## EXP:1

ER DIAGRAM :

An entity-relationship diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is an object, a component of data. An entity set is a collection of similar entities. These entities can have attributes that define their properties. By defining the entities, and their attributes, and showing the relationships between them, anER diagram illustrates the logical structure of databases

## EXP:2

CONSTRAINTS:

Integrity Constraints are a mechanism to prevent invalid data entry into the table to maintain data consistency. The whole purpose of constraints is to maintain the data integrity during the various transactions like update/delete/insert on a table.

**Types of constraints:**

- NOT NULL
- UNIQUE
- DEFAULT
- CHECK
- Key Constraints – PRIMARY KEY, FOREIGN KEY

NOT NULL:

NOT NULL constraint makes sure that a column does not hold NULL value. When we don't provide value for a particular column while inserting a record into a table, it takes NULL value by default. By specifying the NULL constraint, we can be sure that a particular column(s) cannot have NULL values

UNIQUE:

UNIQUE Constraint enforces a column or set of columns to have unique values. If a column has a unique constraint, it means that a particular column cannot have duplicate values in a table.

DEFAULT:

The DEFAULT constraint provides a default value to a column when there is no value provided while inserting a record into a table.

CHECK:

This constraint is used for specifying a range of values for a particular column of a table. When this constraint is being set on a column, it ensures that the specified column must have the value falling in the specified range

FOREIGN KEY:

Foreign keys are the columns of a table that points to the primary key of another table. They act as a cross-reference between tables.

DOMAIN INTEGRITY

It refers to the enforcement of rules and constraints that ensure data entered into a database adheres to a predefined set of acceptable values

Example: Create table cust(custid number(6) not null, name char(10));

Alter table cust modify (name not null);

CHECK CONSTRAINT

The **CHECK constraint** in SQL is used to limit the value range that can be placed in a column. It ensures that the data in a column meets a specific condition. If the condition is not met, the data modification is aborted.

ENTITY INTEGRITY

 Also called business key integrity, this rule proclaims that each row in a table must contain some unique data, which is known as the business key. Through this verification, a [primary key](#) will be ensured of non-duplication, which also implies that no null values are allowed in the primary key column, thus uniquely identifying each instance of an entity in the table.

## EXP :3

DML COMMANDS:

DML commands are the most frequently used SQL commands and are used to query and manipulate the existing database objects. Some of the commands are Insert, Select, Update, and Delete.

 **Insert Command**

is used to add one or more rows to a table. The values are separated by commas and the data types char and date are enclosed in apostrophes. The values must beentered in the same order as they are defined.

 **Select Commands** It is used to retrieve information from the table. It is generally referredto as querying the table. We can either display all columns in a table or only specify columns from the table.

**Update Command** It is used to alter the column values in a table. A single column maybe updated or more than one column could be updated.

**Delete command** after inserting a row in a table we can also delete them if required. The delete command consists of a from clause followed by an optional where clause.

**Set operations:**

Union/ Intersect/ Except operations – These operations operate on relations, which mustbe compatible i.e. they must have the same no. of attributes with the same domain types

## EXP:4

## Data Definition Language (DDL):

This language allows the users to define data and its relationships to other types of data. It is used to create data tables, and files within databases.

| Command | Description | Syntax |
|---------|-------------|--------|
| CREATE | Create database or its objects (table, index, function, views, store procedure, and triggers) | `CREATE TABLE table_name (column1 data_type, column2 data_type, ...);` |
| DROP | Delete objects from the database | `DROP TABLE table_name;` |
| ALTER | Alter the structure of the database | `ALTER TABLE table_name ADD COLUMN column_name data_type;` |
| TRUNCATE | Remove all records from a table, including all spaces allocated for the records are removed | `TRUNCATE TABLE table_name;` |
| COMMENT | Add comments to the data dictionary | `COMMENT 'comment_text' ON TABLE table_name;` |

View:

• A database view is a virtual table or logical table which is defined as a SQL SELECT query with joins. Because a database view is similar to a database table, which consists of rows and columns, so you can query data against it. Most database management systems, including MySQL, allows you to update data in the underlyingtables through the database view with some prerequisites.

INDEX:

• A database index is a data structure that improves the speed of operations in a table. Indexes can be created using one or more columns, providing the basis for both rapid random lookups and efficient ordering of access to records

## EXP:5

## Aggregate functions

perform a calculation on a set of values and return a single value.There are different types of aggregate functions such as min, max, sum, avg, count, etc.

TCL COMMAND:

Transaction Language Commands allows us to control and manage transactions to maintain the integrity of data within SQL statements

COMMIT: command is used to save the Records.

ROLLBACK: command is used to undo the Records.

SAVEPOINT command is used to undo the Records in a particular transaction

## EXP:6

Equi-join:

A join that is based on equalities is called equi-join. '=' operator is used in equi- join comparison. It retrieves rows from tables having a common column. It is also called simple join.

Non-equi-join:

A join that specifies the relationship between columns belonging to different tables by making use of the relational operators (, <=, >=, !=) other than the '=' operator is calledas non-equi-join

Self-join:

Joining a table to itself is known as self-join i.e. it joins one row in a table to another. Itcan compare each row of the table to itself and also with other rows of the same table.

Outer join:

An outer join returns all the rows returned by simple join or equi join as well as those rowsfrom one table that do not match any row from the other table. The symbol (+) represents outer join.

## EXP:7

Decision-making statements:

PL/SQL provides IF statement to execute a statement or sequence of statements conditionally. There are 3 forms of IF statement –IF-THEN, IF-THEN-ELSE, and IF-THEN-ELSIF.

## EXP:8

Cursor:

A cursor is a type of pointer built into PL/SQL for querying the database, retrieving a set of records, and allowing a developer to access the active data set, a row at a time. This allows the programmers to accomplish tasks that require procedural code to be performed oneach record in a result set individually

Types of Cursors

1. Implicit cursor

Implicit cursors are cursors that are opened by the oracle engine for its internal processing. This kind of cursor is called implicit because oracle automatically handles many of the cursor-related operations such as open, fetch, close, etc.

2. Explicit cursor

Explicit cursors are the cursors open by the user for processing data as required. It is also known as a user-defined cursor. The user explicitly performs operations such as open, fetch, control, etc. against the cursor

General Cursor Attributes:

| Name | Description |
|------|-------------|
| %FOUND | Returns true if the record was fetched successfully,falses otherwise. |
| %NOTFOUND | Returns true if the record was not fetched successfully, falseotherwise |
| %ROWCOUNT | Returns numbers of records fetched from cursors at that point in time |
| %ISOPEN | Return True if the cursor is open, false otherwise |

## EXP:10

## database Trigger

The trigger is a set-off action that gets executed automatically when a specified changeoperation (SQL INSERT, UPDATE or DELETE statement) is performed on a particular table.

## EXP:11

## CRUD OPERATION:

Create Operations

Create or insert operations and add new documents to a collection. If the collection does not currentlyexist, insert operations will create the collection.

Read Operations

Read operations retrieves documents from a collection; i.e. queries a collection for documents.

Update Operations

Update operations modify existing documents in a collection

Delete Operations

Delete operations remove documents from a collection.