

Experiment No. 2

AIM

Study of time response of a second order system subjected to various inputs.

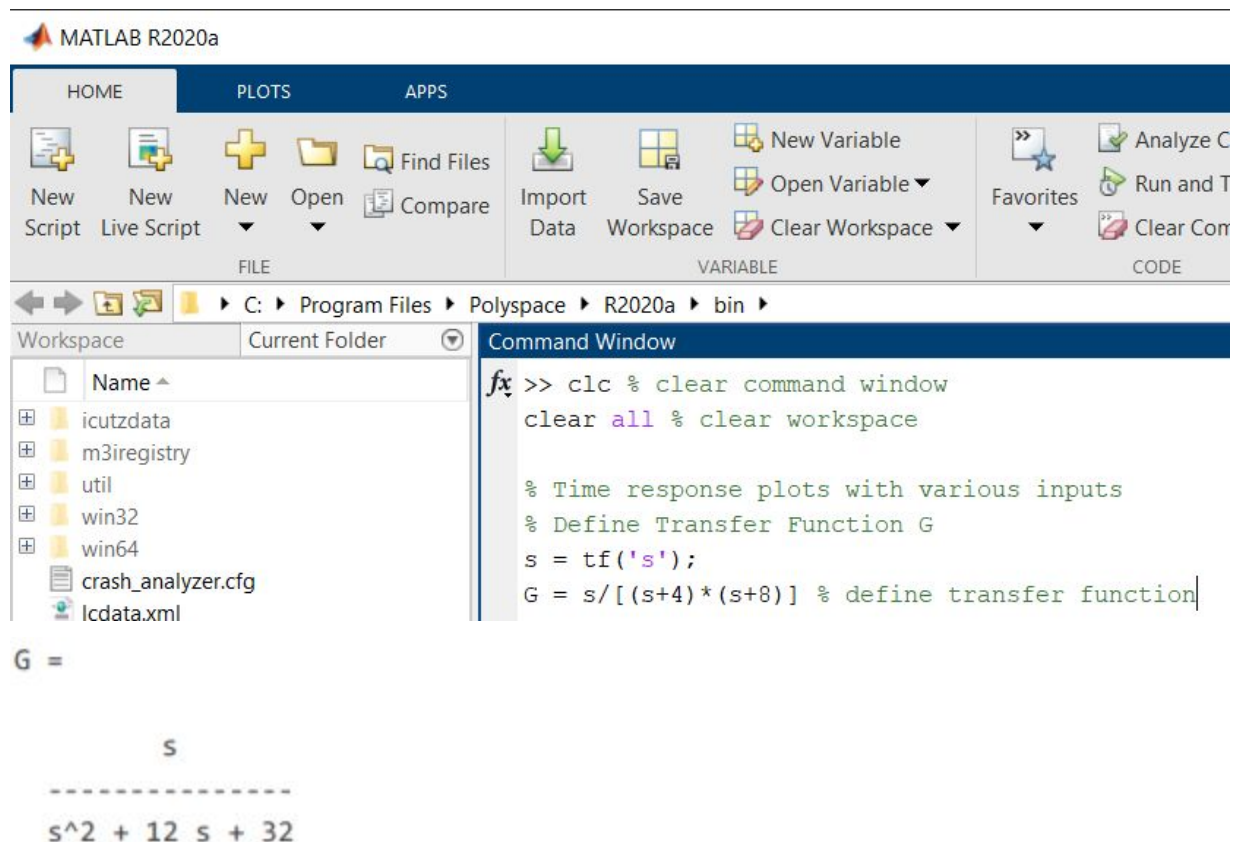
OBJECTIVE

To plot the Time Response of the given transfer function with different input signals:

$$G(s) = \frac{s}{(s+4)(s+8)}$$

- a). Impulse Input
- b). Step Input
- c). Ramp Input
- d). Parabolic Input

MATLAB Code and Output



```
MATLAB R2020a

HOME PLOTS APPS

New Script New Live Script New Open Find Files Import Data Save Workspace New Variable Open Variable Clear Workspace Favorites Analyze C Run and T Clear Com

FILE VARIABLE CODE

C:\Program Files\Polyspace\R2020a\bin

Workspace Current Folder

Name ^
+ icutzdata
+ m3iregistry
+ util
+ win32
+ win64
+ crash_analyzer.cfg
+ ldata.xml

Command Window

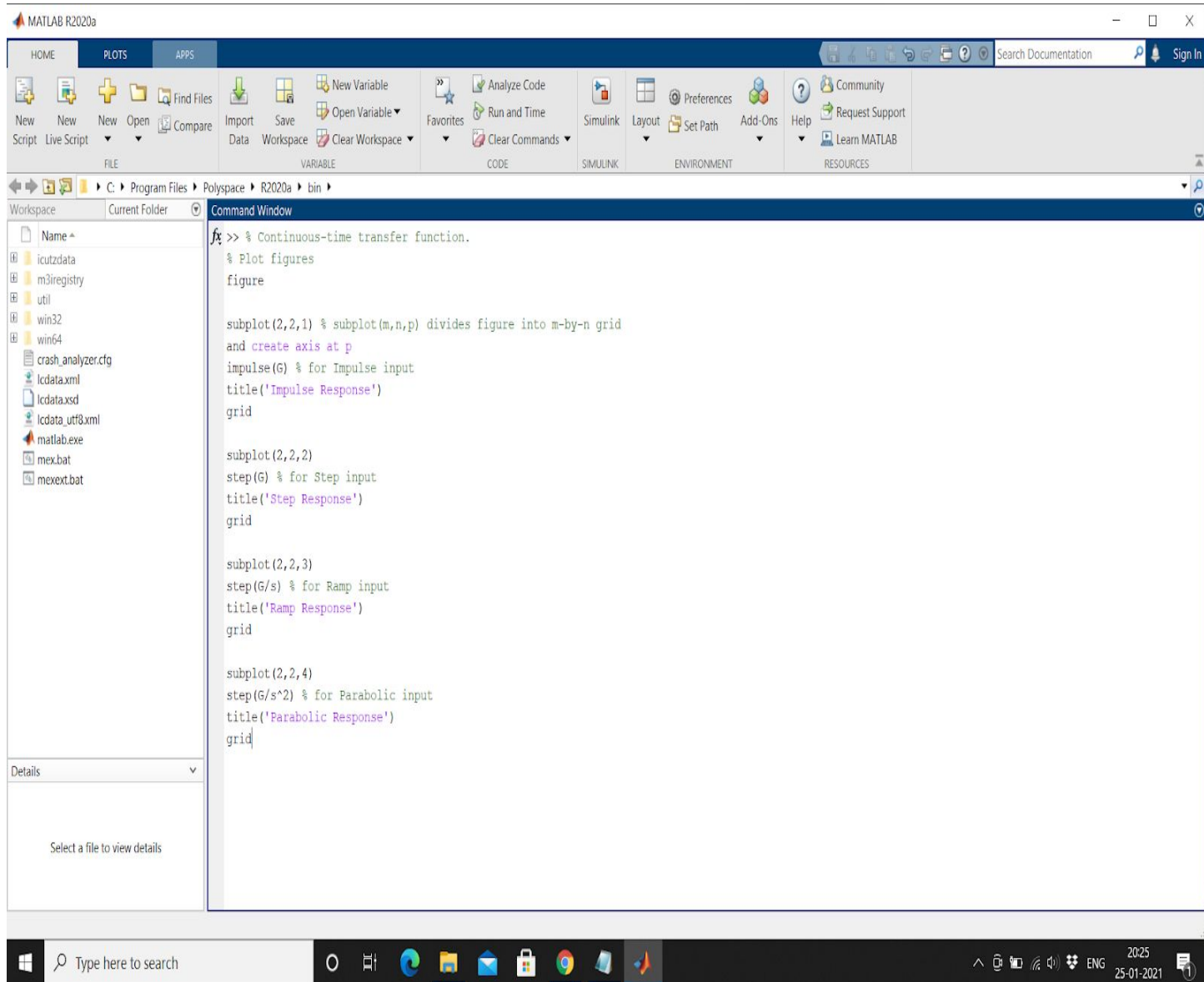
fx >> clc % clear command window
clear all % clear workspace

% Time response plots with various inputs
% Define Transfer Function G
s = tf('s');
G = s/[(s+4)*(s+8)] % define transfer function

G =

      s
-----
s^2 + 12 s + 32
```

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Command Window

```
fx >> % Continuous-time transfer function.
% Plot figures
figure

subplot(2,2,1) % subplot(m,n,p) divides figure into m-by-n grid
and create axis at p
impz(G) % for Impulse input
title('Impulse Response')
grid

subplot(2,2,2)
step(G) % for Step input
title('Step Response')
grid

subplot(2,2,3)
step(G/s) % for Ramp input
title('Ramp Response')
grid

subplot(2,2,4)
step(G/s^2) % for Parabolic input
title('Parabolic Response')
grid
```

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