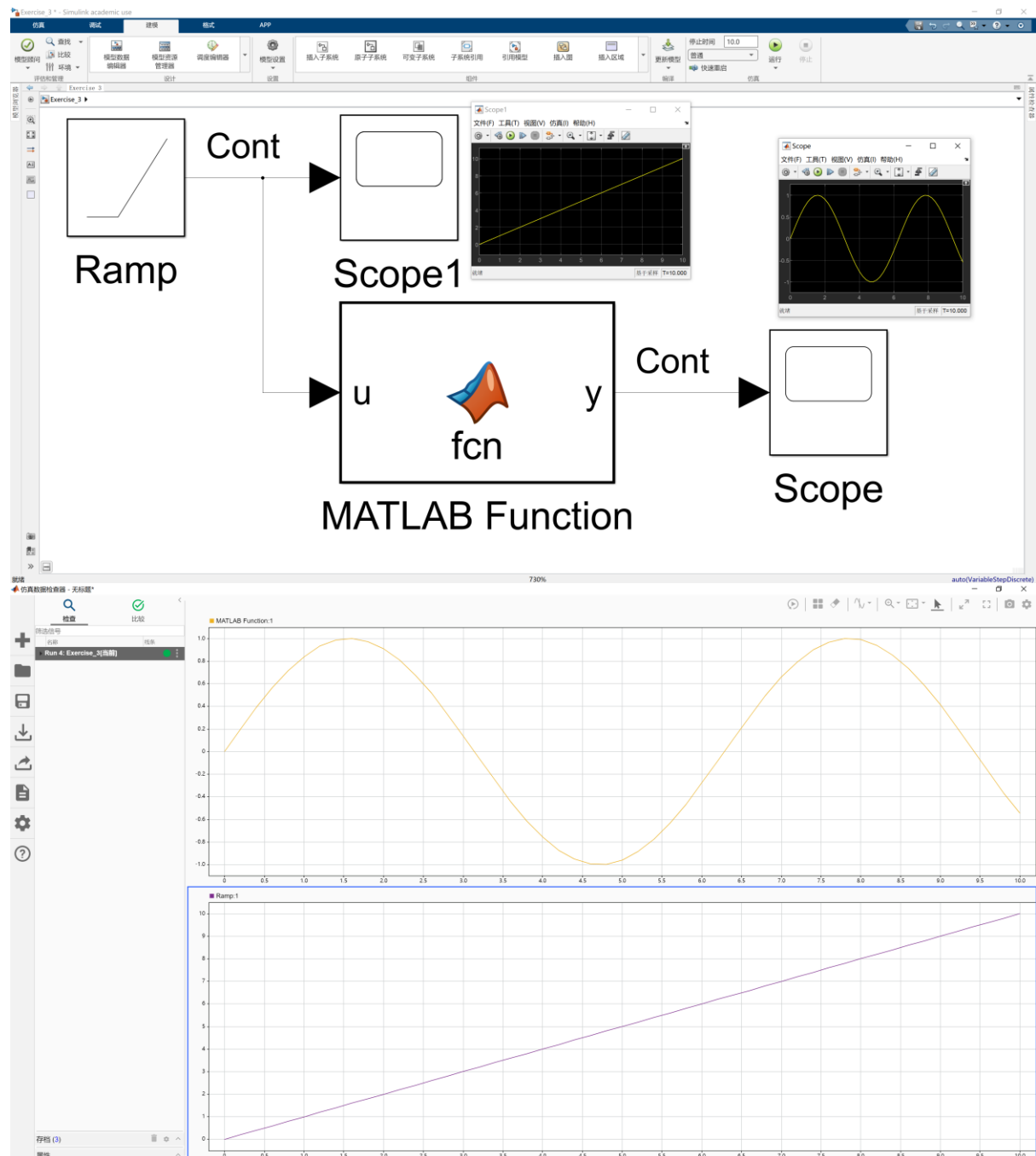
Exercise 3

Answer:

