

MAT 281E Fall 2015-2016 HOMEWORK 1

CRN:15813

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Solutions on matlab:

Q1:

MATLAB R2014a

HOME PLOTS APPS VARIABLE VIEW

Search Documentation

C:\Users\Yunus\Documents\MATLAB

Command Window

New to MATLAB? Watch this [Video](#), see [Examples](#), or read [Getting Started](#).

```
>> A=[1 2 3 4 5;2 3 4 5 1;3 4 5 1 2;]  
  
A =  
  
    1    2    3    4    5  
    2    3    4    5    1  
    3    4    5    1    2  
  
>> B=[3 4 5 1 2;1 2 3 4 5;2 3 4 5 1]  
  
B =  
  
    3    4    5    1    2  
    1    2    3    4    5  
    2    3    4    5    1  
  
>> C=A*transpose(B)  
  
C =  
  
    40    55    45  
    45    45    55  
    55    40    45
```

Details

Select a file

Variables

A 3x5 double

	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5					
2	2	3	4	5	1					
3	3	4	5	1	2					
4										
5										
6										
7										
8										

B 3x5 double

	1	2	3	4	5	6	7	8	9	10
1		4	5	1	2					
2	1	2	3	4	5					
3	2	3	4	5	1					
4										
5										
6										
7										

C 3x3 double

	1	2	3	4	5	6	7	8	9	10
1	40	55	45							
2	45	45	55							
3	55	40	45							
4										
5										
6										

Workspace

Name

A 3x5 double

B 3x5 double

C 3x3 double

matlab_hw-1.pdf - Okuyucu

TUR 10:43 3.10.2015

Q2:

a.

The image shows the MATLAB R2014a interface with the following components:

- Current Folder:** Contains the file `calcTrace.m`.
- Command Window:**
 - Initial message: "New to MATLAB? Watch this [Video](#), see [Examples](#), or read [Getting Started](#)."
 - Code entered:

```
>> A=[1 2 3 4;2 3 4 5;3 4 5 1;1 2 3 4]
```
 - Output:

```
A =  
  
     1     2     3     4  
     2     3     4     5  
     3     4     5     1  
     1     2     3     4
```
 - Code entered:

```
>> calcTrace(A) %My own function on the right side
```
 - Output:

```
ans =  
  
    13
```
 - Code entered:

```
>> trace(A) %MATLAB'S default function
```
 - Output:

```
ans =  
  
    13
```
 - Cursor is at the prompt `fx >>`.
- Workspace:** Shows the variable `ans` with a value of 13.
- Editor - `calcTrace.m`:**

```
1 function output = calcTrace (input)  
2 [k,l] = size(input);  
3 if ismatrix(input) & k==4 & l==4  
4     %check if is the input 4x4 matrix  
5     output=0;  
6     for n=1:4  
7         output=output+input (n,n) ;  
8     end  
9     %suming diagonal entries  
10 else  
11     error('Plese enter a 4x4 matrix')  
12 end  
13  
14
```

The Windows taskbar at the bottom shows the time as 10:24 on 3.10.2015, with the language set to TUR.

b and c:

MATLAB R2014a

HOME PLOTS APPS VARIABLE VIEW

FILE VARIABLE CODE SIMULINK ENVIRONMENT RESOURCES

Current Folder: C:\Users\Yunus\Documents\MATLAB

Command Window

```
>> A

A =

     1     2     3     4
     2     3     4     5
     3     4     5     1
     1     2     3     4

>> sum(A(2,1:4))

ans =

    14

>> sum(A(3,1:4))

ans =

    13
```

fx >>

Variables - A

A 4x4 double

	1	2	3	4	5	6	7	8
1	1	2	3	4				
2	2	3	4	5				
3	3	4	5	1				
4	1	2	3	4				
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

Workspace

Name	Value
A	4x4 double
ans	13

Windows Taskbar: 02:00 3.10.2015

d:

MATLAB R2014a

HOME PLOTS APPS VARIABLE VIEW

New Script New Open Find Files Import Data Save Workspace New Variable Open Variable Clear Workspace Analyze Code Run and Time Clear Commands Simulink Library Layout Set Path Help Community Request Support Add-Ons

FILE VARIABLE CODE SIMULINK ENVIRONMENT RESOURCES

C:\Users\Yunus\Documents\MATLAB

Command Window

New to MATLAB? Watch this [Video](#), see [Examples](#), or read [Getting Started](#).

```
>> B

B =

     3     4     5     1     2
     1     2     3     4     5
     2     3     4     5     1

>> C=[A B]

C =

Columns 1 through 7

     1     2     3     4     5     3     4
     2     3     4     5     1     1     2
     3     4     5     1     2     2     3

Columns 8 through 10

     5     1     2
     3     4     5
     4     5     1

fx >>
```

Variables

C 3x10 double

	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	3	4	5	1	2
2	2	3	4	5	1	1	2	3	4	5
3	3	4	5	1	2	2	3	4	5	1
4										
5										

B 3x5 double

	1	2	3	4	5
1	3	4	5	1	2
2	1	2	3	4	5
3	2	3	4	5	1
4					
5					

A 3x5 double

	1	2	3	4	5
1	1	2	3	4	5
2	2	3	4	5	1
3	3	4	5	1	2
4					
5					
6					

Wor... Name

A ans B C

02:06 3.10.2015

Q3:

MATLAB R2014a

HOME PLOTS APPS VARIABLE VIEW

Search Documentation

C:\Users\Yunus\Documents\MATLAB

Current Folder

calcTrace.m

Command Window

New to MATLAB? Watch this [Video](#), see [Examples](#), or read [Getting Started](#).

```
>> I1=eye(4)
```

I1 =

1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1

```
>> I2=eye(4)
```

I2 =

1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1

```
>> X1=zeros(4)
```

X1 =

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

```
>> X2=zeros(4)
```

X2 =

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

Variables

8x8 double

	1	2	3	4	5	6	7	8	9
1	1	0	0	0	0	0	0	0	0
2	0	1	0	0	0	0	0	0	0
3	0	0	1	0	0	0	0	0	0
4	0	0	0	1	0	0	0	0	0
5	0	0	0	0	1	0	0	0	0
6	0	0	0	0	0	1	0	0	0
7	0	0	0	0	0	0	1	0	0
8	0	0	0	0	0	0	0	1	0
9	0	0	0	0	0	0	0	0	1

I2 4x4 double

	1	2	3	4
1	1	0	0	0
2	0	1	0	0
3	0	0	1	0
4	0	0	0	1

I1 4x4 double

	1	2	3	4
1	1	0	0	0
2	0	1	0	0
3	0	0	1	0
4	0	0	0	1

X1 4x4 double

	1	2	3	4
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0

X2 4x4 double

	1	2	3	4
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0

Workspace

Editor - calcTrace

Name	Value
I	8x8 double
I1	4x4 double
I2	4x4 double
X1	4x4 double
X2	4x4 double

Details

Select a file to view

Windows Taskbar: 10:19 3.10.2015

HOME PLOTS APPS VARIABLE VIEW

Search Documentation

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Current Folder: calcTrace.m

Command Window

New to MATLAB? Watch this [Video](#), see [Examples](#), or read [Getting Started](#).

X2 =

0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

>> I=[I1 X1;X2 I2]

I =

Columns 1 through 6

1	0	0	0	0	0
0	1	0	0	0	0
0	0	1	0	0	0
0	0	0	1	0	0
0	0	0	0	1	0
0	0	0	0	0	1
0	0	0	0	0	0
0	0	0	0	0	0

Columns 7 through 8

0	0
0	0
0	0
0	0
0	0
0	0
0	0
1	0

Variables

I 8x8 double

	1	2	3	4	5	6	7	8	9
1	1	0	0	0	0	0	0	0	
2	0	1	0	0	0	0	0	0	
3	0	0	1	0	0	0	0	0	
4	0	0	0	1	0	0	0	0	
5	0	0	0	0	1	0	0	0	
6	0	0	0	0	0	1	0	0	
7	0	0	0	0	0	0	1	0	
8	0	0	0	0	0	0	0	1	

I2 4x4 double

	1	2	3	4
1	1	0	0	0
2	0	1	0	0
3	0	0	1	0
4	0	0	0	1

I1 4x4 double

	1	2	3	4
1	1	0	0	0
2	0	1	0	0
3	0	0	1	0
4	0	0	0	1

X1 4x4 double

	1	2	3	4
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0

X2 4x4 double

	1	2	3	4
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0

Workspace

Name	Value
I	8x8 double
I1	4x4 double
I2	4x4 double
X1	4x4 double
X2	4x4 double

Editor - calcTrace

C:\Users\Yunus\Documents\MATLAB

Command Window

New to MATLAB? Watch this [Video](#), see [Examples](#), or read [Getting Started](#).

>> I=eye(8)

I =

1	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0
0	0	1	0	0	0	0	0
0	0	0	1	0	0	0	0
0	0	0	0	1	0	0	0
0	0	0	0	0	1	0	0
0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	1

>> K=mat2cell(I,[4,4],[4,4])

K =

[4x4 double]	[4x4 double]
[4x4 double]	[4x4 double]

>> I1=K{1,1}

I1 =

1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1

>> I2=K{2,2}

Select a fi

< >

File Explorer

HOME PLOTS APPS VARIABLE VIEW

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Command Window

New to MATLAB? Watch this [Video](#), see [Examples](#), or read [Getting Started](#).

```
0 0 1 0
0 0 0 1

>> I2=K{2,2}

I2 =

    1     0     0     0
    0     1     0     0
    0     0     1     0
    0     0     0     1

>> X1=K{1,2}

X1 =

    0     0     0     0
    0     0     0     0
    0     0     0     0
    0     0     0     0

>> X2=K{2,1}

X2 =

    0     0     0     0
    0     0     0     0
    0     0     0     0
    0     0     0     0

fx >>
```

Variables

I 8x8 double

	1	2	3	4	5	6	7	8
1	1	0	0	0	0	0	0	0
2	0	1	0	0	0	0	0	0
3	0	0	1	0	0	0	0	0
4	0	0	0	1	0	0	0	0
5	0	0	0	0	1	0	0	0
6	0	0	0	0	0	1	0	0
7	0	0	0	0	0	0	1	0
8	0	0	0	0	0	0	0	1

K 2x2 cell

	1	2
1	4x4 double	4x4 double
2	4x4 double	4x4 double
3		
4		
5		
6		
7		
8		

I1 4x4 double

	1	2	3	4	5	6
1	1	0	0	0		
2	0	1	0	0		
3	0	0	1	0		
4	0	0	0	1		

I2 4x4 double

	1	2	3	4	5
1	1	0	0	0	
2	0	1	0	0	
3	0	0	1	0	
4	0	0	0	1	

X1 4x4 double

	1	2	3	4	5	6
1	0	0	0	0		
2	0	0	0	0		
3	0	0	0	0		
4	0	0	0	0		

X2 4x4 double

	1	2	3	4	5
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	

Workspace

Value

8x8 double
4x4 double
4x4 double
2x2 cell
4x4 double
4x4 double

Q4:

MATLAB R2014a

HOME PLOTS APPS VARIABLE VIEW

Search Documentation

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Current Folder

calcTrace.m

Command Window

New to MATLAB? Watch this [Video](#), see [Examples](#), or read [Getting Started](#).

```
>> A=[4 -81 21 -7 23;0 -21 13 10 -1;34 16 -10 32 20;10 14 0 -25 18;8 -7 15 11 4]
```

A =

4	-81	21	-7	23
0	-21	13	10	-1
34	16	-10	32	20
10	14	0	-25	18
8	-7	15	11	4

```
>> B=A^-1
```

B =

-0.7222	5.1034	0.4315	1.4212	-3.1242
0.1379	-1.0580	-0.0892	-0.2836	0.6644
0.0566	-0.4481	-0.0533	-0.1136	0.3403
0.2850	-2.0212	-0.1567	-0.5797	1.2482
0.6898	-4.8196	-0.3881	-1.3186	2.9525

```
>> A*B
```

ans =

1.0000	-0.0000	-0.0000	-0.0000	0.0000
0.0000	1.0000	0.0000	0.0000	0.0000
-0.0000	0.0000	1.0000	0.0000	0.0000
0.0000	-0.0000	-0.0000	1.0000	0.0000
-0.0000	0.0000	0.0000	-0.0000	1.0000

Variables

A 5x5 double

	1	2	3	4	5	6
1	4	-81	21	-7	23	
2	0	-21	13	10	-1	
3	34	16	-10	32	20	
4	10	14	0	-25	18	
5	8	-7	15	11	4	
6						
7						
8						

B 5x5 double

	1	2	3	4	5	6
1		5.1034	0.4315	1.4212	-3.1242	
2	0.1379	-1.0580	-0.0892	-0.2836	0.6644	
3	0.0566	-0.4481	-0.0533	-0.1136	0.3403	
4	0.2850	-2.0212	-0.1567	-0.5797	1.2482	
5	0.6898	-4.8196	-0.3881	-1.3186	2.9525	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

Workspace

Name

A

ans

B

matlab_hw-1.pdf - Okuyucu

10:39 3.10.2015

Q5:

MATLAB R2014a

HOME PLOTS APPS VARIABLE VIEW

Search Documentation

C:\Users\Yunus\Documents\MATLAB

Command Window

New to MATLAB? Watch this [Video](#), see [Examples](#), or read [Getting Started](#).

```
>> V=[41;-20;714;110]

V =

    41
   -20
   714
   110

>> norm(V)

ans =

    723.8626

fx >>
```

Variables - V

4x1 double

	1	2	3	4	5	6
1	41					
2	-20					
3	714					
4	110					
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

Workspace

Editor - calcTrace.m

Name	Value	Min
ans	723.8626	723.8
V	[41;-20;714;110]	-20

Details

Select a file to

Windows taskbar: 16:16 5.10.2015

Q6:

MATLAB R2014a

HOME PLOTS APPS VARIABLE VIEW

Search Documentation

C:\Users\Yunus\Documents\MATLAB

Command Window

New to MATLAB? Watch this [Video](#), see [Examples](#), or read [Getting Started](#).

```
>> C

C =

    40    55    45
    45    45    55
    55    40    45

>> det(C)

ans =

    1.7625e+04

>> format long g
>> det(C)

ans =

    17625

>> format short g
>> det(C)

ans =

    17625

fx >>
```

Variables

A 3x5 double

	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5					
2	2	3	4	5	1					
3	3	4	5	1	2					
4										
5										
6										
7										
8										

B 3x5 double

	1	2	3	4	5	6	7	8	9	10
1	0	4	5	1	2					
2	1	2	3	4	5					
3	2	3	4	5	1					
4										
5										
6										
7										

C 3x3 double

	1	2	3	4	5	6	7	8	9	10
1	40	55	45							
2	45	45	55							
3	55	40	45							
4										
5										
6										

Workspace

Name

- a
- A
- ans
- B
- C

10:46 3.10.2015