

Database Technologies

Q.P. Code : 4467

(OLD COURSE)

(3 Hours)

[Total Marks : 100

- N.B.: (1) Question No.1 is compulsory.
 (2) Attempt any four questions out of remaining four.
 (3) Assume suitable data if required.
 (4) Figures to the right indicate full marks.

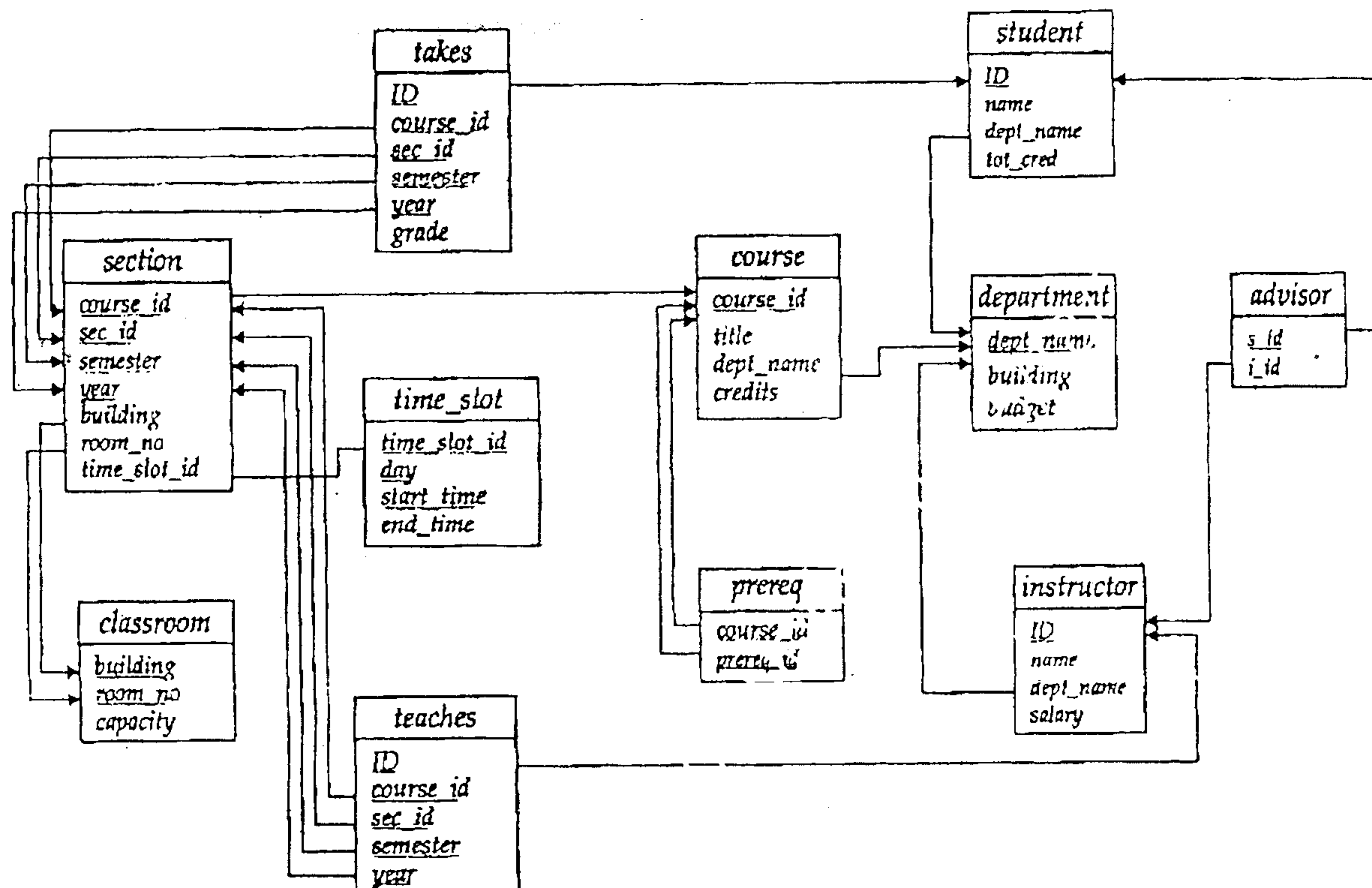


Figure 1 : Schema Diagram for University Database

- 15 1. (a) Write the following simple SQL Queries on the University Schema.
- Find the names of all the instructors from Computer Science Department.
 - Find the course id and titles of all courses taught by an instructor named 'Sudarshan'.
 - Find the total capacity of each of the buildings in the university.
 - Find the courses which are offered in both Odd and Even semester.
 - Find names of instructors who have taught at least one course in Even semester 2012.
- 5 (b) Prove that any relation schema with two attributes is in BCNF.

2. (a) Consider a relation instance Customers Orders Inventory (COI) as shown below: 10
 Customers Order Inventory (COI)

| Customer | Order Num. | Item Num. | Item |
|------------------|------------|-----------|-------------------------|
| General Tool | 07456 | 2246 | Pentium Computer |
| General Tool | 08622 | 3145 | HP Printer |
| General Tool Co. | 08622 | 3967 | 17" monitor |
| Totally Toys | 06755 | 2246 | Pentium computer |
| TOTALLYTOYS | 08134 | 3145 | Hewlett-Packard Printer |
| XYZ Inc. | 09010 | 0446 | Dot Matrix Printer |

- (1) Clearly state and describe the different anomalies of COI relation.
 (2) Normalize the relation to avoid anomalies if any.
- (b) Describe why concepts hierarchies are useful in Data warehousing. 10
3. (a) Explain design issues of Temporal Database in detail! 10
 (b) In real-world data, tuples with missing values for some attributes are a common occurrence. Describe various methods for handling this problem. 10
4. (a) In real-world data, tuples with missing values for some attributes are a common occurrence. Describe various methods for handling this problem. 10
 (b) Explain Query Processing in Distributed Databases with suitable example. 10
5. (a) Discuss the options for mapping EER model constructs to relations. 10
 (b) Suppose that a data warehouse consists of the three dimensions time, doctor, and patient, and the two measures count and charge, where charge is the fee that a doctor charges a patient for a visit. Draw a schema diagram for the above data warehouse using one of the schemas. 10
6. (a) Consider an Employee relation with Salary attribute is given. Write a trigger to check salary threshold before inserting or updating the Employee tuple. 10
 (b) Discuss the various type constructors. How are they used to create complex object structures? 10
7. Attempt the following :- 20
- (a) Data Fragmentation techniques for Distributed Database.
 (b) Discuss the two main types of constraints on specializations and generalizations.
 (c) What is a subclass? When is a subclass needed in data modeling?
 (d) What primary characteristics should an OJD possess?