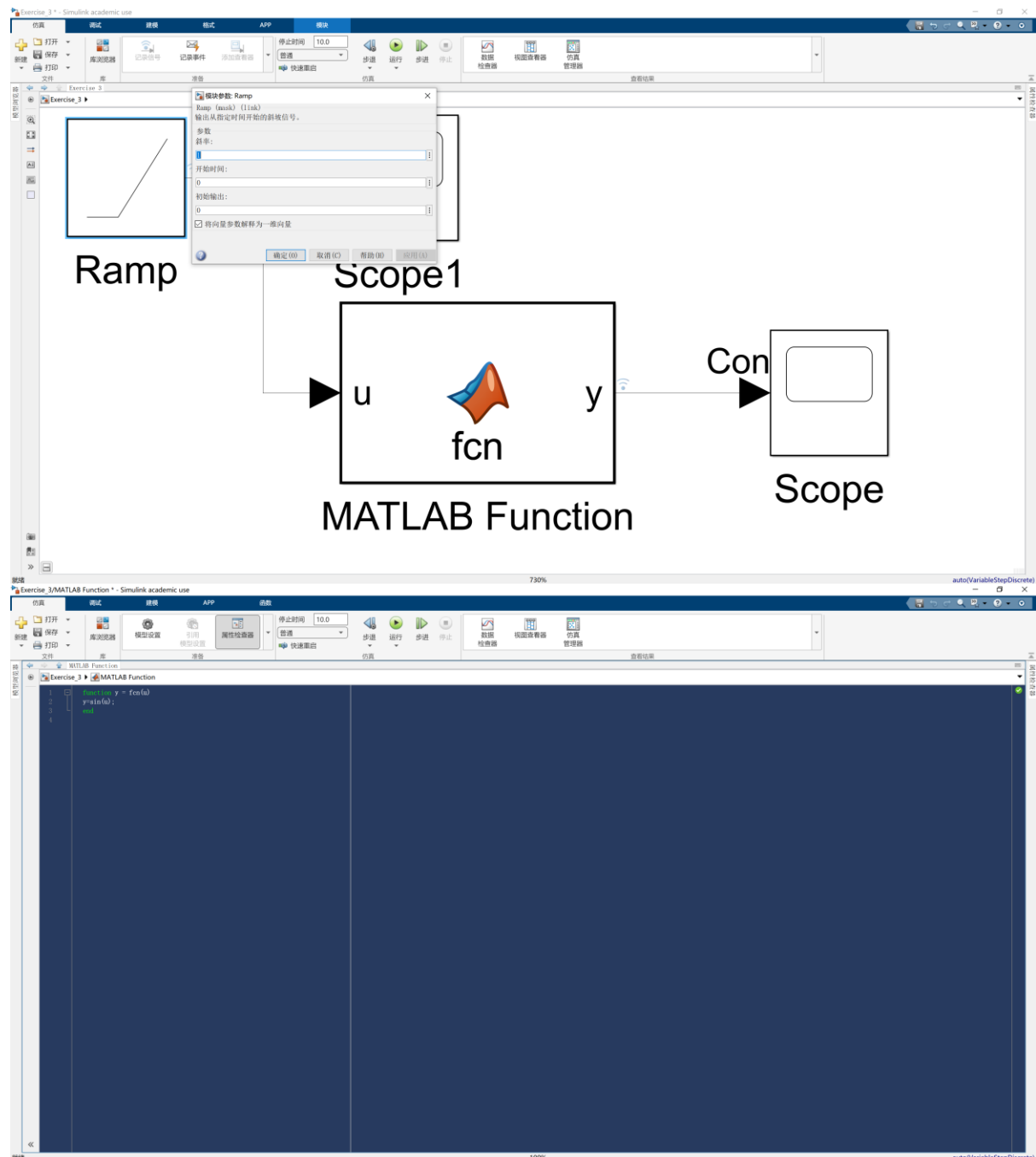
(1) Screenshot of the Simulink model.



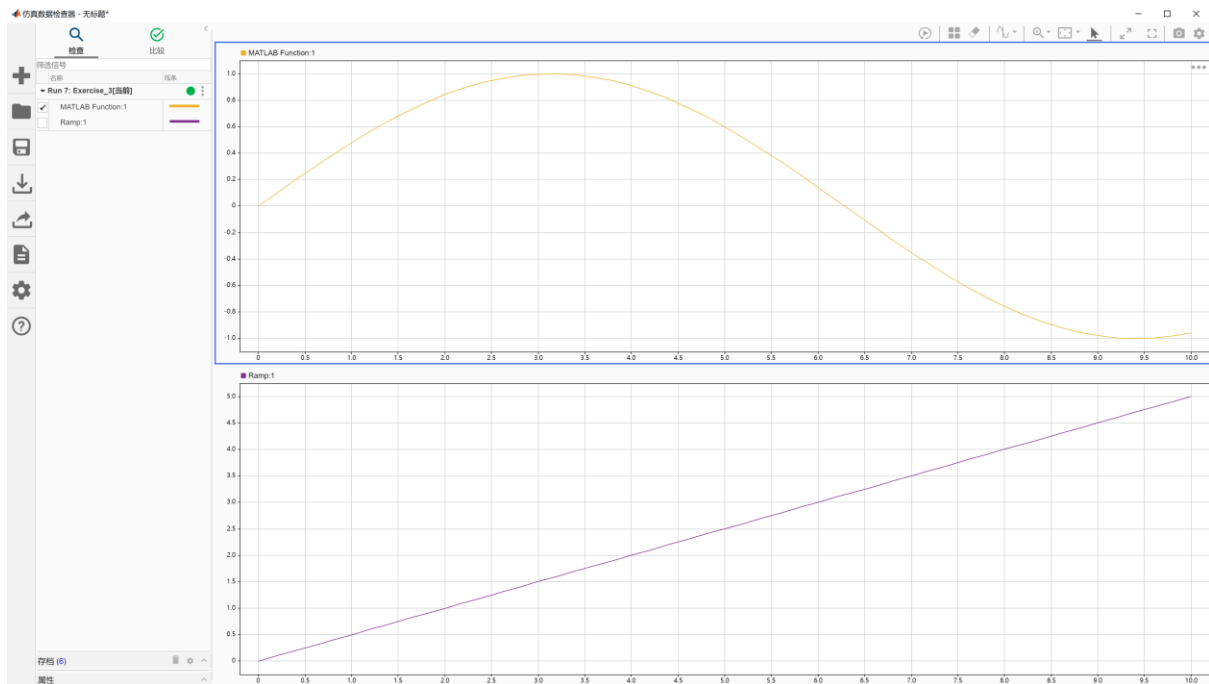
(2) Screenshots of the scopes on all the signals.



(3) Screenshots of the properties (parameters) of blocks other than scopes.



