**ORACLE DATABASE 10g EXPRESS EDITION**

**Software introduction:**

Based on Oracle Web site: Oracle Database 10g Express Edition (Oracle Database XE) is an entry-level, small-footprint database based on the Oracle Database 10g Release 2 code base that's free to develop, deploy, and distribute; fast to download; and simple to administer. Oracle Database XE is a great starter database for:

* Developers working on PHP, Java, .NET, and Open Source applications
* DBAs who need a free, starter database for training and deployment
* Independent Software Vendors (ISVs) and hardware vendors who want a starter database to distribute free of charge
* Educational institutions and students who need a free database for their curriculum

**Features:**

* [Application Development](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02008)
* [Availability](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02009)
* [Business Intelligence](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02010)
* [Clustering](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02011)
* [Content Management](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02012)
* [Database Overall](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02014)
* [Database Security](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02020)
* [Grid Computing](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02015)
* [Grid Management](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02019)
* [Information Integration](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02016)
* [Location Services](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02017)
* [Performance and Scalability](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02018)
* [Server Manageability](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02021)
* [Windows](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#AREANO02024)
* [Workspace Manager](https://docs.oracle.com/cd/B19306_01/server.102/b14214/chapter1.htm#BIHCICBG)

**Limitations:**

Oracle Database XE is free for runtime usage with the following limitations:

* Supports up to 4GB of user data (in addition to Oracle system data)
* Single instance only of Oracle Database XE on any server
* May be installed on a multiple CPU server, but only executes on one processor in any server
* May be installed on a server with any amount of memory, but will only use up to 1GB RAM of available memory

**Installation steps:**

To install 10g universal edition, double click, OracleXEUniv.exe, the install wizard starts. It will guide you to finish the installation process. You should take notes about:

* The SYSTEM password you select: fyicenter.
* Database server port: 1521.
* Database HTTP port: 8080.
* MS Transaction Server port: 2030.
* The directory where 10g XE is installed: \oraclexe\
* Hard disk space taken: 1655MB.

**How to login? :**

The first thing you need to do is to log in as the Oracle Database XE Administrator. Follow these steps:

1. Open the Database Home Page login window:
   * On Windows, from the **Start** menu, select **Programs** (or **All Programs**), then **Oracle Database 10g Express Edition**, and then **Go To Database Home Page**.
   * On Linux, click the **Application** menu (on Gnome) or the **K** menu (on KDE), then point to **Oracle Database 10g Express Edition**, and then Go To **Database Home Page**.
2. At the Database Home Page login window, enter the following information:
   * **Username:** Enter system for the user name.
   * **Password:**Enter the password that was specified when Oracle Database XE was installed.
3. Click **Login**.

The Oracle Database XE home page appears.

**BRIEF INTRODUCTION**

**SQL:-**

Structure Query Language(SQL) is a programming language used for storing and managing data in RDBMS. SQL was the first commercial language introduced for E.F Codd's **Relational** model. Today almost all RDBMS(MySql, Oracle, Infomix, Sybase, MS Access) uses **SQL** as the standard database language. SQL is used to perform all type of data operations in RDBMS.

What Can SQL do?

* SQL can execute queries against a database
* SQL can retrieve data from a database
* SQL can insert records in a database
* SQL can update records in a database
* SQL can delete records from a database
* SQL can create new databases
* SQL can create new tables in a database
* SQL can create stored procedures in a database
* SQL can create views in a database
* SQL can set permissions on tables, procedures, and views

**DDL (Data Definition Language):**

Changes to the structure of the database are handled by a different set of SQL statements, usually called the SQL ***Data Definition Language***, or***DDL*.**

Using DDL statements it is possible to:

* Define and create a new table
* Remove a table that is no longer needed
* Change the definition of an existing table
* Define a virtual table (view) of data
* Establish security controls for a database
* Build an index to make table access faster
* Control the physical storage of data by the DBMS

 The Data Definition Language is based on three SQL verbs:

**CREATE** :It defines and creates a database object

**DROP** : It removes an existing database object

**ALTER** :It  changes the definition of a database object

Let us see the details of each statement.

