

LAB - 2• Theory:

→ Database: structured collection of data that is stored and organised in a way that it allows efficient retrieval & manipulation of the data.

→ Query: request for info from a database. It's a command used to retrieve, modify or manipulate data stored in a database.

→ Basic syntax:

① Create database:

Create Database db-name;

② - selecting database:

Use db-name;

③ - Creating a table

Create table table-name (
column1 constraints,
column2 constraints);

④ - Inserting data into table

Insert into table-name (column1, column2 . . .)
values (value1, value2);

⑤ - Deleting data from table:

Delete from table-name where condition;

⑥ Updating a table :

Update table - name

set column = value, - - - -

where condition ;

⑦ Selecting data from table

Select column1, column2 - - - -

from table - name

where condition

order by column ASC / DESC ;

• Lab 3 :

• Theory :

- σ - selection operator - selects the attributes from a particular relation on which operations are performed.
- π - projection operator - projects a particular column(s) as output.
- ρ - renaming operator - used to rename relations, attributes for convenience.
- \bowtie - natural join - cross product containing common elements.
- \times - cross product.
- $-$ - subtraction operator - includes every tuple of A that B doesn't have ($A - B$).
- \div - division operator - (A/B) A containing all elements of B.
- \cup - union - ($A \cup B$) - all elements of A and B.
- \cap - intersection - ($A \cap B$) - containing all common elements of A and B.

Lab 4 :

- Theory : nested queries, correlated queries and aggregate operators.

① Nested queries : queries that are embedded within another query.

Syntax :

Select column1, column2 - - -

from table1

where column1 in (select column1 from table2
where condition);

② Correlated queries : they are a type of nested query in which the subquery references a column from the outer query.

Syntax :

Select column1, column2 - - -

from table1 t1

where column1 = (select max(column1) from
table2 t2 where t1.column2 = t2.
column2);

③ Aggregate operators : perform calculations on a set of values and return a single value as the result.

1. COUNT () : returns the number of rows that match a specific condition.
2. SUM () : returns the sum of the values in specified column.
3. AVG () : returns the average of the values.
4. MIN () : returns the minimum value in the specified column.
5. MAX () : returns the maximum value.

Lab 5• Theory :

→ DESC is a SQL keyword used to retrieve information of the result set in decreasing order.

```
Select column-1, column-2, ---  
from table-name  
order by column-name desc ;
```

→ LIMIT is a SQL clause to limit the number of rows returned by a query. It's often used in conjunction with the order by clause to sort the result set before limiting the number of rows.

```
Select column-name(s)  
from table-name  
[where condition]  
order by column-name(s)  
limit no-of-rows ;
```

Lab 6• Theory :

→ Order By is a SQL clause used to sort the result set of a query in ascending or descending order based on one or more columns.

It can be used with select, update, delete and other SQL statements to specify the order in which the result set should be returned.

Select column 1

From table 1

Where condition

Order by column1 [ASC/DESC], column2 [ASC/
DESC]

Lab 7 :• Theory :

→ Trigger : a special type of stored procedure that is automatically executed in response to certain events such as inserting, updating or deleting data in a table.

2 types :

(i) Before trigger : ~~these~~ executed before the data modification statement is executed.

(ii) After trigger : executed after the data modification statement is executed.

① Insert trigger : trigger is executed automatically after a new record is inserted into a table.

create trigger name after insert on table-name
for each row

begin

-- trigger code

end;

② Delete trigger : executed automatically after a ~~record~~ record is deleted from a table.

create trigger name after delete on table-name
for each row

begin

-- trigger code

end;

②. Update trigger : executed automatically
after a record is updated in a table.
create trigger name after delete on
table_name

for each row

begin

-- trigger code here.

end;

Lab 8 :

• Theory :

→ stored procedures are a type of database object that contains a set of SQL statements that can be executed as a single unit.

① Creation of stored procedures :

create procedure procedure-name
(IN parameter-name datatype)

Begin -- procedure code

End ;

② Execution of procedures :

call procedure-name (parameter-value);

(or)

exec procedure-name (parameter-value);

③ Modification of procedures :

~~At~~

Alter procedure procedure-name

(IN parameter-name-new datatype)

Begin

-- procedure code

End ;

Lab 9 :• Theory :

→ cursor is a programming construct that allows user to traverse through a set of rows returned by a SQL query, one row at a time. They are used to perform operations on individual rows within a result set.

Syntax :

```
Declare cursor-name cursor for
Select column1, column2, column3
from table-name
where condition;
```

```
Open cursor-name;
```

```
Declare @column1 datatype, @column2 datatype,
        @column3 datatype;
```

```
Fetch next from cursor-name into @column1,
        @column2, @column3;
```

```
While @fetch-status = 0
```

```
Begin
```

```
Print @column1 + ' ' + @column2 + ' '
        + @column3;
```

```
Fetch next from cursor-name into @column1,
        @column2, @column3;
End;
```

-- close the cursor

close cursor-name;

deallocate cursor-name;

Lab - 10• Theory :

→ PL : procedural language which is a programming language designed to create stored procedures, functions, triggers etc.

→ Syntax :

Declare

X number = 100;

Begin

For i In 1 --- 10 loop

If mod(i, 2) = 0 then

insert into temp values (i, x, 'i is even');

else

insert into temp values (i, x, 'i is odd');

end if

X = X + 100;

end loop.

commit;

end;