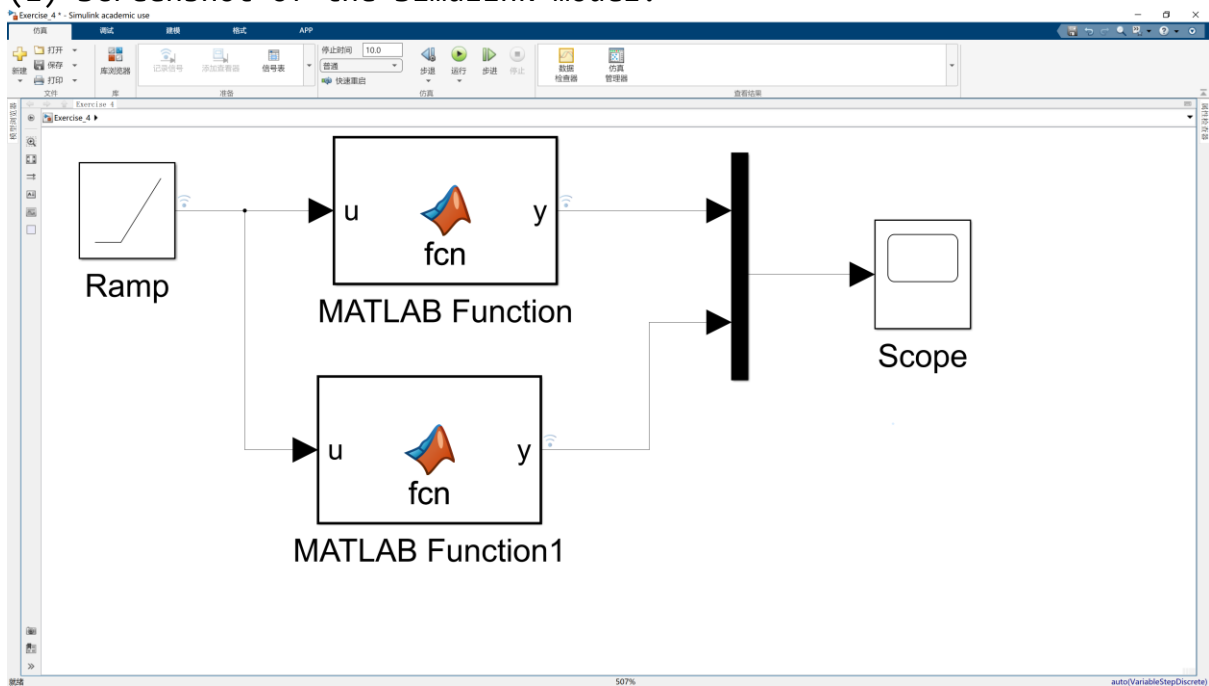
- (4) Compile and run your model. What do you observe on the Scopes?
 >>Observe that the input primary function signal becomes a sin function after the custom function processing.
- (5) Double click the Ramp and change some of the parameters, re-run your model and observe the changes on the Scopes.
 >>After changing the slope of Ramp to 0.5, the following image is obtained.



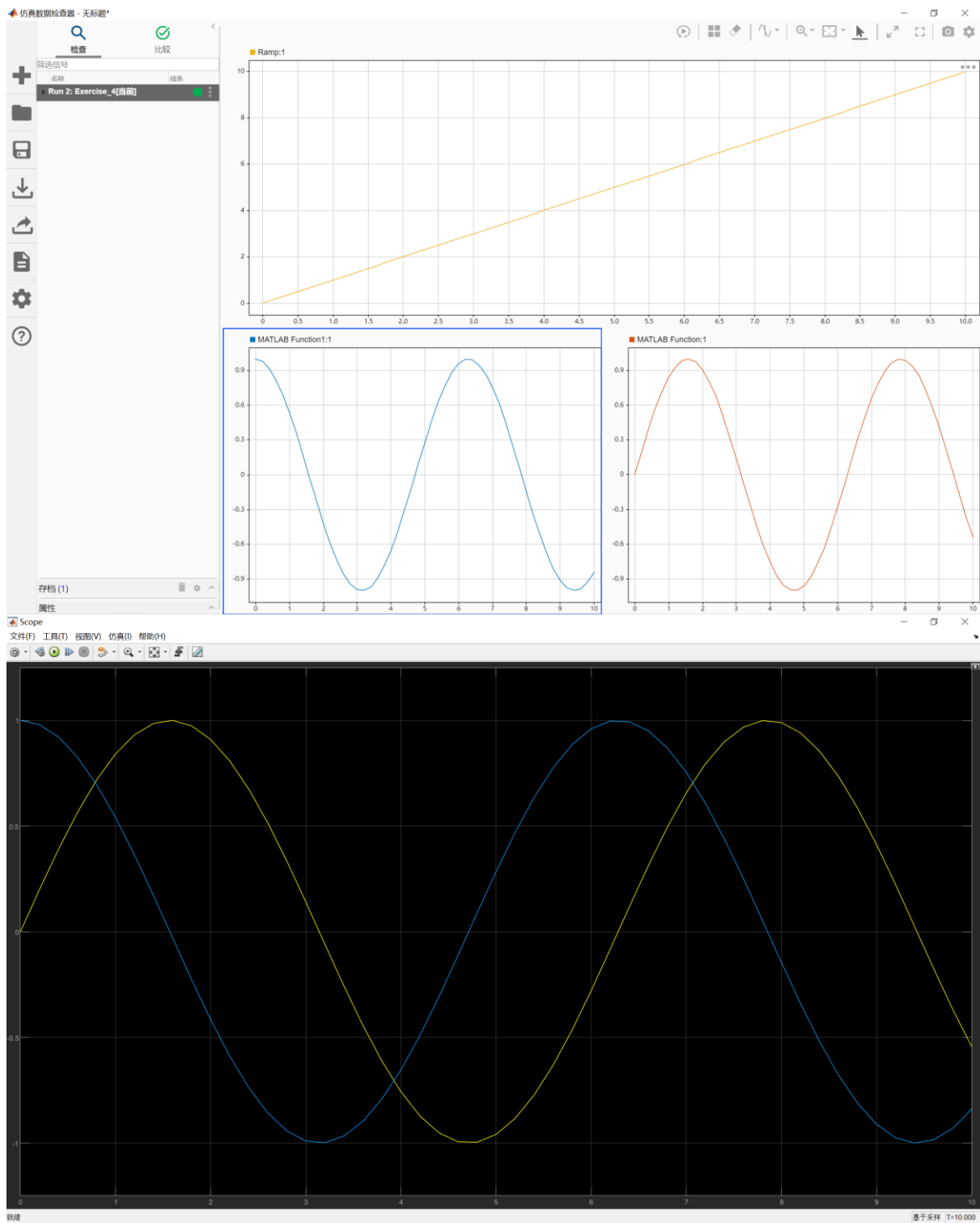
Exercise 4

Answer:

