

第一部分：

1. Define foreign key. What is this concept used for? (10%)
2. Specify the following query in SQL on the database schema shown below. (10%)

For each department whose average employee salary is more than \$30,000, retrieve the department name and the number of employees working for that department.

EMPLOYEE (FNAME, MINIT, LNAME, SSN, BDATE, ADDRESS, SEX, SALARY, SUPERSSN, DNO)

DEPARTMENT (DNAME, DNUMBER, MGRSSN, MGRSTARTDATE)

DEPT_LOCATIONS (DNUMBER, DLOCATION)

PROJECT (PNAME, PNUMBER, PLOCATION, DNUM)

WORKS_ON (ESSN, PNO, HOURS)

DEPENDENT (ESSN, DEPENDENT-NAME, SEX, BDATE, RELATIONSHIP)

3. What is a minimal set of functional dependencies? Does every set of dependencies have a minimal equivalent set? Is it always unique? Why or why not? (10%)
4. In the Enhanced ER (EER) model, what is the difference between a specialization hierarchy and a specialization lattice? Please give illustrative examples. (10%)
5. What are the different types of SQL injection attacks? (10%)

第二部分：

1. Discuss the meanings of the existential quantifier (\exists) and the universal quantifier (\forall). (10%)
2. Is it possible to successfully map a binary M:N relationship type without requiring a new relation? Why or why not? (10%)
3. Discuss how each of the following features is realized in SQL 2008: *object identifier*, *type inheritance*, *encapsulation of operations*, and *complex object structures*. (10%)
4. What is SQLJ used for? Describe the two types of iterators available in SQLJ. (10%)
5. What are storage area networks? What flexibility and advantages do they offer? (5%)
6. How have new iSCSI systems improved the applicability of storage area networks? (5%)