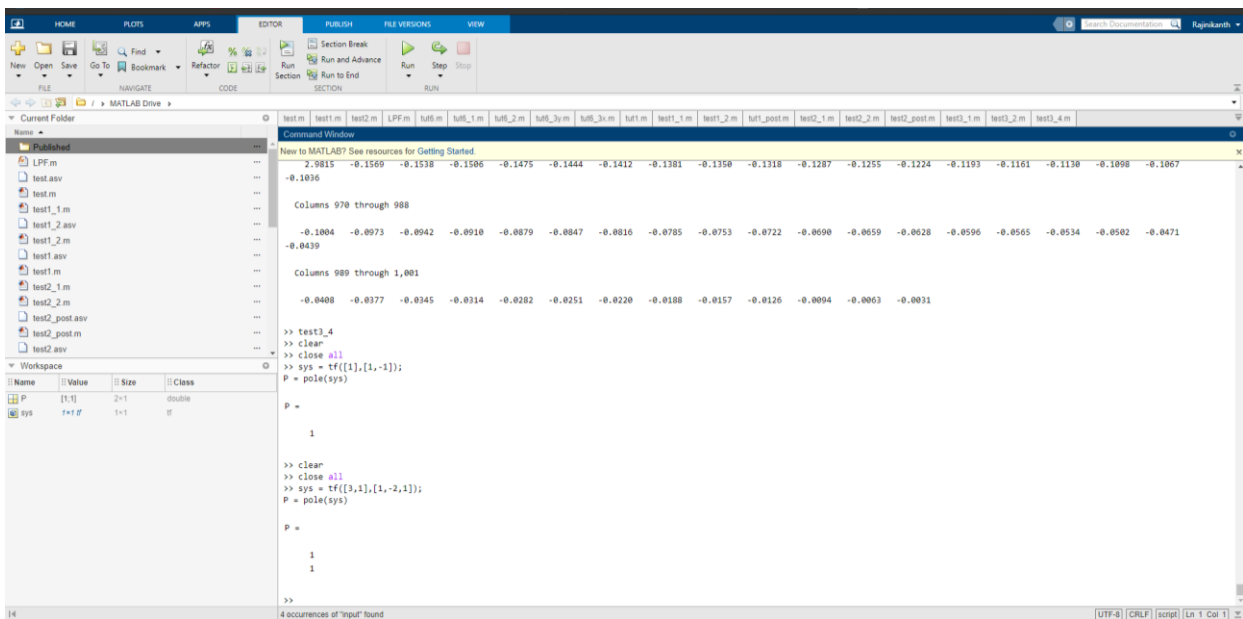


TUTORIAL-4

In-TUTORIAL:

1. Write a MATLAB program to find the poles of $X(z) = \frac{1}{1-z}$
- compute the poles
 - plot the pole-zero diagram

```
test3_4
clear
close all
sys = tf([1],[1,-1]);
P = pole(sys)
```



The screenshot shows the MATLAB R2020a interface. The script editor contains the following code:

```
test3_4
clear
close all
sys = tf([1],[1,-1]);
P = pole(sys)
```

The Command Window shows the execution results:

```
New to MATLAB? See resources for Getting Started.
2.9815 -0.1569 -0.1538 -0.1506 -0.1475 -0.1444 -0.1412 -0.1381 -0.1350 -0.1318 -0.1287 -0.1255 -0.1224 -0.1193 -0.1161 -0.1130 -0.1098 -0.1067
-0.1036

Columns 970 through 988
-0.1004 -0.0973 -0.0942 -0.0910 -0.0879 -0.0847 -0.0816 -0.0785 -0.0753 -0.0722 -0.0690 -0.0659 -0.0628 -0.0596 -0.0565 -0.0534 -0.0502 -0.0471
-0.0439

Columns 989 through 1,001
-0.0408 -0.0377 -0.0345 -0.0314 -0.0282 -0.0251 -0.0220 -0.0188 -0.0157 -0.0126 -0.0094 -0.0063 -0.0031

>> test3_4
>> clear
>> close all
>> sys = tf([1],[1,-1]);
P = pole(sys)

P =

     1

>> clear
>> close all
>> sys = tf([1],[1,-1]);
P = pole(sys)

P =

     1
     1

>>
```

The Workspace window shows the following variables:

Name	Value	Size	Class
P	[1,1]	2x1	double
sys	1x1 tf	1x1	tf

The Command Window also shows the following message:

```
4 occurrences of "input" found
```

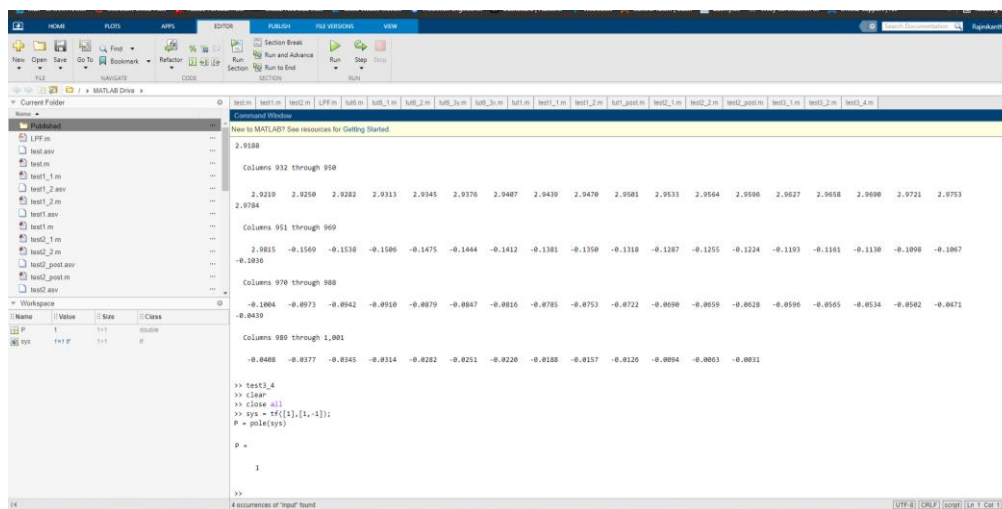
2. Write a MATLAB program to find the poles of $X(z) = \frac{1+3z}{1-2z+z^2}$
- compute the poles
 - plot the pole-zero diagram

clear

close all

sys = tf([3,1],[1,-2,1]);

P = pole(sys)



Post-TUTORIAL:

1. Write a MATLAB program for plotting the pole-zero diagram of the transfer function:

$$X(z) = \frac{1}{1-2z+z^2}$$

- Compute the poles
- Plot the pole-zero diagram
- Comment on the stability of the system

```
sys = tf([3,1],[1,-2,1]);
```

```
P = pole(sys)
```

```
plot(p)
```