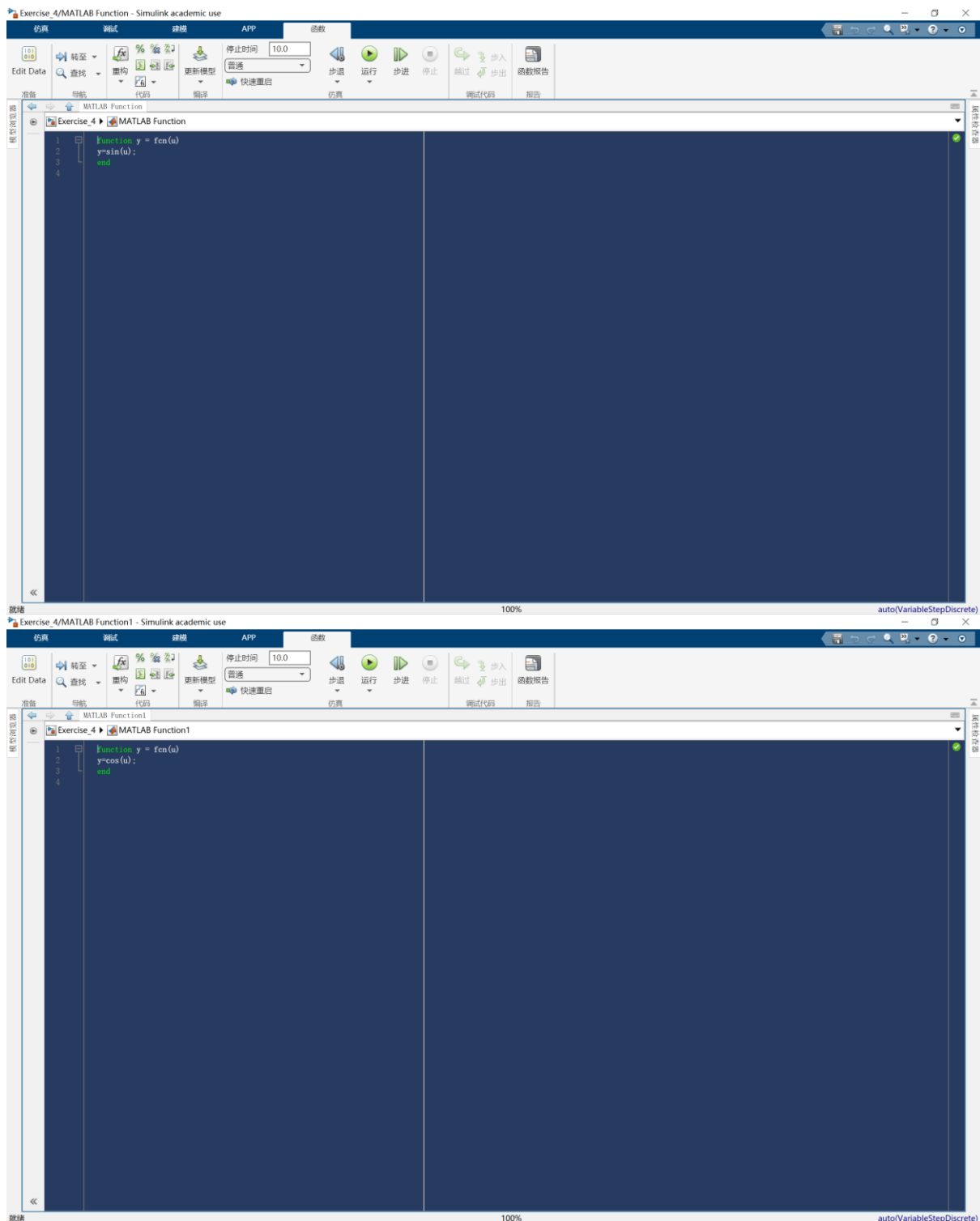
(1) Screenshot of the Simulink model.



(2) Screenshots of the scopes on all the signals.



(3) Screenshots of the properties (parameters) of blocks other than scopes.

