Exercise LO1.1 – Group Submissions

# Exercise LO1.1 – Database Management Terminology

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| Group 1 | Group 2 | Group 3 | Group 4 |
| 1. Database 2. Metadata 3. Rdbms 4. Relation 5. Primary key 6. Surrogate Key 7. Transaction | 1. Dbms 2. Row (record, entry, tuple) 3. Superkey 4. Candidate key 5. 4GL 6. DML | 1. Column (field, header, attribute) 2. Foreign key 3. Unique Key 4. SQL 5. Schema 6. Constraint | 1. Composite key 2. DDL 3. DCL 4. Data mining 5. Big data 6. Domain |

Each group is responsible for defining the terms listed under the group # above. Your group will present your terms/definitions to the class. Use visuals where possible to help your classmates understand.

Put your definitions into a single Word document hand it into Dropbox. The instructor will compile the lists from all the groups and provide it to the class.

# Group 1

**RDBMS -** An RDBMS is a Relational Database. A relational database is a type of database that stores and provides access to data points that are related to one another. In a relational database, each row in the table is a record with a unique ID called the key. The columns of the table hold attributes of the data, and each record usually has a value for each attribute.

https://www.oracle.com/ca-en/database/what-is-a-relational-database/#:~:text=The%20software%20used%20to%20store,storage%2C%20access%2C%20and%20performance.

**Relation -** In SQL, a relation is a bag or group of objects (called tuples) that all share the same characteristics: a list of attributes with a known given data type. It’s often shown as a table!

<https://theartofpostgresql.com/blog/2019-09-sql-relations/#:~:text=In%20SQL%2C%20a%20relation%20is,six%20attributes%20a%20sextuple%2C%20etc>.

**Primary Key -** What is a primary key? In the world of [databases](https://www.lifewire.com/what-is-a-database-1019737), the primary key of a relational table uniquely identifies each record in the table. Databases use keys to compare, sort, and store records, and to create relationships between records.

[*https://www.lifewire.com/primary-key-definition-1019179*](https://www.lifewire.com/primary-key-definition-1019179)

Surrogate Key - A surrogate key is a type of primary key used in most database tables. It provides a simple, system-generated, business-agnostic column. This column is used as an identifier for each row rather than relying on pre-existing attributes.

[*https://vertabelo.com/blog/what-is-surrogate-key/*](https://vertabelo.com/blog/what-is-surrogate-key/)

**Database** - A database is an organized collection of structured information, or data, typically stored electronically in a computer system

<https://www.oracle.com/database/what-is-database/>

**Metadata** - Metadata is defined as **the data providing information about one or more aspects of the data**; it is used to summarize basic information about data that can make tracking and working with specific data easier.

<https://en.wikipedia.org/wiki/Metadata>

**Transaction -** A transaction, in the context of a database, is a logical unit that is independently executed for data retrieval or updates. Experts talk about a database transaction as a “unit of work” that is achieved within a database design environment. Essentially, a “transaction” is any change that happens in a database.

[*What is a Transaction (in a Database)? - Definition from Techopedia*](https://www.techopedia.com/definition/16455/transaction-databases#:~:text=A%20database%20%E2%80%9Ctransaction%E2%80%9D%20is%20any%20change%20that%20happens.,used%20explicitly.%20Otherwise%2C%20confusion%20can%20easily%20crop%20up.)

# Group 2

**Fourth-generation language** is a computer programming language that is intended to be easier for users than machine languages (first-generation), assembly languages (second-generation) and older high-level languages (third-generation). 4GLs are closer to human language than other high-level languages and are accessible to people without formal training as programmers. They allow multiple common operations to be performed with a single programmer-entered command. 4GLs are usually not general-purpose languages like third-generation languages such as C and C++ are but instead are usually designed for a specific purpose, as in the case of SQL, which works with databases. (Encyclopedia Britannica)

A **super key** is a set of one or more attributes (columns), which can uniquely identify a row in a table. (Chaitanya Singh)

**Candidate Key** is a set of attributes that uniquely identify tuples in a table. Candidate Key is a super key with no repeated attributes. (Richard Peterson)

**Database Management System (DBMS)** is a software for storing and retrieving users’ data while considering appropriate security measures. It consists of a group of programs which manipulate the database. The DBMS accepts the request for data from an application and instructs the operating system to provide the specific data. In large systems, a DBMS helps users and other third-party software to store and retrieve data.

DBMS allows users to create their own databases as per their requirement. The term “DBMS” includes the user of the database and other application programs. It provides an interface between the data and the software application (Richard Peterson)

**Row**: In relational databases, a row is a data record within a table. Each row, which represents a complete record of specific item data, holds different data within the same structure.

A row is occasionally referred to as a tuple.

What is Database Row? - Definition from Techopedia

**Record**: A record type is a composite data type that consists of one or more identifiers and their corresponding data types.

You can create user-defined record types by using the TYPE IS RECORD statement within a package or by using the CREATE TYPE (Object) statement.

Records (PL/SQL) - IBM Documentation

**Entry**: Data store in a table

Scotty

**Tuple**: In the context of relational databases, a tuple is one record (one row). The information in a database can be thought of as a spreadsheet, with columns (known as fields or attributes) representing different categories of information, and tuples (rows) representing all the information from each field associated with a single record.

What is a Tuple (Database)? - Definition from Techopedia

# Group 3

**Columns:**

Columns are the attributes that we want to store in the tables that are also called as relations in case of relational databases for which SQL is used as the query language to communicate with database servers. (Column in SQL | Assigning Different Attributes to Column Table (educba.com))

**Foreign Key:**

A foreign key is a field (or collection of fields) in one table, that refers to the primary key in another table. ( SQL FOREIGN KEY Constraint (w3schools.com))

**Unique key:**

A unique key constraints also identifies an individual uniquely in a relation or table. A table can have more than one unique key unlike primary key. Unique key constraints can accept only one NULL value for column. Unique constraints are also referenced by the foreign key of another table. It can be used when someone wants to enforce unique constraints on a column and a group of columns which is not a primary key.

Source: Difference between Primary key and Unique key – GeeksforGeeks

**SQL:**

SQL stands for Structured Query Language which is basically a language used by databases. This language allows to handle the information using tables and shows a language to query these tables and other objects related (views, functions, procedures, etc.). Most of the databases like SQL Server, Oracle, PostgreSQL, MySQL, MariaDB handle this language (with some extensions and variations) to handle the data. With SQL you can insert, delete, and update data. You can also create, delete, or alter database objects.

Source: SQL Definition (sqlshack.com)

**Schema:**

A database schema is the way that the contents of a database are arranged. It specifies a database’s tables, the fields which entries in those tables have, and the datatypes assigned to those fields, but it also specifies how those tables are related to each other. Diagrams such as the one below are usually used to define/present database schemas, where different tables are represented as individual blocks, with lines connecting each table to define relationships.

Graphical user interface, application

Description automatically generated

Image Source: <https://www.lifewire.com/thmb/HrE9RJECSZzxzbAL8QENwjk_NFI=/2187x1121/filters:no_upscale():max_bytes(150000):strip_icc()/dbdiagram.io---diagram-only-5c6c2b4746e0fb0001b35e35.png>

Definition Source: <https://database.guide/what-is-a-database-schema/>

**Constraint:**

In a database, a constraint is a rule enforced on a field (or fields) within a record which ensure that the data within a record is properly formatted, and that all of the data entered into each record is consistent with that of the other records.

Definition Source: <https://www.vertabelo.com/blog/database-constraints-types/#:~:text=Database%20constraints%20are%20a%20key%20feature%20of%20database,and%20reliability%20of%20the%20data%20stored%20in%20it>.

# Group 4

**Composite key** - A composite key in SQL can be defined as a combination of multiple columns, and these columns are used to identify all the rows that are involved uniquely. Even though a single column can’t identify any row uniquely, a combination of over one column can uniquely identify any record.

[www.simplilearn.com](https://www.simplilearn.com/tutorials/sql-tutorial/composite-key-in-sql#:~:text=View%20More-,What%20Is%20a%20Composite%20Key%20in%20SQL%3F,can%20uniquely%20identify%20any%20record)

**DDL** - DDL is short name of Data Definition Language, which deals with database schemas and descriptions, of how the data should reside in the database.

* CREATE – to create database and its objects like (table, index, views, store procedure, function and triggers).
* ALTER – alters the structure of the existing database.
* DROP – delete objects from the database.
* TRUNCATE – remove all records from a table; also, all spaces allocated for the records are removed.
* COMMENT – add comments to the data dictionary.
* RENAME – rename an object.

<https://stackoverflow.com/questions/2578194/what-are-ddl-and-dml>

**Big Data** - Put simply, big data is larger, more complex data sets, especially from new data sources. These data sets are so voluminous that traditional data processing software just can’t manage them. But these massive volumes of data can be used to address business problems you wouldn’t have been able to tackle before.

- [oracle.com](https://www.oracle.com/ca-en/big-data/what-is-big-data/)

**DCL** - The Data Control Language is a subset of the Structured Query Language. Database administrators use DCL to configure security access to relational databases. It complements the Data Definition Language, which adds and deletes database objects, and the Data Manipulation Language, which retrieves, inserts, and modifies the contents of a database.

- [lifewire.com](https://www.lifewire.com/data-control-language-dcl-1019477)

Data mining :- Data mining is **the process of sorting through large data sets to identify patterns and relationships that can help solve business problems through data analysis**. Data mining techniques and tools enable enterprises to predict future trends and make more-informed business decisions.

-Techtarget.com

**Domain** - a data domain is the collection of values that a data element may contain. The rule for determining the domain boundary may be as simple as a data type with an enumerated list of values.

-[Data domain - Wikipedia](https://en.wikipedia.org/wiki/Data_domain)