

Practice 6 Report From

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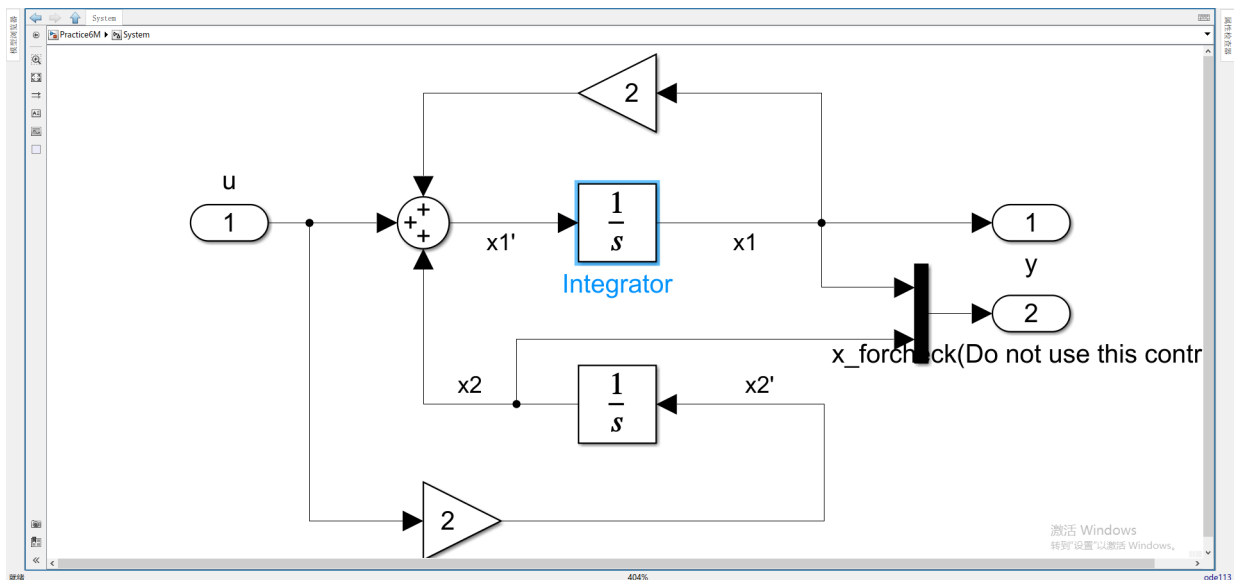
Today I'm not using Latex. Because there are just several picture can show my work.

My **k is 7**, so my system is

4. If $\text{mod}(k,4)=3$:

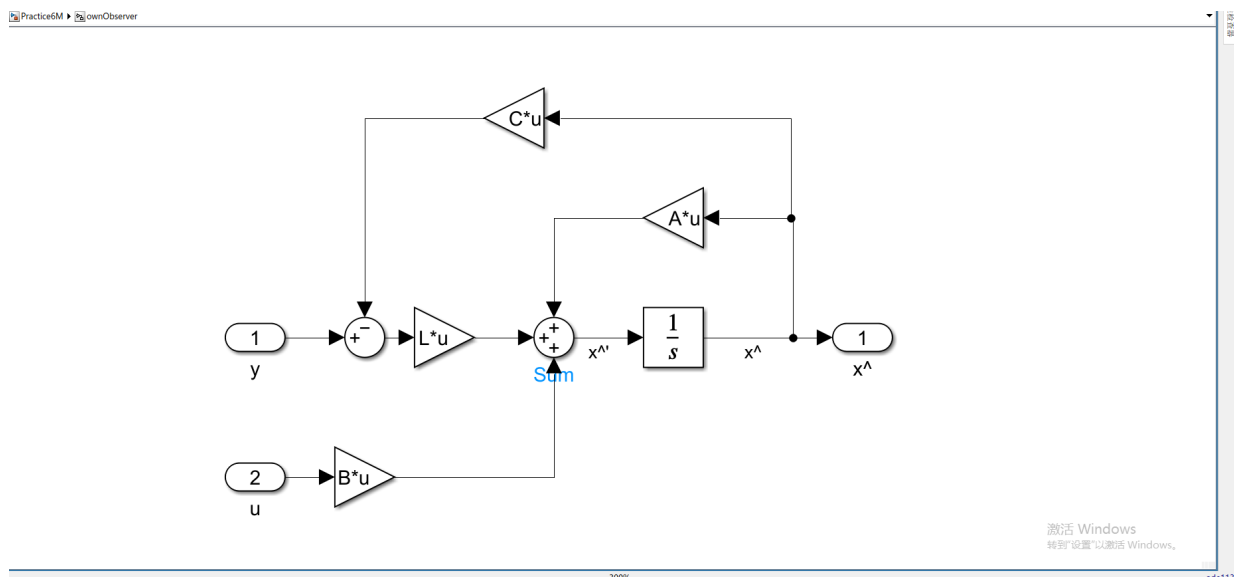
$$\dot{x}(t) = \begin{bmatrix} 2 & 1 \\ 0 & 0 \end{bmatrix} x(t) + \begin{bmatrix} 1 \\ 2 \end{bmatrix} u(t), \quad y(t) = [1 \quad 0] x(t).$$

