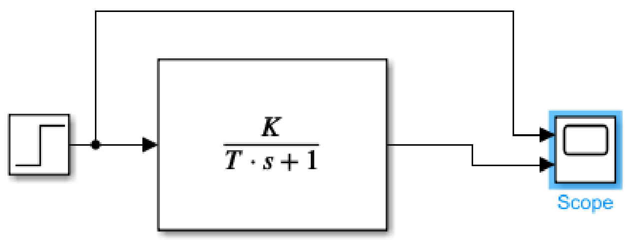
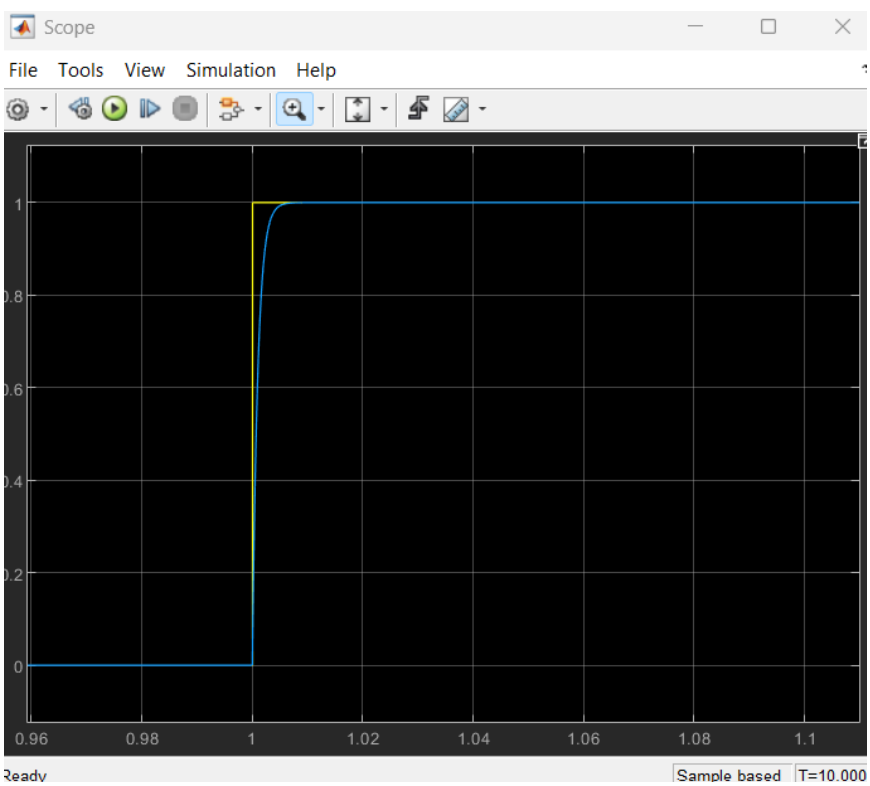
First order and second order lab2