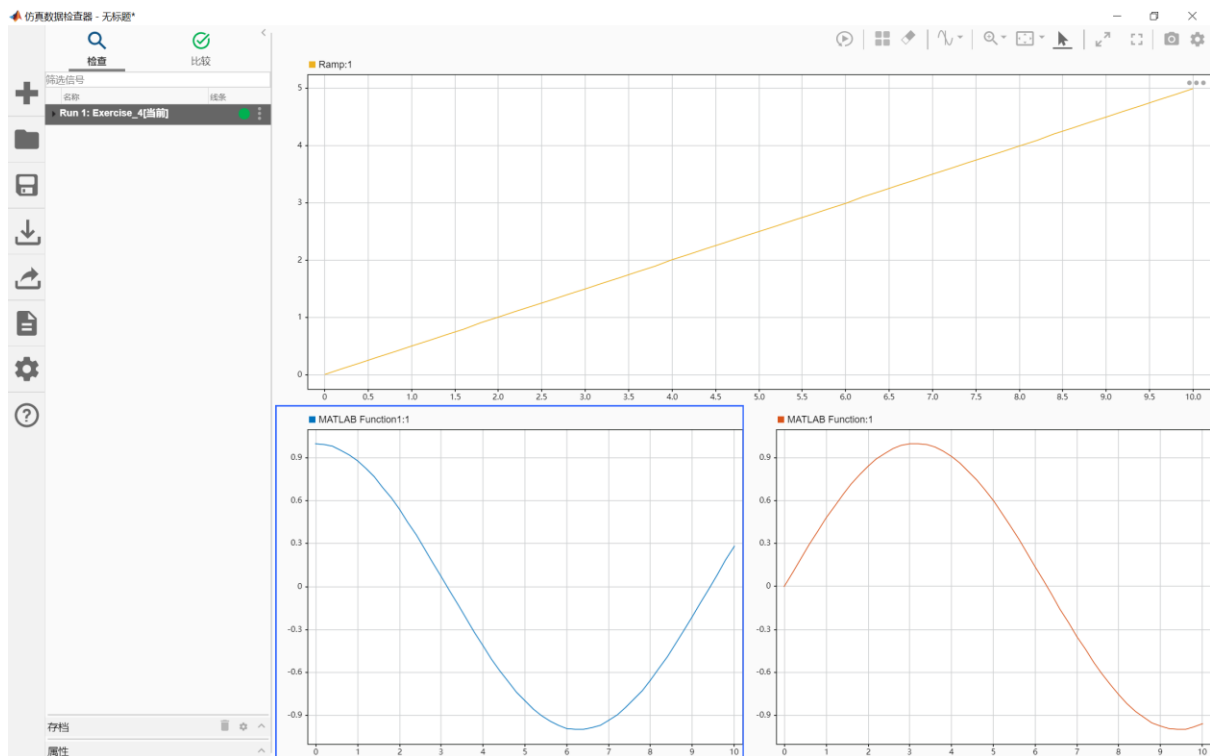


(4) What do you observe on the Scope?

>>The oscilloscope shows two lines one for the sin function and one for the cos function.

(5) Double click the Ramp and change some of the parameters, re-run your model and observe the changes on the Scope.

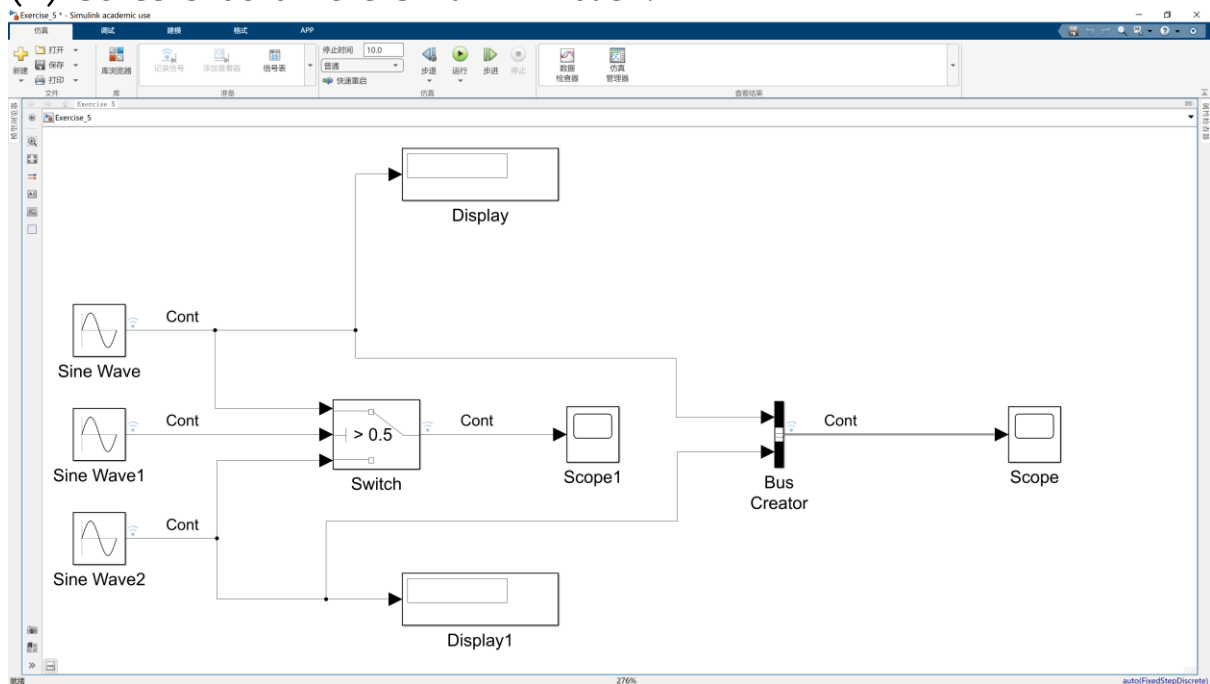
>>After changing the slope of Ramp to 0.5, the following image is obtained.



