LAB #02

MATRICES



Spring 2023

**CSE-301L Signals & Systems Lab**

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Section: C

“On my honor, as a student of the University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work”

Submitted to:

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(15 Mar 2023)

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**Task 1**

**Code:**

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**Output:**

>> T1

B =

3 3 3

1 3 4

2 6 -1

>>

**Task 2**

**Code:**

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**Output:**

>> T2

x3 =

Columns 1 through 12

0.4396 1.8930 1.6761 0.8197 1.1445 0.6940 0.9415 0.4311 0.2158 1.1082 1.0310 0.8345

Columns 13 through 24

1.5091 1.0803 0.6227 0.9830 1.1447 0.6280 0.7434 0.4147 1.3704 0.8927 1.0827 1.2959

Columns 25 through 36

And so on…

**Task 3**

**Code:**

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**Output:**

>> T3

A =

Columns 1 through 20

-120 -116 -112 -108 -104 -100 -96 -92 -88 -84 -80 -76 -72 -68 -64 -60 -56 -52 -48 -44

Columns 21 through 40

-40 -36 -32 -28 -24 -20 -16 -12 -8 -4 0 4 8 12 16 20 24 28 32 36

Columns 41 through 60

40 44 48 52 56 60 64 68 72 76 80 84 88 92 96 100 104 108 112 116

Column 61

120

**Task 4**

**Code:**

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**Output:**

>> T4

C =

22 101 69 0

77 -13 102 21

103 70 45 14

61 34 26 75

D =

-46 -33 53 -18

53 169 78 3

-75 86 45 10

59 16 -20 -59

E =

5420 -4467 105 -283

11168 -3355 1732 2271

5429 -6412 1324 1722

2615 1793 964 1307

F =

5.6218 3.8795 -2.7906 -1.3273

7.8879 5.0640 -2.9492 -1.4727

4.0608 2.2202 -1.6864 -0.6143

0.3029 -0.0945 0.5704 0.0744

G =

1.0e+102 \*

0.0000 4.0653 0.0000 -0.0000

0.0000 0.0000 0.0000 0.0000

1.0125 0.0000 0.0000 0.0000

0.0000 0.0000 0.0000 0.0000

H =

0.5366 0.5291 -0.9661 -0.4121

0.8268 0.5140 0.8940 -0.5366

0.9906 0.5140 0.8509 -0.5366

-0.3048 -0.1324 0.1411 0.9894

I =

5.8310 + 0.0000i 8.1854 + 0.0000i 2.8284 + 0.0000i 3.0000 + 0.0000i

3.4641 + 0.0000i 0.0000 + 9.5394i 3.4641 + 0.0000i 3.0000 + 0.0000i

9.4340 + 0.0000i 0.0000 + 2.8284i 0.0000 + 0.0000i 1.4142 + 0.0000i

1.0000 + 0.0000i 3.0000 + 0.0000i 4.7958 + 0.0000i 8.1854 + 0.0000i

J =

-4.5649 + 0.0000i 3.1557 + 2.3145i 1.3740 + 0.0000i -1.5427 + 0.0000i

14.4990 + 0.0000i 5.1582 + 7.4316i 1.5458 + 0.0000i 0.8947 + 0.0000i

15.0475 + 0.0000i 6.4988 + 7.3098i 2.0090 + 0.0000i 1.3251 + 0.0000i

0.0849 + 0.0000i 0.4731 - 0.8634i 3.4242 + 0.0000i 6.9863 + 0.0000i

**Task 5**

**Code:**

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**Output:**

>> T5

B =

7 -4 12

9 10 2

11 8 11

5 4 1

C =

-5 9 10 2

6 11 8 11

15 5 4 1

D =

7 -4 12

9 10 2

**Task 6**

**Code:**

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**Output:**

>> T6

ans =

-1 0 1

ans =

0 0 0

ans =

0 1 1

ans =

-1 0 0

**Task 7**

**Code:**

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**Output:**

>> T7

col\_sum =

1 13

col\_prod =

-12 40

A\_length =

2

A\_size =

2 2

**Task 8**

**Code:**

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**Output:**

>> T8

A =

3 23 34 12 34 5 1

12 34 34 32 23 23 2

67 23 2 4 4 5 3

4 5 1 1 2 34 4

10 20 30 40 50 60 5

>>

**Task 9**

**Code:**

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**Output:**

>> T9

ans =

0.0838

ans =

-0.2285

-1.9479

-0.4555

0.4985

0.8347

-0.9657

-1.3079

1.3583

0.0838

ans =

-1.3079

1.3583

0.0838

Y =

Columns 1 through 12

20.0000 20.8081 21.6162 22.4242 23.2323 24.0404 24.8485 25.6566 26.4646 27.2727 28.0808 28.8889

Columns 13 through 24

29.6970 30.5051 31.3131 32.1212 32.9293 33.7374 34.5455 35.3535 36.1616 36.9697 37.7778 38.5859

So on…

**Task 10**

**Code:**

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**Output:**

>> T10

x =

-0.1111

0.2222

0.2222

**Task 11**

**Code:**

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**Output:**

>> T11

Enter the matrix A: randn(3)

Enter the vector b: randn(3)

The solution is:

0.9588 -4.0551 0.1070

0.0514 0.4091 -0.4994

-1.0130 1.8815 0.0637

>>