First_order_testing.1

script_first_order.m

```
K=1;
R=10e3;
C=1e-7;
T=R*C;
```

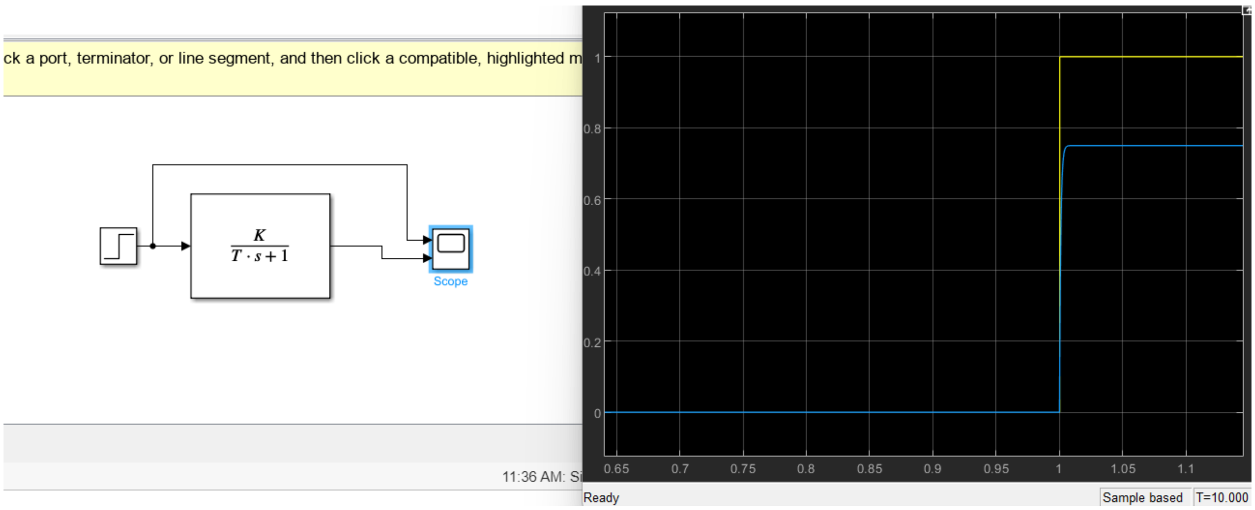




Firsdt_order_testing.2

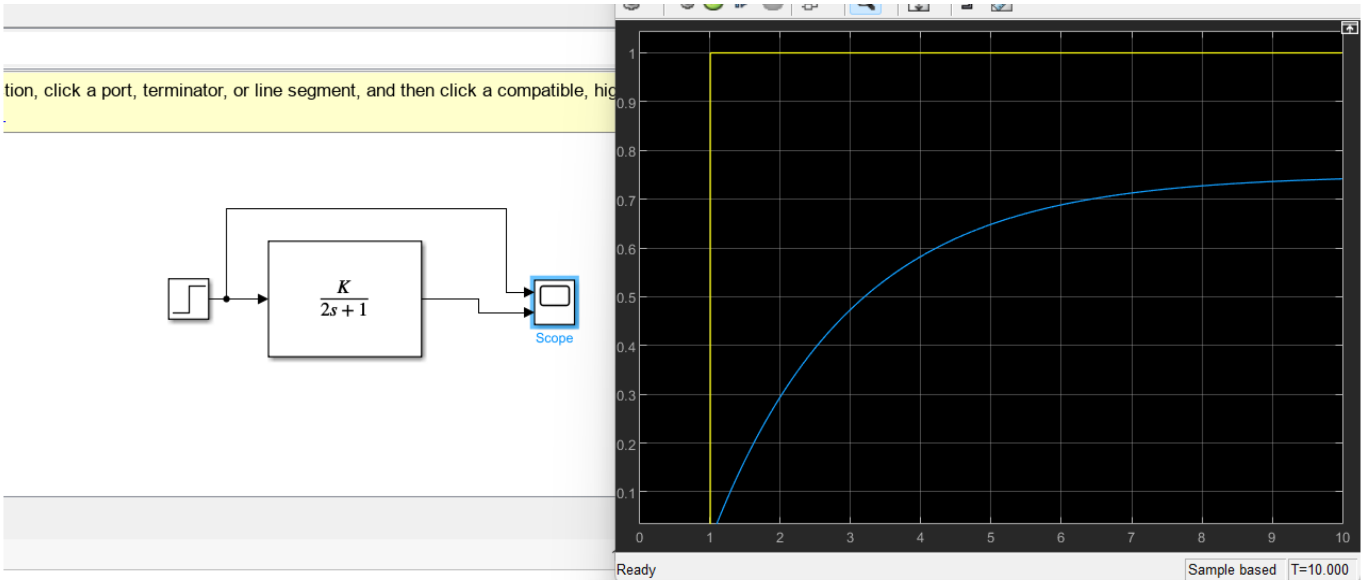
script_first_order.m

```
K=0.75;
R=10e3;
C=1e-7;
T=R*C;
```



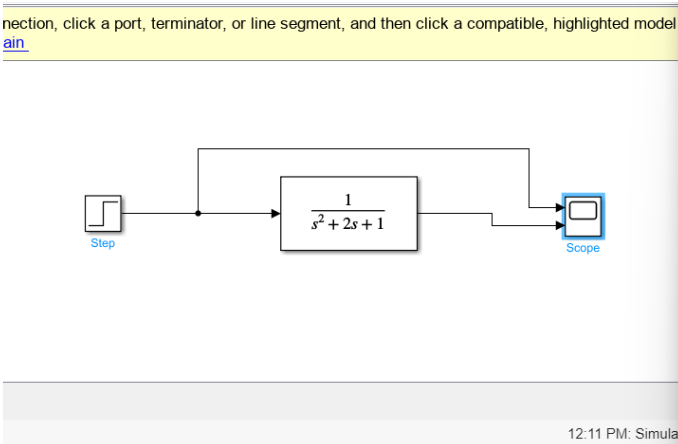
->when I decreased the gain it affected the output of the system by decreasing it but same settling time is unchanged