CREATE TABLE Statement

The *CREATE TABLE* statement defines a new table in the database and prepares it to accept data. The various clauses of the statement specify the elements of the table definition.

**Syntax:** **Create table Table\_name (column\_name (Data\_type));**

DROP TABLE statement

Sometimes it is necessary to dispose of old tables, which are no longer in use. This is done through the use of the DROP TABLE statement. The table name in the statement identifies the table to be dropped. Normally you will be dropping one of your own tables and will use an unqualified table name, but it is possible to drop a table owned by another user, assuming that you have the required permission.

**Syntax:** Drop table Table\_name

## ALTER TABLE Statement

After a table has been in use for some time, users often discover that they want to store additional information about the entities represented in the table. Changes to table structures can be handled using the **ALTER TABLE** statement.

Using the ALTER TABLE statement we can:

* Add a column to a table
* Drop a column from a table
* Change the default value for a column
* Add or drop a primary key for a table
* Add or drop a foreign key for a table
* Add or drop a constraint for a table

**DML (Data Manipulation Language):**

A **data manipulation language** (**DML**) is a family of syntax elements similar to a computer programming **language** used for selecting, inserting, deleting and updating data in a database. Performing read-only queries of data is sometimes also considered a component of **DML.** DML is mostly incorporated in SQL databases.

The functional capability of DML is organized in manipulation commands like SELECT, UPDATE, INSERT INTO and DELETE FROM, as described below:

* SELECT: This command is used to retrieve rows from a table. The syntax is SELECT [column name(s)] from [table name] where [conditions]. SELECT is the most widely used DML command in SQL.
* UPDATE: This command modifies data of one or more records. An update command syntax is UPDATE [table name] SET [column name = value] where [condition].
* INSERT: This command adds one or more records to a database table. The insert command syntax is INSERT INTO [table name] [column(s)] VALUES [value(s)].
* DELETE: This command removes one or more records from a table according to specified conditions. Delete command syntax is DELETE FROM [table name] where [condition].

**Use Of Command :-**

1] CREATE Command:- The *CREATE TABLE* statement defines a new table in the database and prepares it to accept data. The various clauses of the statement specify the elements of the table definition.

Syntax : Create table table\_name(column\_name1 data\_type,column\_name2 datatype)

Eg: create table student(name char(10),rollno int,branch char(5),city char(5))

2] INSERT Command:- This command adds one or more records to a database table.

Syntax: insert into table\_name(column\_name1 ,column\_name2) values( value1,value2)

Eg: insert into table student(name ,rollno ,branch ,city ) values (‘gagan’,12,’CSE’,’SGNR’)

3] RENAME:

Rename command is used to change name of a table

SYNTAX:

RENAME <old table name> to <new table name>

rename student to studentdb

4]ALTER :

By use of alter table command we can modify our existing table

We can add new columns by using alter table command

SYNTAX:

Alter table <tablename> add (<new column name> <datatype>(<size>),...)

Eg: alter student add (DOB varchar(10))

we can drop a column using alter command

SYNTAX:

Alter table <tablename> drop column <column name>

altertable student dropcolumn city

We can modify a column i.e. change the datatype of the attribute using alter command

SYNTAX:

Alter table <tablename> modify (<column name> <new data type> (<new size>))

Eg: alter table student modify (name varchar(20))

5] UPDATE :

Update command is used to change the data values in the table

SYNTAX:

Update <table\_name> set <attribute\_name>=<value> where <condition>

6 ] SELECT:

Once data has been inserted into the table the next most logical operation is to view what has been inserted

SELECT verb is used to view this.