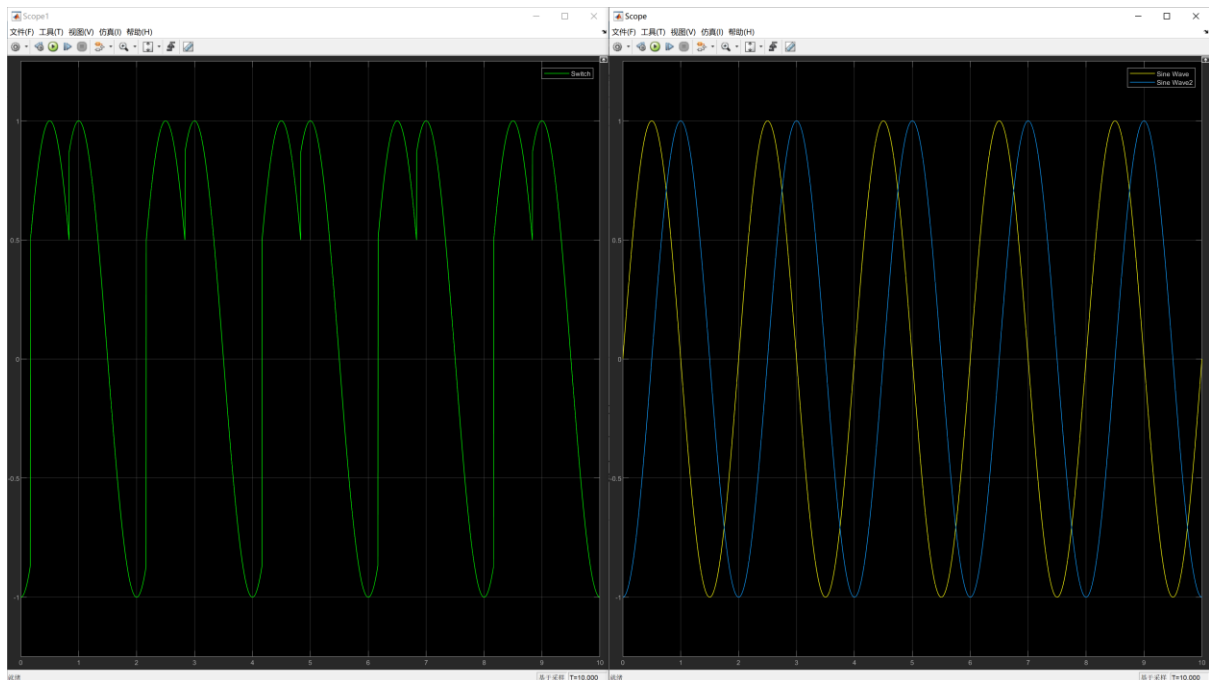
Exercise 5

Answer:

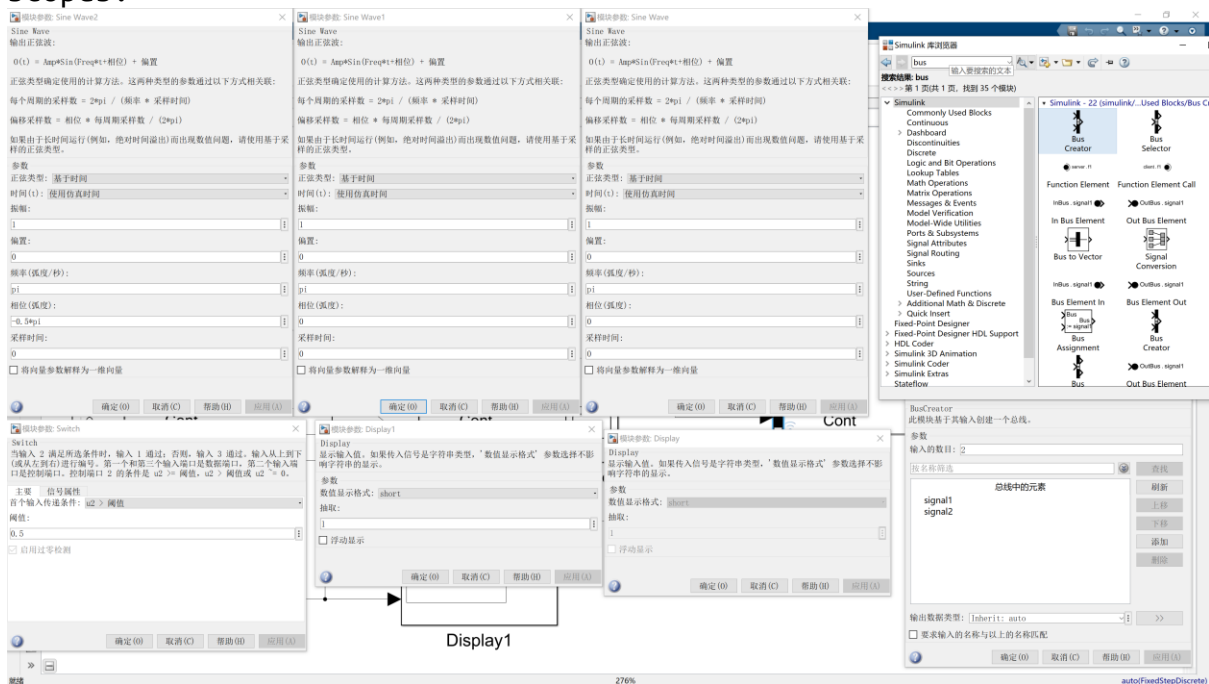
(1) Screenshot of the Simulink model.



(2) Screenshots of the scopes on all the signals.