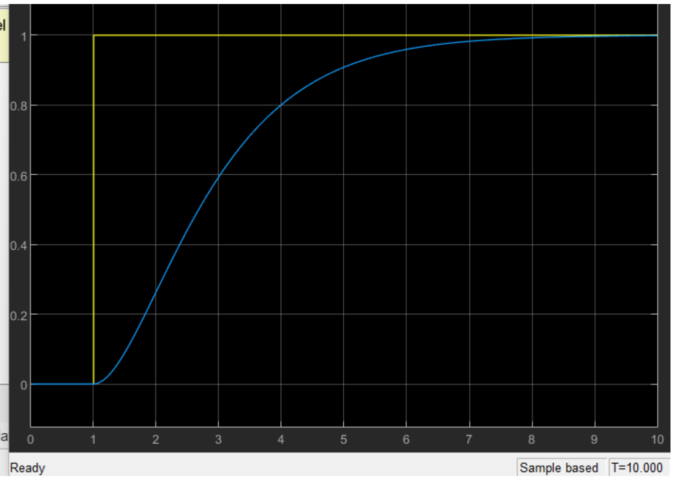
First_order_testing.3



->when I increased the time constant of the system the response has decreased as you see in the scope when time constant is equal to 2 and the rise time has increased also the settling has affected which indicates that time constant has an effect.

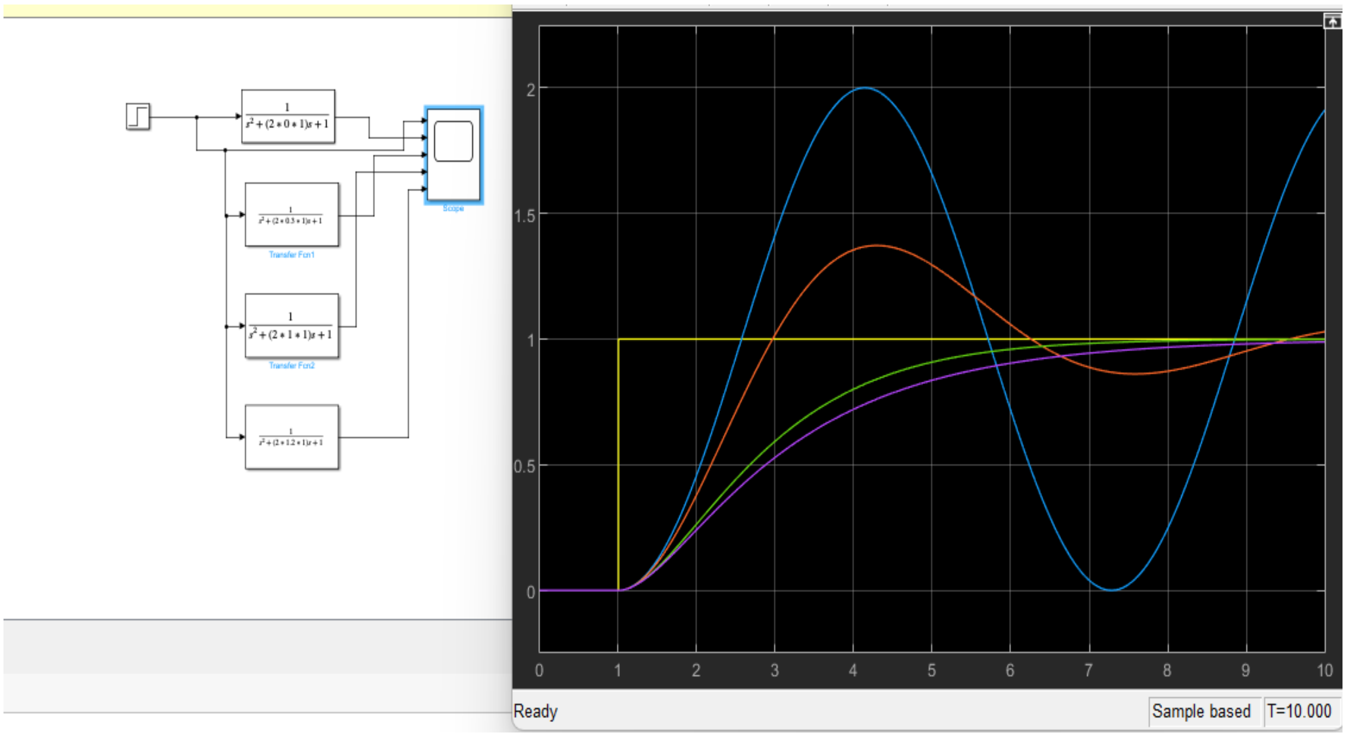
Second_order_testing.1





->the theta is 1 and wn is 1 the condition of zeta is critically damped as you see then it settled at 1

Second_order_testing.2



- ➔ The blue one is for zeta = 0 which system keeps on oscillating
- ➔ The red one is for zeta = 0.3 which system oscillates and has overshoot then settles at 1
- ➔ The green one is for zeta = 1 which is critically damped no overshoot
- ➔ The purple on is for zeta = 1.2 which is overdamped which decreased the response of the system makng it slower than the green one with zeta = 1