MSDS 7330
File Organization and Database Management
Quiz Unit 4

This is a synchronous session quiz assignment for MSDS7330, File Organization and Database Management. This quiz is due at the end of the same class period in which it is handed out or whenever the instructor tells you to hand it in; whichever comes first. Enter your answer to each question in the MSDS 7330 Quiz Answer Sheet Word document. Be sure to place your name and today's date in the Quiz Answer Sheet, and place your last name and the unit number at the beginning of the file name. For example, the filename for the quiz answer sheet for Unit 4 for Daniel Engels should be *Engels4MSDS7330QuizAnswerSheet.docx*.

For one question, in the Quiz Answer Sheet write out the explanation why the answer is correct. Your chosen question should be a different question from all other students in the session.

Your answer Word document should be submitted on the 2DS system for the quiz number equal to the unit number. For example, the quiz for Unit 4 should be submitted for Quiz 4.

1) Relational Algebra is an example of what type of query language that takes two relations as input and produces another relation as output of the query?
   a) Relational
   b) Structural
   c) Procedural
   d) Fundamental
2) Which of the following is a fundamental operation in relational algebra?
   a) Natural Join
   b) Cartesian Product
   c) Assignment
   d) Set Intersection
3) Which of the following is used to denote the selection operation in relational algebra?
   a) Pi (Greek)
   b) Sigma (Greek)
   c) Lambda (Greek)
   d) Omega (Greek)
4) For the Select operation, what is the name of the variables that appear in the subscript?
   a) Predicates
   b) Relation
   c) Operation
   d) Attribute
5) For the Select operation, what is the name of the variables that appear in the parenthesis?
   a) Predicates
   b) Relation
   c) Operation
   d) Attribute
6) Which operation allows us to find tuples that are in one relation but are not in another relation?
   a) Union
   b) Set-difference
   c) Difference
   d) Intersection
7) Which of the following is a unary operation?
   a) Selection operation
   b) Primitive operation
   c) Projection operation
   d) Generalized selection
8) Which of the following is a join condition that contains an equality operator?
   a) Equijoins
   b) Cartesian
   c) Natural
   d) Left

9) The assignment operator is denoted by
   a) $\longrightarrow$
   b) $\longleftarrow$
   c) $=$
   d) $==$

10) Consider the relations R(A, C) and S(B, C, D) containing the following tuples:

R(A, C)

A	**C**
3	3
6	4
2	3
3	5
7	1

S(B, C, D)

B	**C**	**D**
5	1	6
1	5	8
4	3	9

Compute the natural join of R and S. Which of the following tuples is in the result? Assume each tuple has schema (A,B,C,D).
   a) (2,4,3,9)
   b) (3,5,1,6)
   c) (7,1,5,8)
   d) (3,3,5,8)

11) Consider the relations R(A, B) and S(B, C, D) containing the following tuples:

R(A, B)

A	**B**
1	2
3	4
5	6

S(B, C, D)

B	**C**	**D**
2	4	6
4	6	8
4	4	9

Compute the natural join of R and S. Which of the following tuples is in the result? Assume each tuple has schema (A,B,C,D).
   a) (1,2,4,8)
   b) (2,4,7,9)
   c) (3,4,7,8)
   d) (1,2,4,6)

12) Consider the relations R(A, B, C) and S(A, B, C) containing the following tuples:

R(A, B, C)

A	**B**	**C**
1	2	3
4	2	3
4	5	6
2	5	3
1	2	6

S(A, B, C)

A	**B**	**C**
2	5	3
2	5	4
4	5	6
1	2	3

Compute the union of R and S. Which of the following tuples does not appear in the result?
   a) (1,2,3)
   b) (1,2,6)
   c) (4,2,3)
   d) (2,2,3)

13) Consider a relation R(A) with r tuples, all unique within R, and a relation S(A) with s tuples, all unique within S. Let t represent the number of tuples in R minus S. Which of the following triples of values (r,s,t) is possible?
   a) (5,10,10)
   b) (10, 15, 0)
   c) (5, 0, 3)
   d) (5, 2, 2)

14) Consider a relation R(A,B) with r tuples, all unique within R, and a relation S(B,C) with s tuples, all unique within S. Let t represent the number of tuples in R natural-join S. Which of the following triples of values (r,s,t) is possible?
   a) (2,10,0)
   b) (1,1,2)
   c) (5,10,500)
   d) (2,3,4)