Matlab Shot:



Observer Design:

Code will show later.

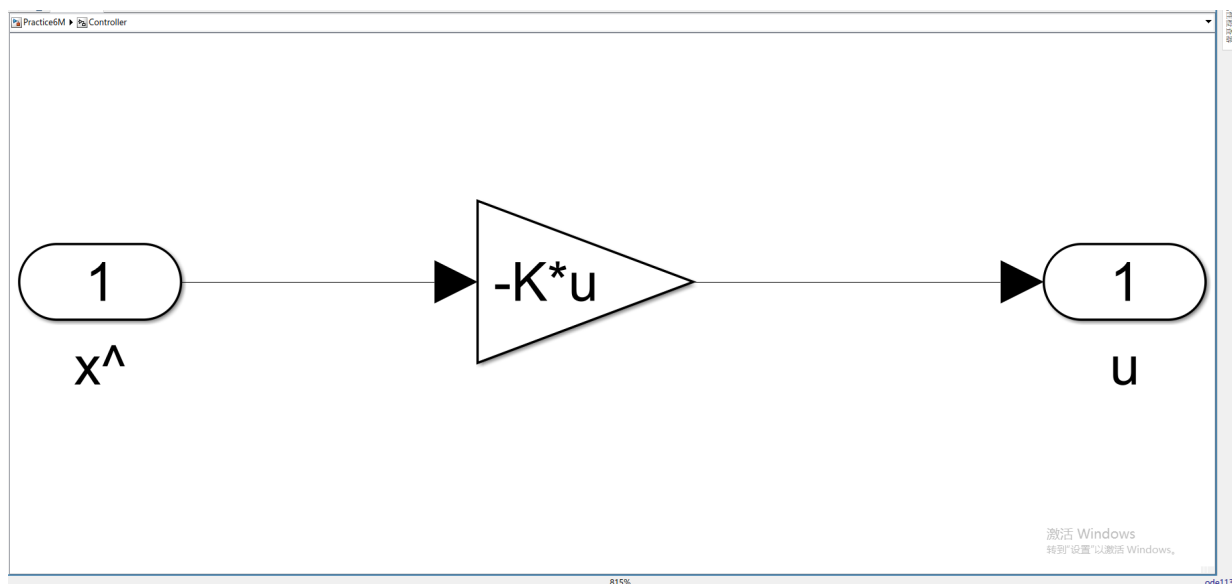


Controller:

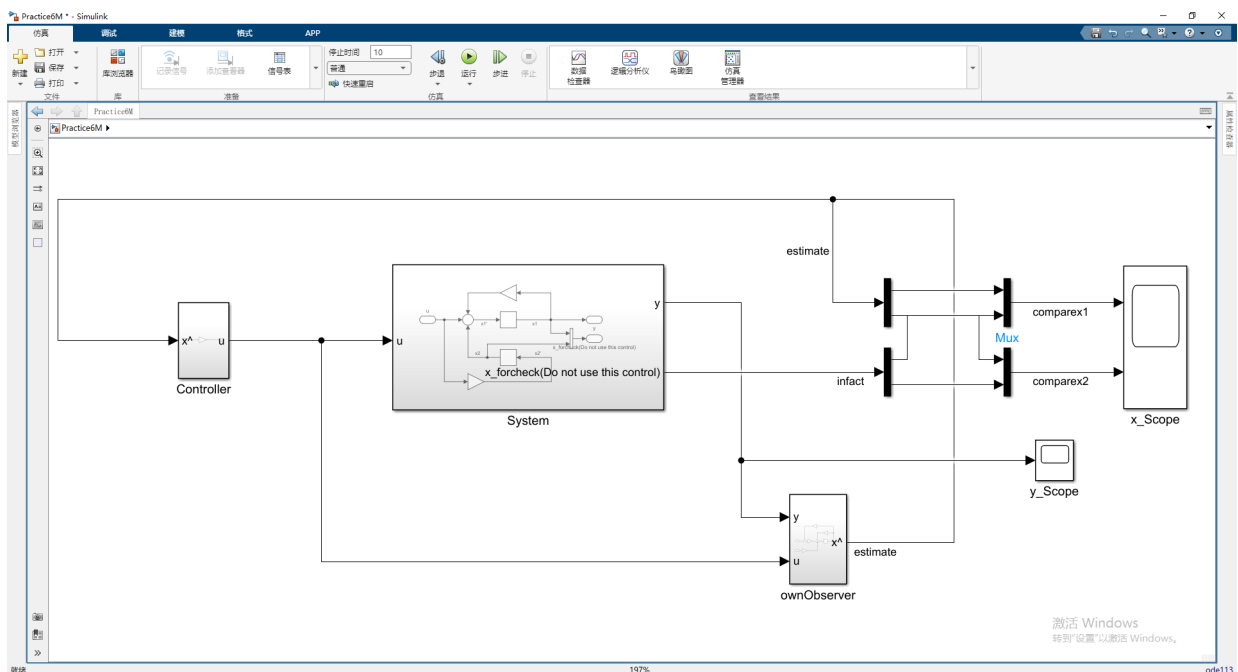
Code will show here(Including Observer Design):

```
Practice6.m  x  +
1  A = [2,1;0,0];
2  B = [1;2];
3  C = [1,0];
4
5  %state observer
6  P = sdpvar(2,2);
7  Y = sdpvar(2,1);
8  F = [P*A+A'*P-C'*Y'-Y'*C<=0];
9  F = F + [P>=0];
10 sol = solvesdp(F);
11 P = double(P);
12 L = P*(-1)*double(Y)
13
14 %stabilized feedback control
15 X = sdpvar(2,2);
16 Y = sdpvar(1,2);
17 F = [X*A'+A*X-Y'*B'-B'*Y<=0];
18 F = F + [X>= 0];
19 sol = solvesdp(F);
20 P = double(X)^(-1);
21 K = double(Y)*P;
```

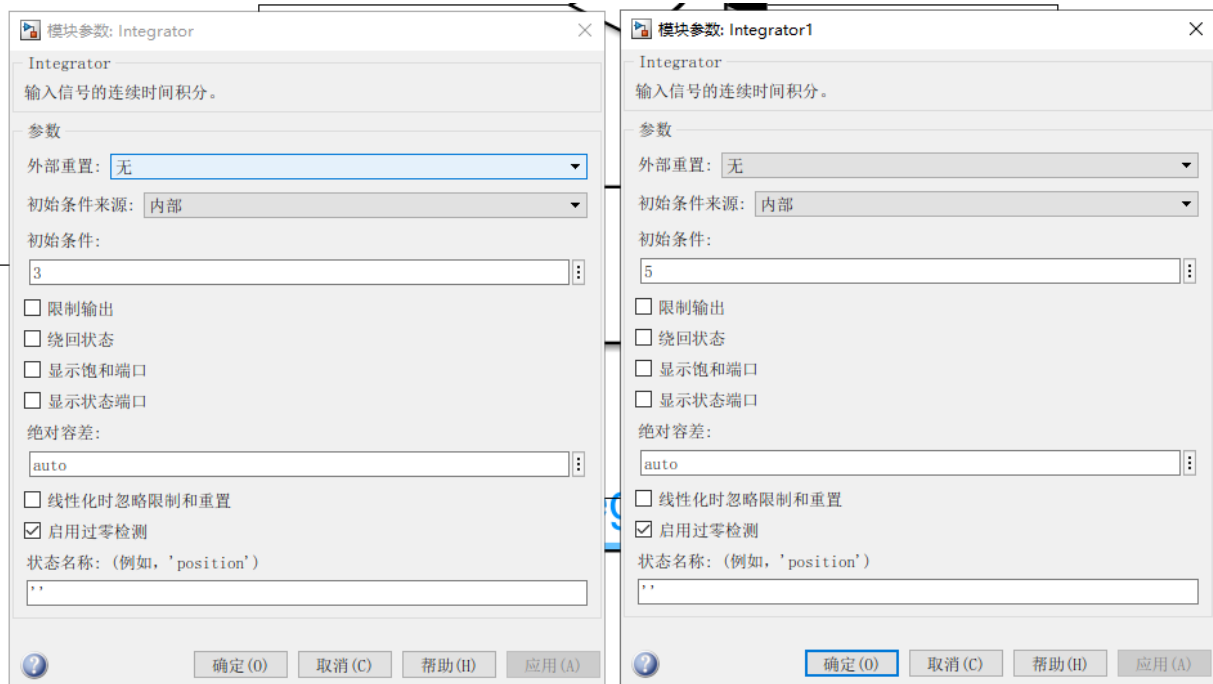
名称	值
A	[2,1;0,0]
B	[1;2]
C	[1,0]
F	2x1 lmi
K	[6.5800,0.1918]
L	[2.9375;1.3125]
out	1x1 SimulationOutput...
P	(10.9559,4.0535e-1...
sol	1x1 struct
X	2x2 sdpvar
Y	1x2 sdpvar



