Lesson 02 Quiz 3

Started: Apr 5 at 1:08pm

Quiz Instructions

Nature of Data

This quiz refers to Sparse 2-D and Multi-Dimensional Matrices.

You are allowed 2 attempts; your highest score will be kept. Correct answers will be shown after the 2nd attempt.

Question 1 — 1 pts

In the following sparse matrix, a zero (0) represents a null or missing value.

	[0]	[1]	[2]	[3]	[4]	[5]
[0]	0	0	0	0	0	0
[1]	0	2	0	0	0	0
[2]	0	0	4	0	0	0
[3]	0	0	9	0	0	3
[4]	0	0	0	0	0	0

Which of the following is the correct representation in the COO 2D sparse matrix format? Zeros should not be represented in this COO 2D sparse matrix format.

- (●) 2D Sparse

R	C	V
2	2	4
3	5	3
1	1	2
3	2	9

- ( )

2D Sparse

R	C	V
2	2	4
5	3	3
1	1	2
2	3	9

2D Sparse

R	C	V
0	0	0
5	4	0
2	2	4
5	3	3
1	1	2
2	3	9

2D Sparse

R	C	V
2	2	4
5	3	3
1	1	2
2	3	9
0	0	0
5	4	0

2D Sparse

R	C	V
2	2	9
5	3	2
1	1	3
2	3	4

Question 2

1 pts

The following sparse 2D matrix M is represented as a table, T, below. The column D1 represents the up-down dimension of the matrix. The column D2 represents the left-right dimension of the matrix.

Matrix M

	A	B	C
A	Z		X
B			
C			
D	Y		

Which of the following tables is T?

- (●) Table T

D1	D2	N
A	A	Z
A	C	X
D	A	Y

- ( ) Table T is none of these options
- ( )

Table T

D1	D2	N
A	A	Z
A	D	X
C	A	Y

Table T

D1	D2	N
A	A	Z
A	C	X
C	A	Y

Question 3

1 pts

Here are 2 matrices in COO sparse matrix format:

Matrix M1

R	C	V
1	2	3
1	4	1
2	1	2

Matrix M2

R	C	V
2	1	1
3	3	2

The dimensions of M1 and M2 are not defined, which means that the dimensions of the two matrices are the same so that M1 and M2 can be added to each other.

Add Matrices M1 and M2. M3 = M1 + M2
What does M3 look like in the COO sparse matrix format?

Matrix M3

R	C	V
1	2	3
1	4	1
2	1	3
3	3	2

Matrix M3

R	C	V
1	2	3
1	4	1
2	1	2
2	1	1
3	3	2

Matrix M3

R	C	V
1	2	3
1	4	1
2	1	2
3	3	2

Matrix M3

R	C	V
2	1	1
3	3	2
1	2	3
1	4	1
2	1	2

Matrix M3

R1	C1	V1	R2	C2	V2
1	2	3	2	1	1
1	4	1	2	1	1
2	1	2	2	1	1
1	2	3	3	3	2
1	3	1	3	3	2
2	1	2	3	3	2

Question 4

1 pts

The following Table T represents, a sparse 2D matrix, M, below. The column X represents the up-down dimension of the matrix. The column Z represents the left-right dimension of the matrix.

Table T

X	Z	N
1	1	8
1	4	5
3	1	6

Which of the following matrices is M?

Matrix M

	1	2	3
1	8		5
2			
3			
4	6		

Matrix M

	1	2	3
1	8		5
2			
3	6		

Matrix M

	1	2	3	4
1	8			5
2				
3	6			

Matrix M is none of these options

Question 5

1 pts

The following matrix is in COO sparse matrix format:

Matrix M

R	C	V
1	1	-1
3	1	2

In a product or addition, missing values are interpreted as zeros.
What is the product of M *times* transpose(M)?

- Product

R	C	V
1	1	1
1	3	4

- Product

R	C	V
1	1	1
3	1	4

- Matrix M

R	C	V
1	1	5

- (selected) Product

R	C	V
1	1	1
3	1	-2
1	3	-2
3	3	4

Question 6

1 pts

The following matrix is in COO sparse matrix format:

Matrix M

R	C	V
1	1	-1
3	1	2

In a product or addition, missing values are interpreted as zeros.
What is the product of transpose(M) *times* M?

- Product

R	C	V
1	1	1
1	3	4

- Product

R	C	V
1	1	1
3	1	-2
1	3	-2
3	3	4

- Product

R	C	V
1	1	1
3	1	4

- Product

R	C	V
1	1	5

Question 7

1 pts

Points in multi-dimensional space can be represented as a _____.

- (●) 2D-array of Booleans
- ( ) Table

Question 8

1 pts

The following 4 3-D matrices can represent 5 points in 4 dimensional space. The names of the dimensions are X, Y, Z, and N. In any given matrix, only 3 spatial dimensions are named.

3 of the 4 matrices represent the same points in 4-D space.

Which one of the matrices below represents a different data set?

- ( ) Matrix D

X=1

	Y=1	Y=2
N=1	1	
N=2	4	
N=3		1

X=3

	Y=1	Y=2
N=1		1
N=2		
N=3		4

- (●) Matrix C

Z=1

	Y=1	Y=2
X=1	1	1
X=2		
X=3		3

Z=4

	Y=1	Y=2
X=1	1	1
X=2		
X=3		3

- ( )

Matrix A

X=1

	Z=1	Z=4
Y=1	1	2
Y=2	3	
Y=3		

X=3

	Z=1	Z=4
Y=1		
Y=2	1	3
Y=3		

Matrix B

Y=1

	Z=1	Z=4
N=1	1	
N=2		1
N=3		

Y=2

	Z=1	Z=4
N=1	3	
N=2		
N=3	1	3

Question 9

1 pts

Table G

Name	Age	Job	Test
Bob	17	Q	T
Sue	31	B	F

How many columns does the Table G have?

4.0000

Question 10

1 pts

The first 7 columns of a table represent the dimensions of a matrix. The 8th and final column of the table represents the values in this matrix. The table may have no more than 7 rows.

If we consider every row in the table to be a point in space, then how many dimensions does this space have?

7.0000

Question 11

1 pts

Matrix M has 4 dimensions, namely D1, D2, D3, and D4.
Matrix M is represented by the following Table T.

Table T

D1	D2	D3	D4	V
2	3	1	1	4
2	2	1	4	3
1	1	3	2	2
2	2	1	2	1
1	2	1	2	1
1	1	2	2	1

How many elements have non-null values in matrix M?

6.0000

Question 12

1 pts

Table G

Name	Age	Job	Test
Bob	17	Q	T
Sue	31	B	F

What is the dimensionality of the above data set?

- ○ 12
- ◉ 2
- ○ 1
- ○ 4
- ○ 8

Question 13 — 1 pts

A sparse multi-dimensional matrix can be represented as a _____.

- ◉ Table
- ○ 2D-array of Booleans

Question 14 — 1 pts

Matrix M has 4 dimensions, namely D1, D2, D3, and D4.
Matrix M is represented by the following Table T.

Table T

D1	D2	D3	D4	V
2	3	1	1	4
1	1	3	2	2
2	2	1	2	1
1	2	1	2	1
1	1	2	2	1

How many elements with null values does matrix M have (at a minimum)?

30.0000

Question 15

1 pts

What is a matrix primarily populated by zero or nulls, usually represented by a 2D table with n columns where n or n-1 is the dimensionality?

- ○ Missing Data
- ◉ Hyper-rectangle
- ○ Category Column
- ○ Sparse Multi-Dimensional Matrix

No new data to save. Last checked at 2:08pm

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