Control System Laboratory Report

Name and ID no. of the Student:

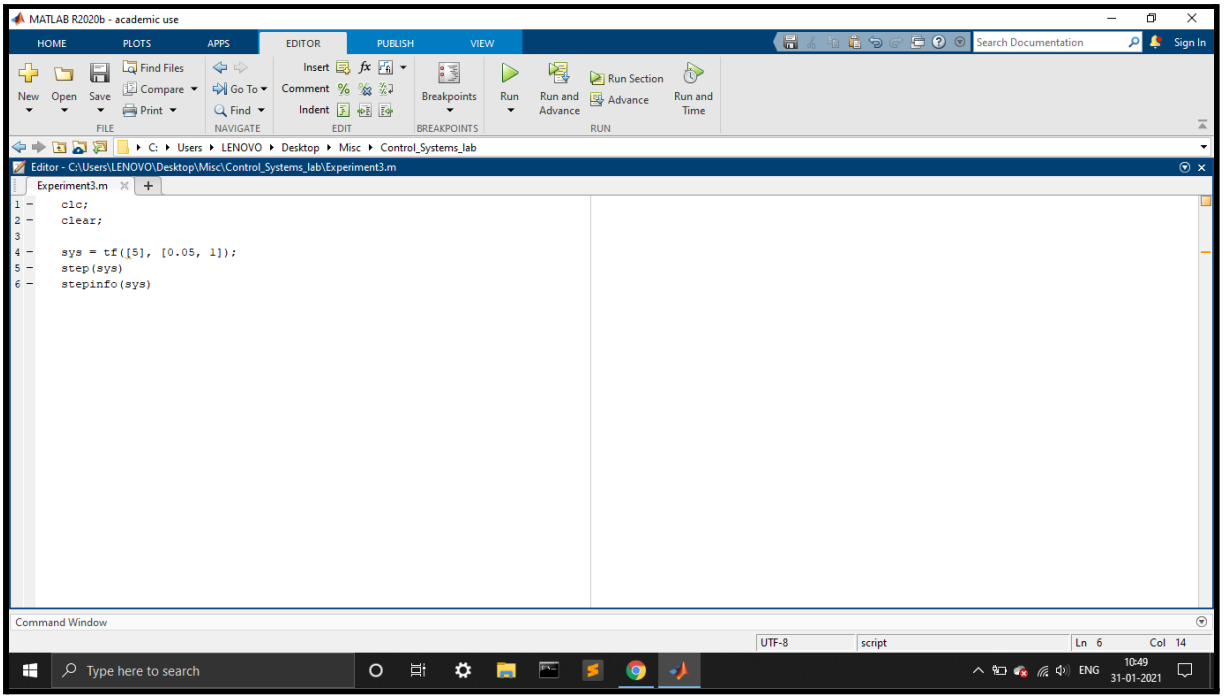
VISHWAS VASUKI GAUTAM, 2019A3PS0443H

Title of the Experiment:

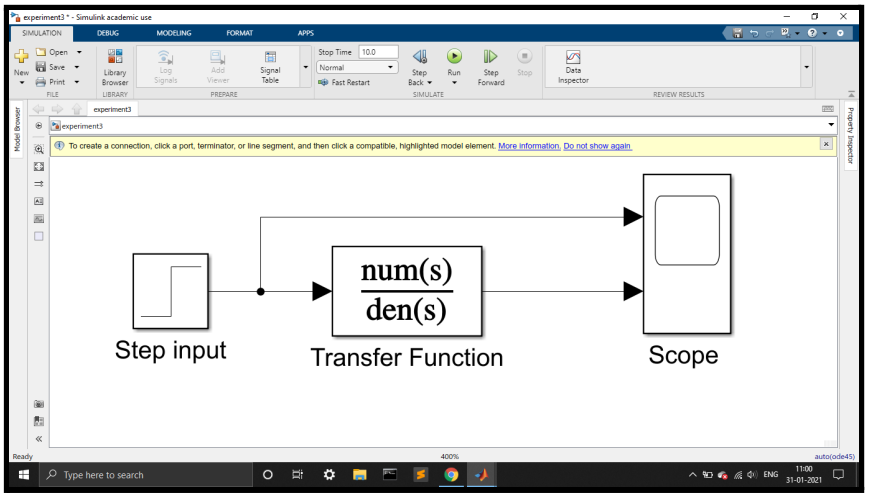
Bump Test Modeling

Model/Simulation:

The image below shows the MATLAB code for obtaining the step response of the first order system and getting the step response information from it.