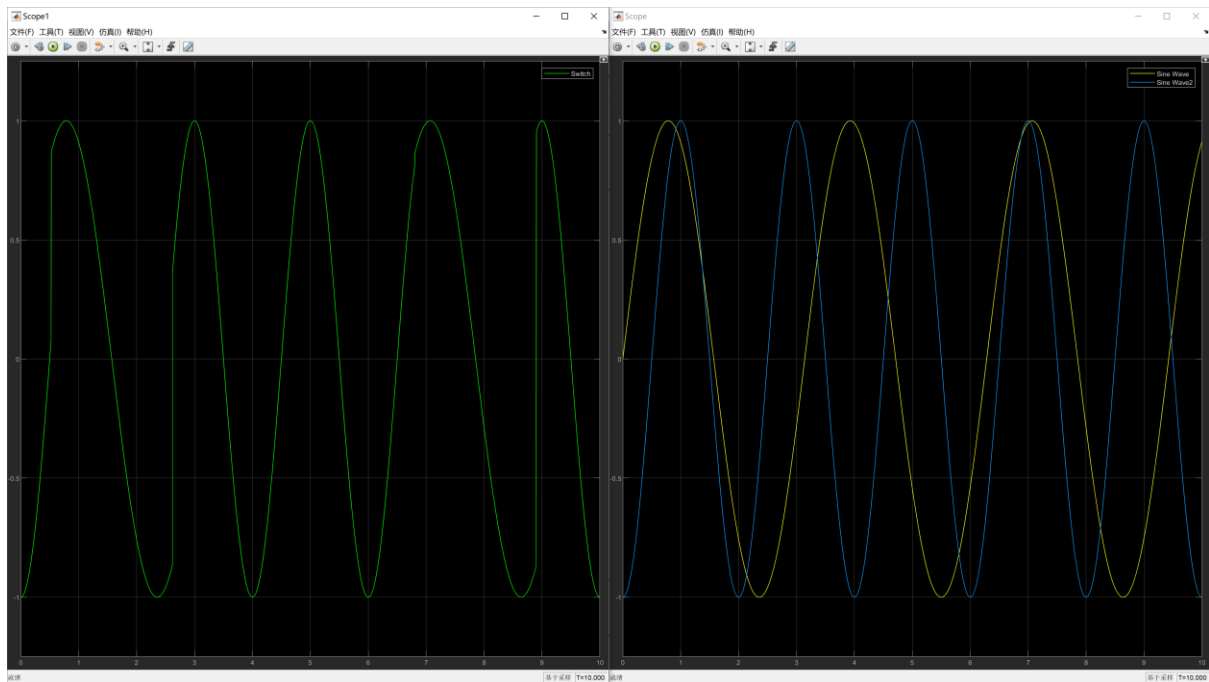


(3) Screenshots of the properties (parameters) of blocks other than scopes.



(4) You may modify the sine waves and the switch threshold to obtain other output signals.

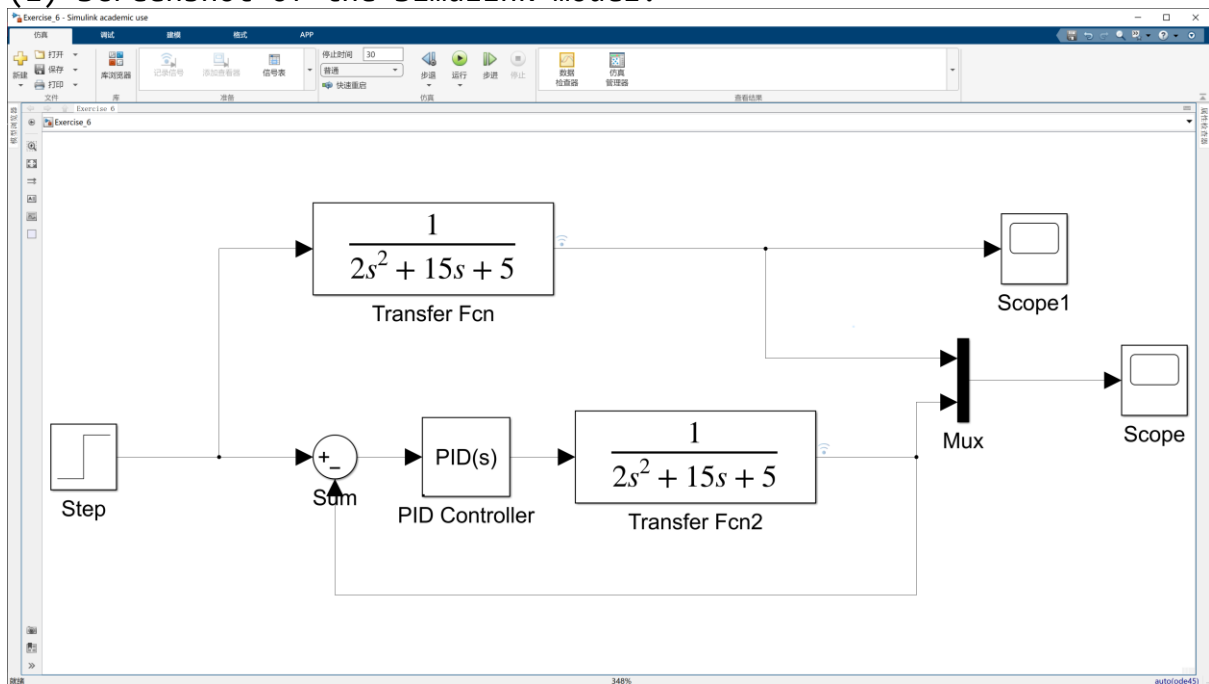
>>After modify sine waves:



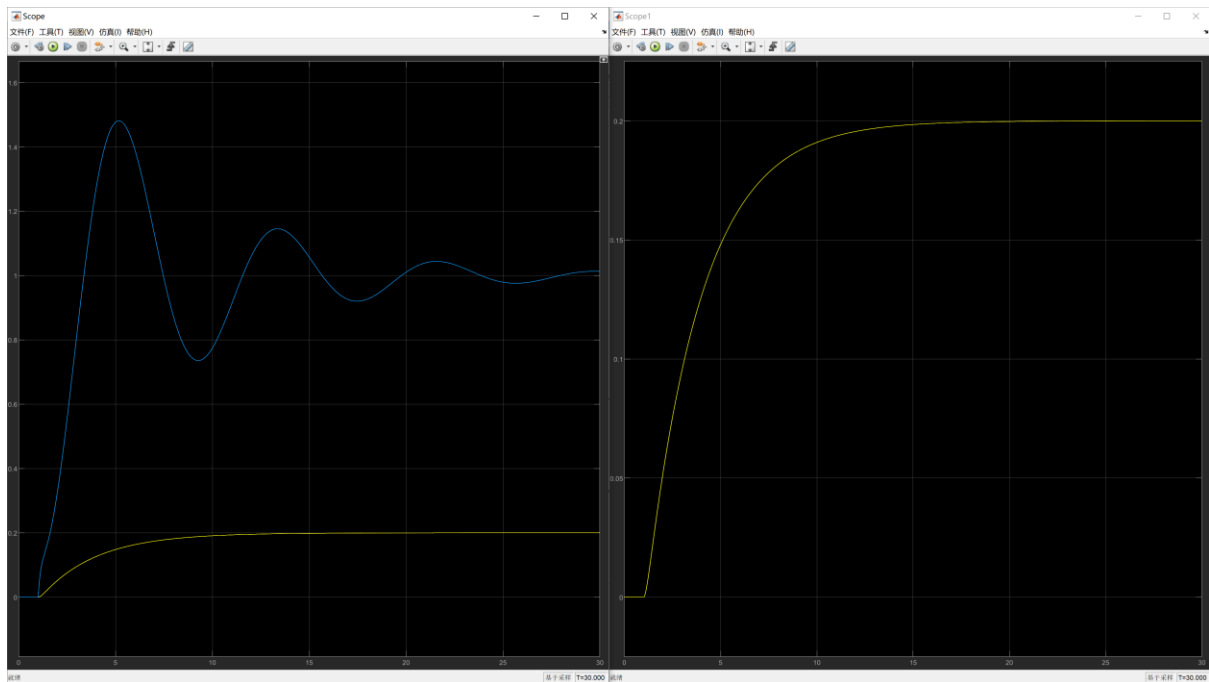
Exercise 6

Answer:

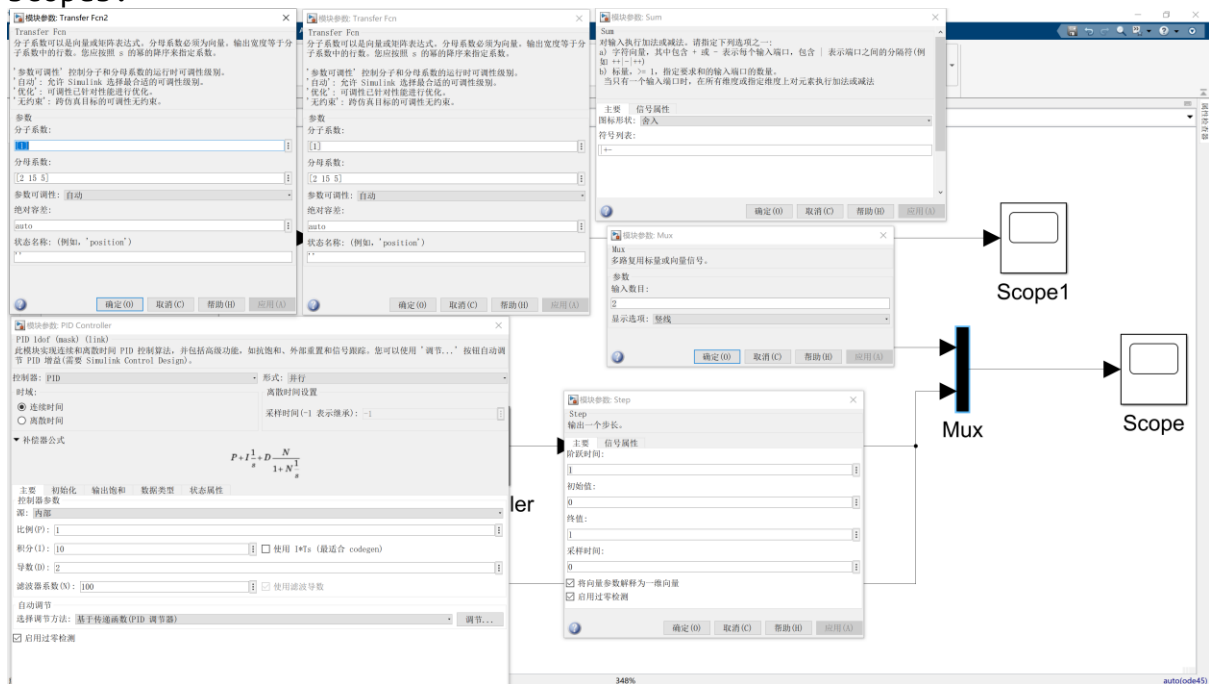
(1) Screenshot of the Simulink model.



(2) Screenshots of the scopes on all the signals.



(3) Screenshots of the properties (parameters) of blocks other than scopes.



(4). The signals are displayed for 10 seconds on scopes, how to increase the simulation time?

>> Modify the stop time value in the top menu or right-click the configuration parameter option, modify the stop time in the top menu or right-click the configuration parameter option, modify the stop time in the solver option.

