DBMS Assignment -I

B.Tech CSIT II Year II Semester Section-A

Submission date : 19.05.2022

Question No : 1

a) i. Data models &levels of abstraction

ii. With a neat sketch, explain DBMS architecture in detail. [CO1]

b) i. Explain the following with examples. Types of entity sets, types of attributes, Relationship sets types,mapping cardinality,participation constraints.

ii. Model the entities and relationships (including attributes and properties of relationships) described below in an ER-diagram.

Write down any assumptions you make.

The NEHRU ZOOLOGICAL PARK has many types of animals.

Every type has a unique name. Every animal of the same type has a unique animal ID. Animals of two types may have the same animal ID. Animals also have age and gender. Animals may have diseases. The beginning time and the duration of disease need to be recorded. A disease has a unique name.

A type keeper takes care of only one type of animal. Every type may have many type keepers. A type keeper may or may not be familiar with diseases. But every disease must be handled by at least one type keeper.

Type keepers have name, employee ID, AADHARNo, address, and phone number.

All animals are in cages. Some cage may be empty. Every cage has a cage ID, space and height. A cage keeper may take care of many cages. Every non-empty cage must have at least one cage keeper. Empty cages don't need any cage keepers.

Cage keepers have a name, employee ID, AADHARNo, address and phone number.

Question No:2 -----

I) Explain the following with examples:
relation,tuple,schema,instance,attribute,domain, cardinality & degree of a relation

II) Relational Algebra & SQL [CO2]

Consider the following relation schema:

employee (empid, employee-name, street, city)

works (employee-name, company-name, salary)

company (company-name, city)

manages (employee-name, manager-name)

Give expressions in relational algebra and in SQL for each of the following queries:

a) Find the names of all employees who work for State Bank of India.

b) Find the names and cities of residence of all employees who work for State Bank of India.

c) Find the names, street address, and cities of residence of all employees who work for State Bank of India and earn more than Rs.10, 000 per annum.

d) Find the names of all employees in this database who live in the same city as the company for which they work.

e) Find the names of all employees who live in the same city and on the same street as do their managers.

f) Find the names of all employees in this database who do not work for State Bank of India.

g) Find those companies whose employees earn a higher salary, on average, than the average salary at the State Bank of India.

Question No: 3 **[CO3]**

a) Explain insertion, deletion and modification anomalies with suitable examples

b) What is Normalization? Explain the purpose of normalization and schema refinement.

c) What is a functional dependency? State the Armstrong inference rules. Provide suitable examples to describe each.