**Database Systems Quiz 2**

**U00839259 (syrrmlla)**

1. **Categories of Data Models**:

* Conceptual data models: A Conceptual Data Base Model is a high-level overview of data that was created to identify entities and their relationships. These are actually designed in a user-friendly manner. The goal of creating a conceptual data model is to define entities, attributes, and connections. At this level of data modeling, there is very little information about the actual database structure. These are also known as entity-based data models or object-based data models.
* Physical data models: The Physical Data Model describes the data model's database-specific implementation. It provides database abstraction and aids in schema generation. This is due to the abundance of meta-data provided by a Physical Data Model. By replicating database column keys, constraints, indexes, triggers, and other RDBMS features, the physical data model also aids in visualizing database structure.
* Implementation data models: This data model only describes the logical elements of the database, not the physical structure. The representational data model allows us to focus on the design and structure of the database. These are relational data models that are used in a variety of applications.
* Self-Describing data models: A message that contains data as well as metadata that describes the format and meaning of that data (i.e., the syntax and semantics). Extensible Markup Language (XML), for example, is a self-describing message format comprised of tag/value pairs.

**Differences between Relational, Object and XML models:**

Relational Model:

* In relational model, data is basically represented with logical relationships.
* We can only set up relationships between parent and child tables in the relational model using the foreign key concept.
* Typically, relational data is not self-describing, and data in the relational model is mostly determined by column type, with only the same type of data being stored in that column.
* Relational data tables adhere to a rigid model, making table normalization difficult.
* We can also prefer the relational data base model if we anticipate processing or storing data in a relational data base.

Object Model:

* An entity in the Object Model data Model represents a real-world object or concept, such as a library or books.
* As a result, each entity has a unique set of attributes to represent.
* There will be connections between various entities represented as relations.

XML Model:

* The data in the XML model is in a hierarchical model, where the data is organized in a tree with relationships to each other.
* An XML model contains data as well as information about what that data really means, which is self-descriptive.
* Essentially, the XML model follows inherent ordering, where data items are displayed in the order of data in the document.

1. **Differences between Procedural and Non-Procedural DMLs:**

The Procedural and Non-procedural languages are two types of Data Manipulating Languages.

The Major difference between them is that the procedural language retrieves data one record at a time whereas non-procedural language is “set”-oriented and specify what data is to be retrieved rather than how to retrieve it.

A high-level or nonprocedural DML can be used to specify complex database operations in a concise manner on its own. Many DBMSs support high-level DML statements that can be entered interactively from a display monitor or terminal, or that can be embedded in a general-purpose programming language. DML statements must be identified within the program in the latter case so that they can be extracted by a precompiler and processed by the DBMS. A general-purpose programming language must contain a low-level or procedural DML. This type of DML typically retrieves and processes individual records or objects from the database. As a result, it must employ programming language constructs such as looping to retrieve and process each record in a set of records.

1. **Schema For Online Book Store:**

**User:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| User\_Id | Name | Email | Password | Address |
| 1 | Sindhuja | [yerra@gmail.com](mailto:yerra@gmail.com) | \*\*\*\*\* | 3520 Walker ave, 38111 |

**Books:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Book\_Id | Name | Genre | Publisher\_name | Author\_name | Rating | Year | Price |
| 1 | 2 states | Romcom | Ram varun | Chetan Bhagath | 4.5 | 2014 | 5$ |

**Orders:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Order\_Id | Book\_Id | User\_Id | Date | Price |
| 12345 | 1 | 1 | 06/03/2022 | 5$ |

**Shopping\_basket\_book:**

|  |  |  |
| --- | --- | --- |
| S\_Id | Book\_Id | Count |
| 1 | 1 | 1 |

**Payment:**

|  |  |  |  |
| --- | --- | --- | --- |
| Order\_Id | Price | User\_Id | Card |
| 1 | 5$ | 1 | xxxxxxxxxx |

**Constraints:**

There may be an issue when User wants to pay with a different card or user wants to add another card details.