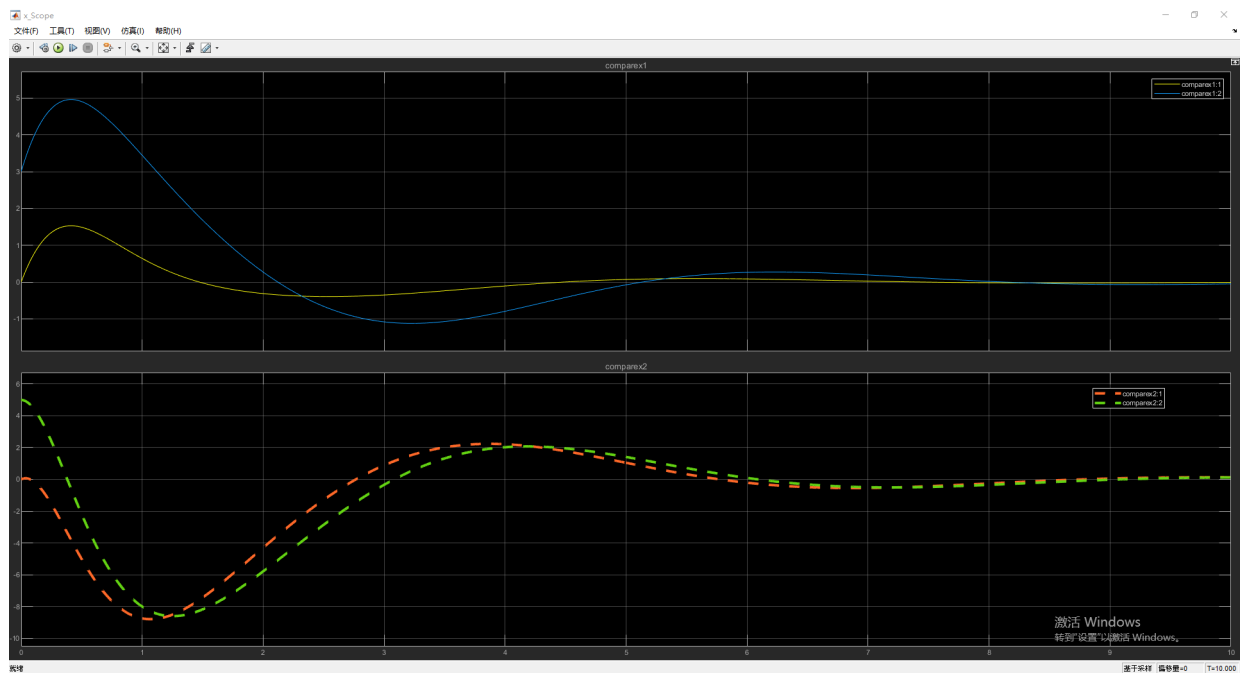
Matlab Simulink(Complete):



Initial Conditions:



X:



Y:

