

第一部份：

1. Discuss the difference between database systems and information retrieval systems. (10%)
2. What is an entity type? What is an entity set? Explain the differences among an entity, an entity type, and an entity set? (10%)
3. What is the difference between data centric and document-centric XML documents? (10%)
4. What is the dependency preservation property for a decomposition? Why is it important? (10%)
5. Discuss the system of propagation of privileges and the restraints imposed by horizontal and vertical propagation limits. (10%)

第二部份：

1. Consider a database that consists of the following relations:

SUPPLIER (Sno, Sname)

PART (Pno, Pname)

PROJECT (Jno, Jname)

SUPPLY (Sno, Pno, Jno)

The database records information about suppliers, parts, and projects, and includes a ternary relationship between suppliers, parts, and projects. This relationship is a many-many-many relationship. Specify the following queries in relational algebra.

- a. Retrieve the names of suppliers who supply more than two parts to project 'J1'. (5%)
 - b. Retrieve the project names that are supplied by supplier 'S1' only. (5%)
2. Describe the rules of inheritance in SQL 2008. (10%)
 3. What is multivalued dependency? When does it arise? (10%)
 4. Suppose we want to create a linear hash file with a file load factor of 0.7 and a blocking factor of 20 records per bucket, which is to contain 112,000 records initially.
 - a. How many buckets should we allocate in primary area? (5%)
 - b. What should be the number of bits used for bucket addresses? (5%)
 5. Define the violations caused by each of the following: dirty read, non-repeatable read, and phantoms. (10%)