

NAME: Jaafar Wael Jaafar

ID: 120180534

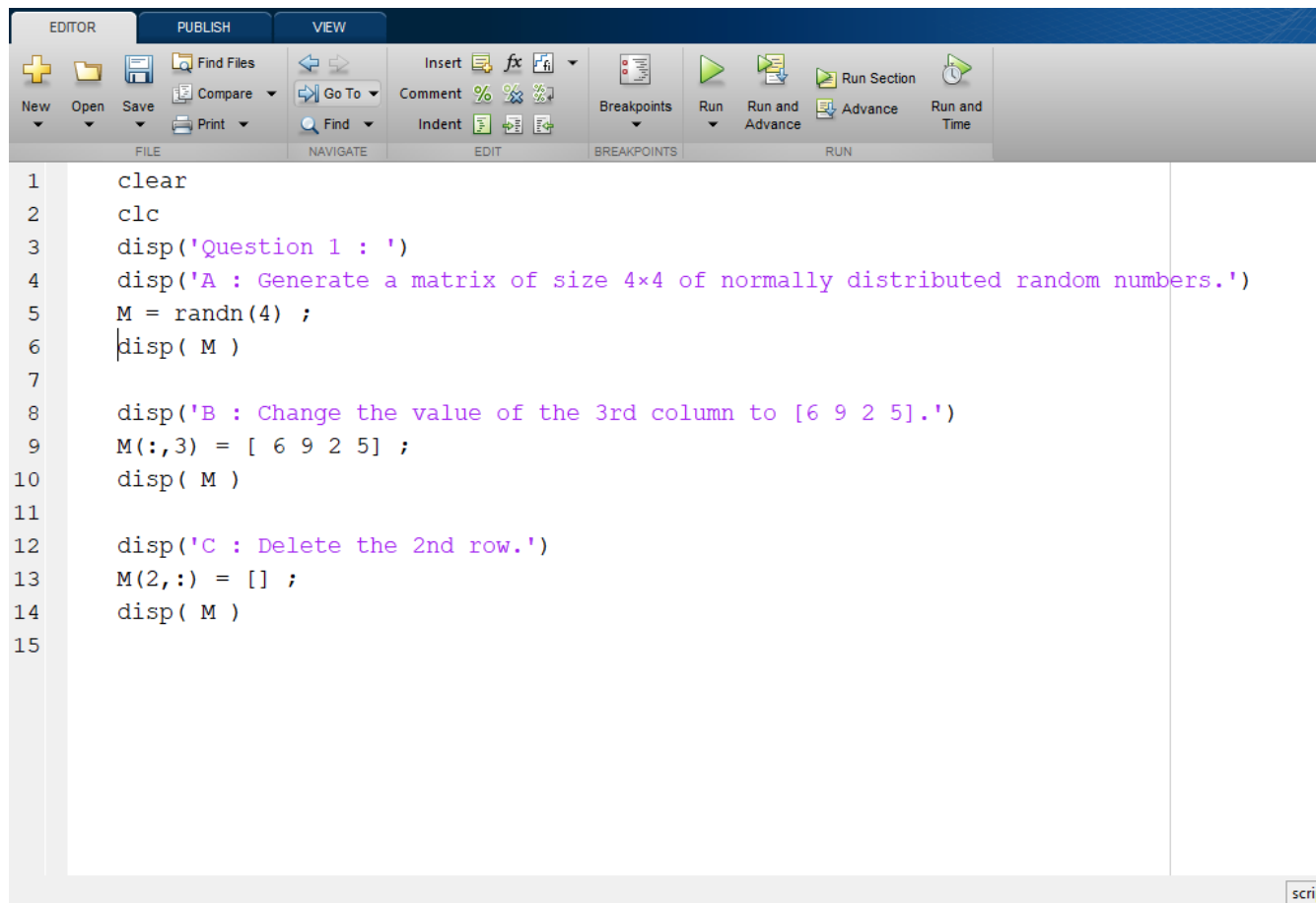
Control System

HOMEWORK

LAB(1)

