**Self Study**

1. UML & ERD

UML: Stands for unified modeling language. It is a language used by software engineers to visualize various aspects of a system by using different shapes and arrows to represent the main structure of a system. It includes widely used diagrams like Class Diagram, Use Case Diagram, Data Flow Diagram and other types of diagrams for different purposes.

ERD: Stands for Entity Relationship Diagram. A type of UML diagrams specialized for representing and visualizing the design or the structure of a database focusing on identifying the main entities which have attributes that make meaning out of an entity and the relationship between the entities.

1. EERD and SOLID

EERD: Stands for Extended (Enhanced) Entity Relationship Diagram. An improved version of the normal ERD that represent more advanced concepts that deeply define the relationship and the dependencies between various entities exist in the system such as Inheritance, Aggregation and composition which later defines how the classes in the system should depend on each other as they can be either tightly coupled (Composition) or loosely coupled (Aggregation). These relationships enhance the maintainability and the scalability of the system.

EERD and SOLID: Stands . EERD helps illustrate the SOLID Principles indirectly as it may identify that an entity has only one job which implies the Single Responsibility Principle (SRP). It may also show the inheritance relationship between a superclass and a subclass which implies the Open / Close Principle (OCP) that allows extending an entity without modifying it and so on with the other principles.

1. How to choose a Primary Key out of a bunch of Candidate Keys

After identifying the candidate keys, Find the following criteria:

1. **Unique and Not Null:** Primary key should distinguish between and rows and that’s why it cannot be set to null.
2. **Simple:** Primary key should be as simple as possible. It should be short in length. It is better to be a single column not multiple columns. Choosing a number-based column is better than choosing string ones.
3. **Stability:** Primary key should not change over time.
4. **Performance:** smaller keys take less space. This affects query speed, indexing and enhance join queries performance.