.All the rows and columns

SYNTAX:

Select \* from <tablename>

7] ELIMINATING DUPLICATES:

Select distinct \* from <table\_name>

.only some columns and eliminating duplicates

Select distinct <column1>,<column2>,... from <table\_name>

**RDBMS DDL COMMANDS :- 1**

**Aim:** Create a table using SQL commands, include 5 columns and 5 attributes in it,

assign datatypes and perform basic operations

**Software used:** Oracle 12c SE

**Queries:**

CREATE TABLE students(name char(20), roll\_no number, branch char(5), city char(20) , marks number, pincode number);

select \* from students

INSERT INTO students values ('Rohit',83,’CSE’,'Jalandhar',95,144011);

INSERT INTO students values ('Nikhil',84,’CSE’,'Jalandhar',90,144011);

INSERT INTO students values ('Ishan',85,’CSE’,'Jalandhar',99,144011);

INSERT INTO students values ('Lakshay',86,’CSE’,'Jalandhar',98,144011);

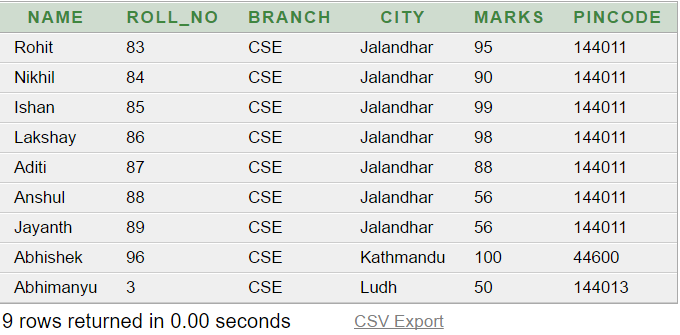
INSERT INTO students values ('Aditi',87,’CSE’,'Jalandhar',88,144011);

INSERT INTO students values (‘Anshul’,88,’CSE’,'Jalandhar',56,144011);

INSERT INTO students values ('Jayanth',89’CSE’,'Jalandhar',56,144011);

INSERT INTO students values ('Abhishek',96,’CSE’,'Kathmandu',100,44600);

INSERT INTO students values ('Abhimanyu',03,’CSE’,'Ludh',50,144013);



**RDBMS DML COMMANDS :-2**

**Aim:** To Perform the Given statements using SQL commands and queries.

1. Retrieve **DATA** from student1 table when city must be Jalandhar and Roll No. Must be

45.

2. Retrieve **DATA** from student1 table when city must be Jalandhar or Roll No. Must be

45.

3. Retrieve **DATA** from student1 table where Roll No. is not greater than 25.

4. Retrieve student name student1 table where city is jalandhar and Roll No. is 25 and age

must be greater than 10.

5. Retrieve student name student1 table where city is jalandhar or Roll No. is 25 and age

must be other than 10.

6. Retrieve age from student1 table where city is other than jalandhar and Roll No. must

be 15.

7. Retrieve **DATA** from student1 table where city is other than jalandhar and age must be

other than 15 and Roll No. must be other than 18.

8. Retrieve **DATA** from student1 table where city is other than jalandhar and age must be

other than 15 and Roll No. must not be equal to other than 18.

9. Retrieve **DATA** from student1 table where city is not other than jalandhar or age must

be other than 15 and Roll No. must be greater than 18.

10. Retrieve **DATA** from student1 table where city is not other than jalandhar and roll no.

must be greater than 18 and age must be other than 21.

**Software Used**: Oracle 12c SE

**Queries:**

**select** \* from student1

**INSERT INTO** student1 values ('Arjun',17,20,'M','FAZILKA');

**INSERT INTO** student1 values ('Deepak',22,20,'M','LUDHIANA');

**select** \* from student1 order by rollno

Queries:-

1. **SELECT \*FROM** student1 where city='Fzr' and rollno= 45

2. **SELECT \*FROM** student1 where city='Jalandhar' or rollno= 45

3. **SELECT \*FROM** student1 where not(rollno> 25)

4. **SELECT** name **FROM** student1 where city='Jalandhar' and rollno= 25 and age>10

5. **SELECT** name **FROM** student1 where city='Jalandhar' or rollno= 25 and not (age=10)

6. **SELECT \* FROM** student1 where not(city='Jalandhar')and rollno=13

7. **SELECT \* FROM** student1 where not(city='Jalandhar') and not(rollno= 7) and not(age=15)

8. **SELECT \* FROM** student1 where not(city='Jalandhar') and rollno= 18 and not(age=15)

9. **SELECT \* FROM** student1 where city='Jalandhar' and not( age=15) or rollno>18

10. **SELECT \* FROM** student1 where city='Jalandhar' and rollno>18 and not (age=21)