**CSE370 Database System**

**Theory Assignment 1 Solution**

**Total Points: 30**

1. **Circle either True or False for the following. [10 points]**
2. True False

A conceptual schema describes the details of the physical storage structures.

1. True False

The database state includes descriptions of the database structure, data types, and the constraints.

1. True False

Physical Data Independence is the capacity to change the internal schema without having to change the conceptual schema.

1. True False

A database system includes both DBMS software and the data.

1. True False

A multi-valued attribute is composed of several components where the composition may form a hierarchy.

1. True False

A key attribute may be composite.

1. True False

A recursive relationship is when two different entity types participate in a relationship in distinct roles.

1. True False

Generalization is the process of defining a set of subclasses of a superclass.

1. True False

If a specialization is overlapping, then the same entity may be a member of more than one subclass of the specialization.

1. True False

If a specialization is total, then an entity of the superclass may not belong to any of the subclasses.

1. **Fill in the blanks with appropriate answer. Each answer may contain one or more words.**  **[7 points]**
2. Data Model is a set of concepts to describe the **structure** of a database, and certain **constraints** that the database should obey.
3. Insulation between programs and data is known as **program-data independence.**
4. DBMS schemas are at three levels: **internal** schema, conceptual schema, and **external** schema.
5. **DML** is a language that is used to manipulate (retrieve, insert, delete, and modify) data.
6. The most dominant and commercially used data model is the **relational** model.
7. **Describe two advantages of Database approach of managing data over File-based approach. Give an example of each advantage which illustrates the benefit of database approach.**

**[6 points]**

1. Improved security :

Database approach provides protection of the data from the unauthorized users. It may take the form of user names and passwords to identify user type and their access right in the operation including retrieval, insertion, updating and deletion.

1. Economy of scale :

Cost savings can be obtained by combining all organization's operational data into one database with applications to work on one source of data. On the other hand, in file-based approach, one have to save all documents in separate files which need more space and cost.

1. **Draw an ER diagram for the following application from the manufacturing industry:**

**[7 points]**

1. Each supplier has a unique name, and is located in a city.

3. Each part has a unique part number.

4. Each part has a color.

5. A supplier can supply a number of different parts.

6. A part can be supplied by a number of different suppliers.

7. A supplier will supply a fixed quantity of each part.

M

N

Part

Supply

Supplier