Class Quiz

### What is a data dictionary?

A data dictionary is a file which contains all the data types and definitions like their length, the number of records in each file, and the names and types of each field.

### What’s the difference between char and varchar data types?

A CHAR field is a fixed length and VARCHAR is a variable length field.

This means that the storage requirements are different - a CHAR always takes the same amount of space regardless of what you store, whereas the storage requirements for a VARCHAR vary depending on the specific string stored.

### What is the difference between a Report and a Form and when will you use each in DB operation?

A form is generally used to add/update/delete records.

A report is a read-only view of the data you would like to see.

A real example could be - when you borrow a book from the library, the software will use some sort of form to update the inventory & keep note of who the book is given to. A report in this example, could be - list of all books borrowed in this week.

### What is the use of the foreign key?

In the context of relational databases, a foreign key is a field (or collection of fields) in one table that uniquely identifies a row of another table or the same table. In simpler words, the foreign key is defined in a second table, but it refers to the primary key or a unique key in the first table.

### Why are different views of data made available to users in a database?

### State the different Data Types commonly used in DB design

#### String

Data that contains a combination of letters, numbers and special characters.

CHARACTER: Fixed-length character strings. The common short name for this data type is CHAR.

VARCHAR: Varying-length character strings.

CLOB: Varying-length character large object strings, typically used when a character string might exceed the limits of the VARCHAR data type.

GRAPHIC: Fixed-length graphic strings that contain double-byte characters.

VARGRAPHIC: Varying-length graphic strings that contain double-byte characters.

DBCLOB: Varying-length strings of double-byte characters in a large object.

BINARY: A sequence of bytes that is not associated with a code page.

VARBINARY: Varying-length binary strings.

BLOB: Varying-length binary strings in a large object.

XML: Varying-length string that is an internal representation of XML.

#### Numeric

Data that contains digits

SMALLINT: for small integers.

INTEGER: for large integers.

BIGINT: for bigger values.

DECIMAL(p,s) or NUMERIC(p,s), where p is precision and s is scale: for packed decimal numbers with precision p and scale s. Precision is the total number of digits, and scale is the number of digits to the right of the decimal point.

DECFLOAT: for decimal floating-point numbers.

REAL: for single-precision floating-point numbers.

DOUBLE: for double-precision floating-point numbers.

#### Datetime

Data values that represent dates, times, or timestamps.

DATE: Dates with a three-part value that represents a year, month, and day.

TIME: Times with a three-part value that represents a time of day in hours, minutes, and seconds.

TIMESTAMP: Timestamps with a seven-part value that represents a date and time by year, month, day, hour, minute, second, and microsecond.

### Mention 4 common commercial RDBMS tools used by various organisations for data management and operations

Oracle Database – 70%

Microsoft SQL Server – 68%

MySQL (Oracle Corporation) – 50%

IBM DB2 – 39%

IBM Informix – 18%

SAP Sybase Adaptive Server Enterprise – 15%

SAP Sybase IQ – 14%

Teradata – 11%

### What is the use of the primary key?

A primary key, also called a primary keyword, is a key in a relational database that is unique for each record. It is a unique identifier, such as a driver license number, telephone number (including area code), or vehicle identification number (VIN). A relational database must always have one and only one primary key.

### What does the term ‘Relation’ means in DB operations/design?

A relational database is a collection of data items organized as a set of formally-described tables from which data can be accessed between those table by using primary and foreign keys.

### What are the benefits of a relational database compared with a flat file database?

A relational database is one that contains multiple tables of data that relate to each other through special key fields. Relational databases are far more flexible (though harder to design and maintain) than what are known as flat file databases, which contain a single table of data.

If you have hundreds of thousands of data rows you will most likely want to use a relational database as it would be too much to handle for a flat database.

### Explain why a foreign key is also a primary key, but a primary key need not be a foreign key

### What is a Report, and what are the key features?

A database report presents information from a database. Information is displayed simply and efficiently. Reports can be printed from the database to view information quickly and easily.

### What is the key difference between DBMS and RDBMS?

The key difference is that RDBMS (relational database management system) applications store data in a tabular form, while DBMS applications store data as files. Does that mean there are no tables in a DBMS? There can be, but there will be no “relation” between the tables, like in a RDBMS.

### As a database design engineer, state the 3 most important factors you will consider regarding the choice of DB type you will recommend to your client.