CMPT 354 - Summer 2019
Quiz 1: May 16, 2019, 12:30pm (Duration: 35 minutes)

First Name:  
Last Name:  
Student Number:  

This is a quick quiz and is used as a measure of your involved presence in the classroom. You have 35 minutes for the following 25 questions. Please mark your answer, using a pencil, in the provided bubble sheets. Please do not forget to write your name on this page and on the bubble sheets. For multiple choice questions, please choose the best option and fully fill the corresponding bubble on bubble sheet. For true or false questions, use the first two bubbles in the bubble sheet respectively. Please return the questions with your answer sheet.

True or False Questions
1) The relational model uses two-dimensional table called a relation or relation instance as the only way to represent data.  
   (a) True   (b) False
2) Foreign key constraints impose referential integrity.  
   (a) True   (b) False
3) Operations that change the database are defined by data definition language.  
   (a) True   (b) False
4) Hierarchical data model is a subset of the relational data model.  
   (a) True   (b) False
5) A data model is a model used for describing data or information that consists of physical and conceptual structure of data, operations on data, and constraints on data.  
   (a) True   (b) False
6) XML is an example of semi-structured data model.  
   (a) True   (b) False
7) Views are stored tables that are constructed by SQL processor and exist in the DB and can be queried.  
   (a) True   (b) False
8) SQL cannot modify relation schemas once they are created.  
   (a) True   (b) False
9) Violation of an integrity rule might lead to partially performed tasks that leave incorrect data in the database.  
   (a) True   (b) False
10) A table can have one and only one attribute as a key that keeps the uniqueness of the records.  
    (a) True   (b) False
11) Tuples or attributes are the rows of a relation.
   (a) True    (b) False

12) The relational data tables prescribe how they are implemented and stored on disk.
   (a) True    (b) False

13) Object oriented data model has atomic data domains.
   (a) True    (b) False

14) A key is a foreign key for a relation if and only if for every tuple there is a tuple that has the same values over the attributes in the referenced relation as does over the corresponding attributes in the original relation.
   (a) True    (b) False

15) Hierarchical and network data models are examples of navigational data models.
   (a) True    (b) False

**Multiple Choice Questions**

16) Which type of integrity constraints are not structural and are used to impose a business rule or convention based on the application?
   (a) Type constraint
   (b) Key constraints
   (c) Referential integrity constraints
   (d) Semantics constraints

17) Which of the following data models uses a tree-based representation of data?
   (a) Key-value model
   (b) Hierarchical model
   (c) Semi-structured model
   (d) b & c

18) Degree of a relation is
   (a) The number its tuples
   (b) The number of its records
   (c) The number of its rows
   (d) The same as the arity of a relation
19) What is the cardinality of the relation R1?
   (a) 2
   (b) 4
   (c) 5
   (d) 6

20) What is the arity of the R1 relation?
   (a) 2
   (b) 4
   (c) 5
   (d) 6

21) In how many different ways you can represent the R1 relation?
   (a) 1440
   (b) 720
   (c) 4320
   (d) 360

22) Which statement is true?
   (a) The relational data model supports semi structured representation of data
   (b) ACID stands for Atomicity, Conceptuality, Isolation, and Durability
   (c) ACID stands for Atomicity, Consistency, Isolation, and Durability
   (d) MapReduce operations are fast analytical operations on relational databases

23) Which statement is false?
   (a) OLTP involves high-frequency updates & small queries
   (b) OLAP involves low frequency updates & big queries
   (c) NoSQL maintains ACID properties of transactions
   (d) NoSQL supports weak (eventual) consistency

In each of the following tables, indicate which reason causes the illegality of the table.

24) Table A
   (a) Domain integrity problem
   (b) Column naming problem
   (c) Key constraints violation
   (d) Semantic constraints violation
CREATE TABLE A (  
id CHAR(11),
name CHAR(20),
school CHAR(20),
gpa REAL,
age INTEGER  
)

Table A

<table>
<thead>
<tr>
<th>id</th>
<th>name</th>
<th>school</th>
<th>gpa</th>
<th>age</th>
</tr>
</thead>
<tbody>
<tr>
<td>10010</td>
<td>Alice</td>
<td>UBC</td>
<td>3.2</td>
<td>19</td>
</tr>
<tr>
<td>10011</td>
<td>Bob</td>
<td>SFU</td>
<td>3.6</td>
<td>20.5</td>
</tr>
<tr>
<td>10012</td>
<td>David</td>
<td>SFU</td>
<td>3.1</td>
<td>21</td>
</tr>
</tbody>
</table>

25) Table B

(a) Domain integrity problem
(b) Column naming problem
(c) Key constraints violation
(d) Semantic constraints violation

CREATE TABLE B (  
id CHAR(11),
name CHAR(20),
school CHAR(20),
gpa REAL,
age INTEGER,
PRIMARY KEY (id)  
)

Table B

<table>
<thead>
<tr>
<th>id</th>
<th>name</th>
<th>school</th>
<th>gpa</th>
<th>age</th>
</tr>
</thead>
<tbody>
<tr>
<td>10010</td>
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