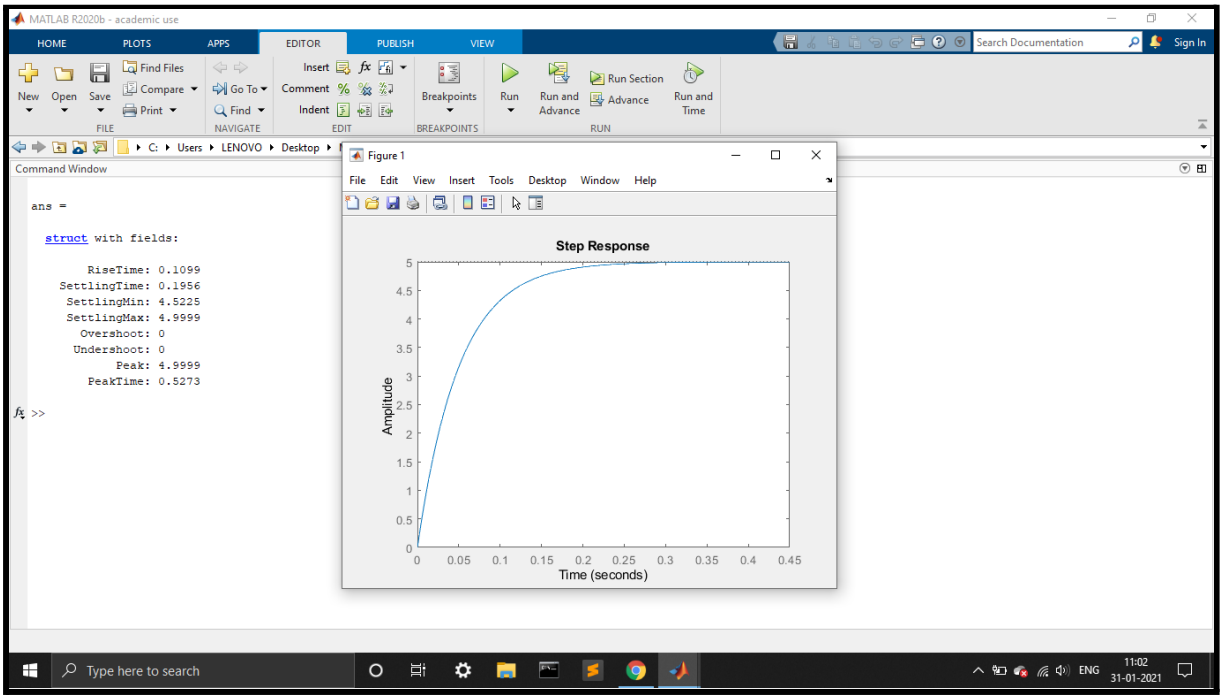


The image below shows the Simulink model for obtaining the step response of the first order system.

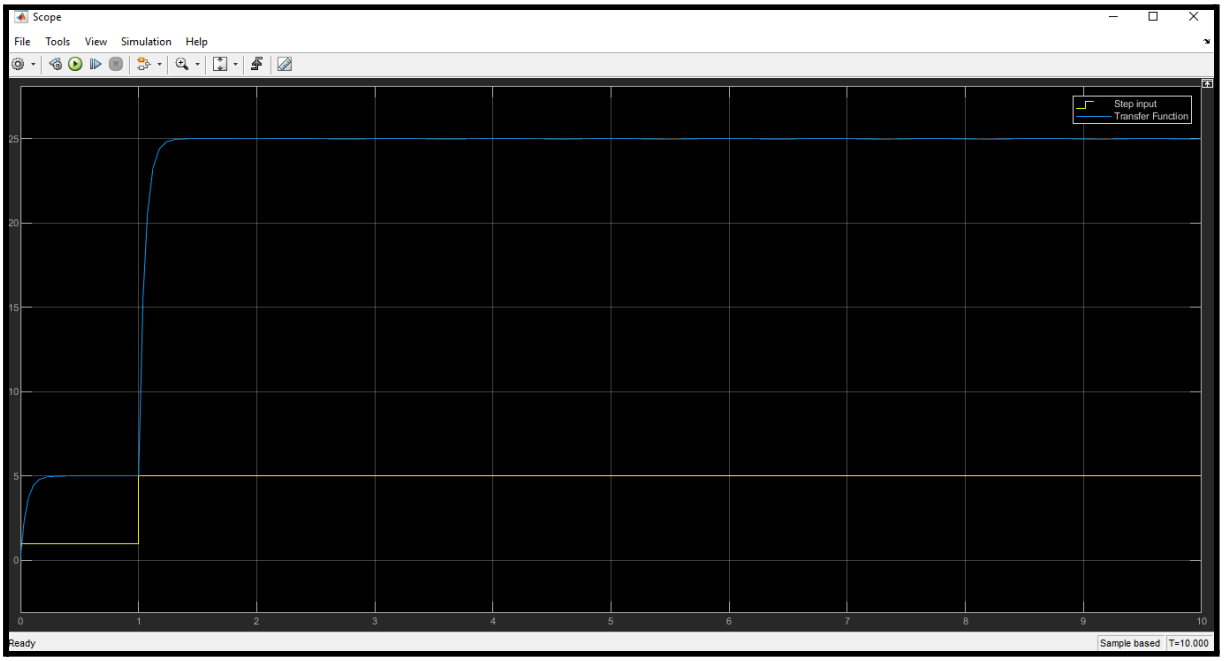


Results:

The below is the plot and the step response information obtained when the MATLAB code was run.



The below plot is the step response from the simulink model along with the step input.



Conclusive remarks:

In order to obtain the step response of the system, we initially need to obtain the model of the system in terms of its input and output (transfer function) in laplace domain. Using this transfer function we can get the output of any system by specifying the input. Once the input is specified we take the Inverse laplace transform of the equation to convert it back to time domain, this will result in response of the system for the given input.

Here, we obtain the step response of a first order system, this is called bump test modelling.

The step response of a transfer function is useful in understanding the stability of the system. The above implemented first order system is stable since the step response settles to a steady state value. This can also be seen in the stepinfo given in the result part.

To conclude, the 2 result graph show the response of the first order system for 2 different inputs, where the first result is obtained for the input u(t) and the second result is obtained for the input 5*u(t-1).