Course Name: ISTA-420

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Homework: Lesson Plan 1

**1. Give an informal definition of database as used in the expression "relational database management system."**

A RDMS is a database management system based on the relational model (a semantic model for representing data), whichin turn is based on the two mathematic branches: (set theory and predicate logic).

**2. Give an informal definition of database as used in the expression "Human Resources database."**

It is a database that consists of data related to Human Resources.

**3. Give an informal definition of entity integrity?**

In a RDMS Entity Integrity ensures two properties for primary keys. The first is that the primary key for a row is unique. In other words, it does not match the primary key of any other row in the table. The second is that the primary key is not null. Entity integrity ensures that no component of the primary key may be set to null.

**4. Give an informal definition of referential integrity?**

It is the mechanism the system provides to maintain foreign keys. The definition of a foreign key must specify the table whose primary key is being referenced. The only property ensured by referential integrity for foreign keys is that a valid foreign key value must always reference an existing primary key or contain a null.

**5. What is a relation as defined by the text book?**

It is a set.

**6. Is this table is first normal form? Why or why not? How would you change it?**

This table is not in first normal form. In First Normal Form, any row must not have a column in which more than one value is saved, like separated with commas. Instead the data must be separated into multiple rows.

In this table there are multiple education credentials in the same column. To bring the table to first normal form this data must be

separated into multiple rows.

**7. Is this table in second normal form? Why or why not? How would you change it?**

According to the Second Normal Form there must not be any partial dependency of any column on primary key. In a table that has concatenated primary key, each column in the table that is not part of the primary key must depend upon the entire concatenated key for its existence. If any column depends only on one part of the concatenated key, then the table fails Second normal form. Thereby, this table is not in second normal form. This is because the attributes of this table do not entirely depend on the concatenated key for its existence. To fix this, two tables can be created. The first will be with the owner id as the primary key, and with owner first name and second name as attributes. The second table will have owner id as the primary key, and pet id, and pet name and breed as attributes.

**8. Is this table in third normal form? How would you change it?**

This table is not in third normal form. It can be changed by making two separate tables. The first table with have ID, first name, last name and zip. The second table will have

zip and street address.

**9. What is an OLTP database? What operations is it optimized for?**

An OLTP database is an Online transaction processing database. It facilitates and manages transaction-oriented application for data entry and retrieval transaction processing on a database management system.

**10. What is a start schema? What operations is it optimized for?**

A star schema is the simplest form of a dimensional model. It organizes data into facts and dimensions. A fact is an event that is counted or measured, such as

a sale or login. A dimension contains reference information about the fact( For example: date, product, or customer). A star schema is diagramed by surrounding each

fact with its associated dimensions. The resulting diagram resembles a star.