Solved Question Paper

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2.a) Difference between Object Oriented Databases and Relational Databases.(5marks)

Relational Database	Object oriented database
Database that stores data in tables that consist of rows and columns. Each row has a primary key and each column has a unique name.	Database that stores data in objects. An object is an item that contains data, as well as the actions that read or process the data.
relational database rely on relational model.	Object database rely on OOP
relational data base handle a single data.	Object database can handle different types of data.
It is based on mathematical principles called relational algebra.	It is based on objects.
Associations are not directly represented.	Associations are directly represented.
Faster for complex queries	Slower than relational databases for relational databases.
Supports multiple writers and readers.	Does not support multiple writers and readers.
RDBMS store only data.	OODBMS store data and methods.

2.c)Differentiate between the following with examples :Specialization and Generalization(5marks)

Specialization	Generalization
It is a top-down activity.	It is a bottom-up activity.
Specialization involves the definition of a new class which inherits all the characteristics of a higher class and adds some new ones, in a subclass. Specialization is the reverse process of Generalization means creating new sub classes from an existing class.	Generalization extracts the common features from a collection of classes, and placing them higher in the inheritance hierarchy, in a super class. OR The process of extracting common characteristics from two or more classes and combining them into a generalized superclass, is called Generalization. Generalization is represented by a triangle followed by a line.
The higher level entity may not have lower level entities.	The higher level entity must have lower level entities.
Specialization increases the size of a schema.	Generalization reduces the size of a schema.
Specialization is applied on a single entity.	Generalization entities on group of entities.

Specialization results in forming the multiple entity from a single entity.	Generalization results in forming a single entity from multiple entities. Generalization clubs all the entities that share some common properties to form a new entity.
Creates new objects based on the difference between the existing ones and have some features of the parents.	Takes all the information that have universal nature within the entities and then forms a new entity.
Animal example in study material	Furniture example in study material

5.b)Give two disadvantages of both, structured analysis and object oriented analysis approach.(5marks)

Object Oriented Analysis Approach

OO model build functional models within the objects. It does not build a complete functional. This is not a problem for some applications but may lead to missed requirements for large applications. The object-oriented models do not easily show the communications between the objects in the system. It does not easily describe communication between objects. In OO modelling, the object need not know who is invoking it. It cannot identify which objects would generate an optimal system design. All the interfaces between the objects cannot be represented in a single diagram.

Structured Analysis

It does not support reusable modules. The top down process works well for new development, but does not provide the mechanism for "designing in" the use of existing components. The top down process of functional decomposition does not map well all the requirements to the existing component.
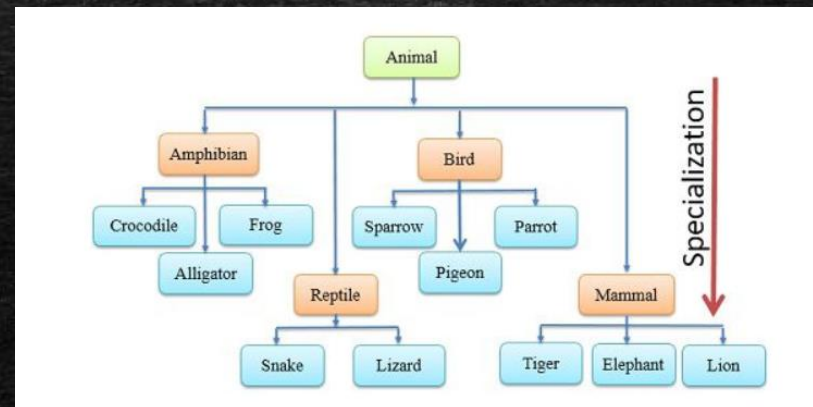
What do you understand by the term `Serialization' ? Where is it required and why ? (5marks)

Specialization :

Specialization is the reverse process of Generalization means creating new sub classes from an existing class. Specialization involves the definition of a new class which inherits all the characteristics of a higher class and adds some new ones, in a subclass. It is a top-down design activity. In specialization, we split an entity to form multiple lower level entities. These newly formed lower level entities inherit some features of the higher level entities. It may happen that a higher level entity may not split further and hence, it may not have any lower level entity. Specialization is always applied on a single entity. It increases the size of a schema.

Specialization results in forming the multiple entity from a single entity. It creates new objects based on the difference between the existing ones and have some features of the parents.

Let us discuss an example of specialization. Let us consider entity **Animal**. The entity animal can further be spilt into **amphibian, reptiles, birds, mammals** etc.. Entity amphibian can be further split to **crocodile, alligator, frog**. The entity reptile splits to **snake, lizard**. The entity bird can be split to **sparrow, pigeon, parrot**. Mammals can be spilt to a **tiger, lion, elephant**.

4.d)What is concurrency ? Explain the issues involved in identifying the concurrency in a system with suitable example.(5marks)