



Ministry of Higher Education And Scientific Research
AL-Mustaqbal University College
Department of Computer Engineering Techniques

Control Foundations

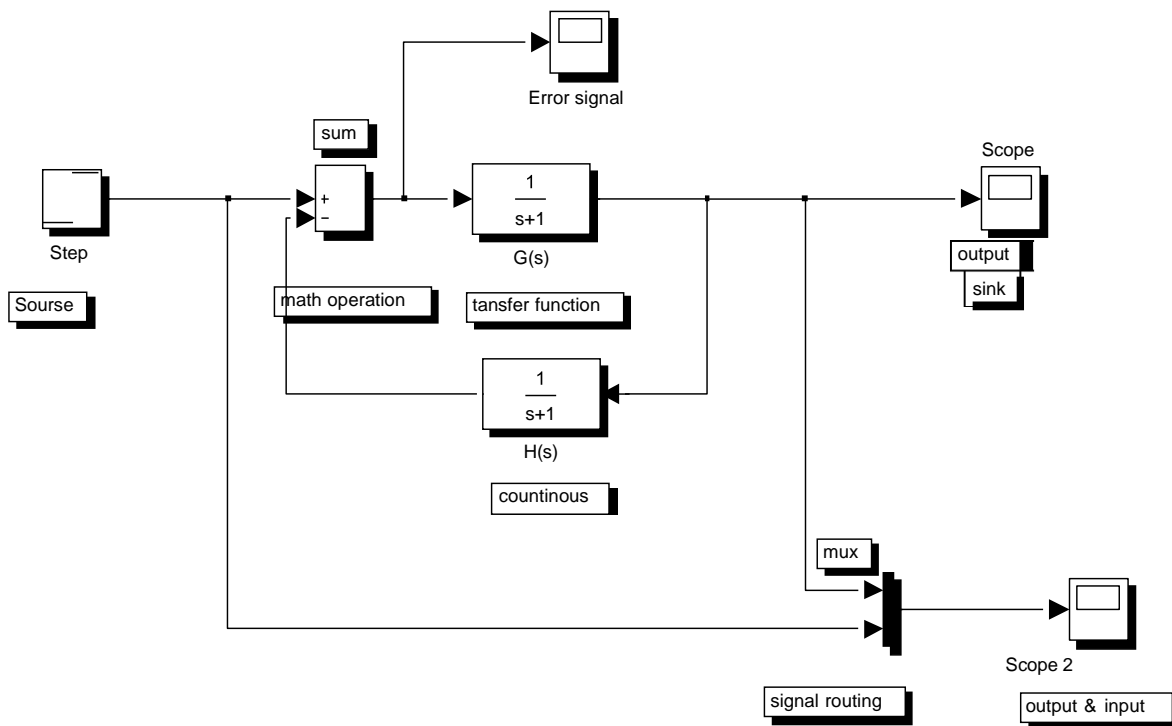
Eng:- Shaymaa Fakhir AL-Hamdany

EXPERIMENT NO.4: Transient Response and Steady State Error Analysis

Object:

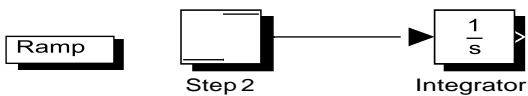
To learn how to use Matlab & Simulink to control system in order to find the steady state error & transient response .

Model connected:



For all cases the inputs are :

- 1- Step 2- Ramp 3- Parabola



Cases:

$$1 - G(s) = \frac{5}{s+2}; \quad H(s) = 1$$

$$2 - G(s) = \frac{10}{s^2 + 2s + 10}; \quad H(s) = 1$$

$$3 - G(s) = \frac{s+2}{s^2 + 12s + 20}; \quad H(s) = \frac{2}{s+2}$$

$$4 - G(s) = \frac{s(s+5)}{0.1s^2 + 2s + 13}; \quad H(s) = \frac{1}{s}$$

$$5 - G(s) = \frac{(0.1s+5)}{s(s^2 + 3s + 6)}; \quad H(s) = \frac{1}{s(s+3)}$$

$$6 - G(s) = \frac{20s}{s^2 + 13s}; \quad H(s) = \frac{1}{s(s+3)}$$

$$7 - G(s) = \frac{100}{s^2 + 13s + 16}; \quad H(s) = \frac{0.1}{(s+0.75)}$$