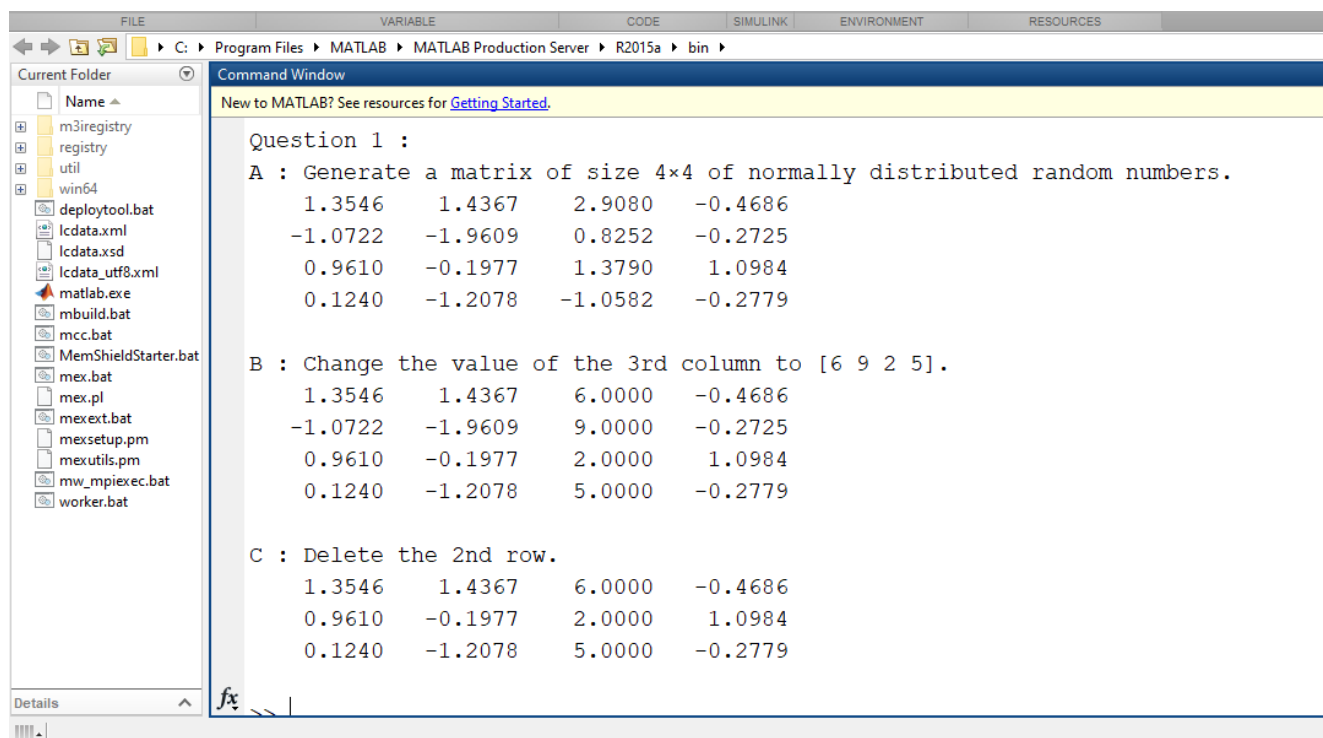
Question 1:

- Generate a matrix of size 4×4 of normally distributed random numbers.
- Change the value of the 3rd column to [6 9 2 5].
- Delete the 2nd row.



The image shows a screenshot of the MATLAB IDE. The top toolbar includes tabs for EDITOR, PUBLISH, and VIEW. Below these are various icons for file operations (New, Open, Save, Find Files, Compare, Print), navigation (Go To, Find), editing (Insert, Comment, Indent), breakpoints, and running (Run, Run and Advance, Run Section, Run and Time). The main editor window displays the following MATLAB code:

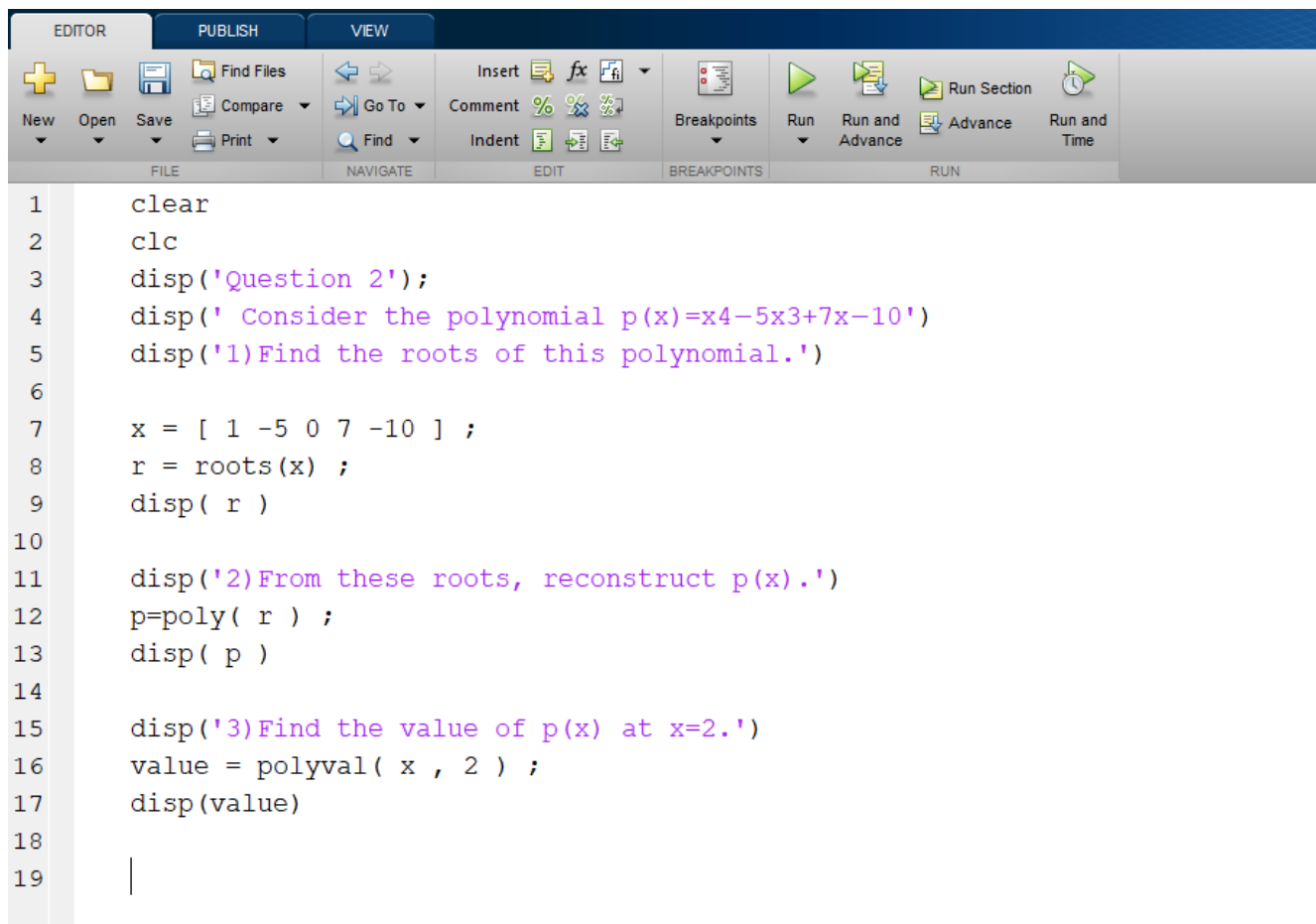
```
1 clear
2 clc
3 disp('Question 1 : ')
4 disp('A : Generate a matrix of size 4x4 of normally distributed random numbers.')
5 M = randn(4) ;
6 disp( M )
7
8 disp('B : Change the value of the 3rd column to [6 9 2 5].')
9 M(:,3) = [ 6 9 2 5] ;
10 disp( M )
11
12 disp('C : Delete the 2nd row.')
13 M(2,:) = [] ;
14 disp( M )
15
```



Question 2:

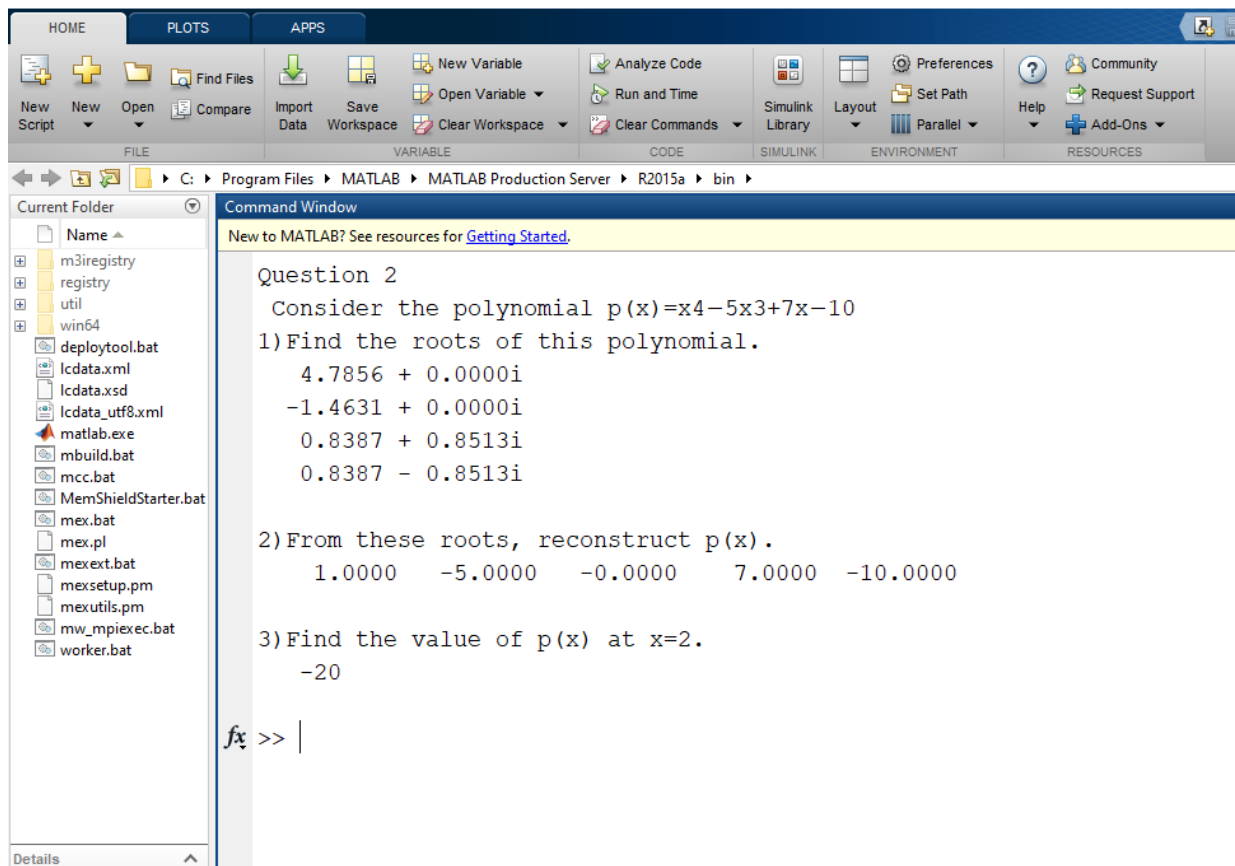
Consider the polynomial $p(x) = x^4 - 5x^3 + 7x - 10$

1. Find the roots of this polynomial.
2. From these roots, reconstruct $p(x)$.
3. Find the value of $p(x)$ at $x=2$.



The image shows the MATLAB Editor window with a script containing the following code:

```
1 clear
2 clc
3 disp('Question 2');
4 disp(' Consider the polynomial p(x)=x4-5x3+7x-10')
5 disp('1)Find the roots of this polynomial.')
6
7 x = [ 1 -5 0 7 -10 ] ;
8 r = roots(x) ;
9 disp( r )
10
11 disp('2)From these roots, reconstruct p(x).')
12 p=poly( r ) ;
13 disp( p )
14
15 disp('3)Find the value of p(x) at x=2.')
16 value = polyval( x , 2 ) ;
17 disp(value)
18
19
```



The image shows the MATLAB Command Window with the following output:

```
Question 2
Consider the polynomial p(x)=x4-5x3+7x-10
1)Find the roots of this polynomial.
    4.7856 + 0.0000i
   -1.4631 + 0.0000i
    0.8387 + 0.8513i
    0.8387 - 0.8513i

2)From these roots, reconstruct p(x).
    1.0000   -5.0000   -0.0000    7.0000  -10.0000

3)Find the value of p(x) at x=2.
   -20

fx >>
```

