Experiment Number: 2					
Date of Performance:					
Date of Submission:					
Program Execution/ formation/ correction/ ethical practices (07)	Documentation (02)	Timely Submission (03)	Viva Answer to sample questions (03)	Experiment Total (15)	Sign

Aim: Implementation of Dimensional and Fact table based on case study one.

Lab outcomes: CSL 503.1: Design data warehouse and perform various OLAP operations.

Problem Statement: Implement the Dimensional table & Fact table.

Theory:
Star schema: Star Schema in data warehouse, in which the centre of the star can have one fact table and a number of associated dimension tables. It is known as star schema as its structure resembles a star.

Snowflake schema: Snowflake Schema in data warehouse is a logical arrangement of tables in a multidimensional database such that the ER diagram resembles a snowflake shape. A Snowflake Schema is an extension of a Star Schema, and it adds additional dimensions. The dimension tables are normalized which splits data into additional tables.

Program   Listing   and   Output:

Star schema

Creation of Fact table

Create table fact_table (
        Item_key int(20), Cons_key
        int(20), Buyer_key int(20),
        Time_id int(20),
        Low_estimate int(20),
        High_estimate int(20),
        Reserved_price int(20)
        FOREIGN KEY (Item_key) REFERENCES Item_table(Item_key) FOREIGN
        KEY (Cons_key) REFERENCES Consigner_table(Cons_key) FOREIGN KEY
        (Buyer_key) REFERENCES Buyer_table(Buyer_key) FOREIGN KEY
        (Time_id) REFERENCES Time(Time_id)
        );

	Field	Type	Null	Key	Default	Extra
▶	Item_key	int	YES	MUL	NULL	
	Cons_key	int	YES	MUL	NULL	
	Buyer_key	int	YES	MUL	NULL	
	Time_id	int	YES	MUL	NULL	
	Low_estimate	int	YES		NULL	
	High_estimate	int	YES		NULL	
	Reserved_price	int	YES		NULL	

insert into fact_table values (101,1,10,1,20,50,35);
insert into fact_table values (111,2,11,2,1000,1500,1200);

Item_key	Cons_key	Buyer_key	Time_id	Low_estimate	High_estimate	Reserved_price
101	1	10	1	20	50	35
102	1	11	2	10	25	20
101	1	10	1	1200	1499	1350

Creation of Item table

Create table Item_table (
        Item_key int(20),
        Item_name varchar(20),
        Item_no int(20),
        Department varchar(20),
        Sold_flag varchar(20)
        );

Field	Type	Null	Key	Default	Extra
Item_key	int	YES		NULL	
Item_name	varchar(20)	YES		NULL	
Item_no	int	YES		NULL	
Department	varchar(20)	YES		NULL	
Sold_flag	varchar(20)	YES		NULL	

insert into item_table values (101,'cookies',10,'Snacks','India');

Item_key	Item_name	Item_no	Department	Sold_flag
101	cookies	10	Snacks	India
102	lays	20	Snacks	India
120	GTA	20	Games	India

Creation of Buyer table

Create table Buyer_table (
        Buyer_key int(20),
        Buyer_name varchar(20),
        Buyer_no int(20), Buyer_type
        varchar(20), Buyer_state
        varchar(20), Buyer_city
        varchar(20), Buyer_country
        varchar(20), Buyer_pin int(10)
        );

Field	Type	Null	Key	Default	Extra
▶ Buyer_key	int	YES		NULL	
Buyer_name	varchar(20)	YES		NULL	
Buyer_no	int	YES		NULL	
Buyer_type	varchar(20)	YES		NULL	
Buyer_state	varchar(20)	YES		NULL	
Buyer_city	varchar(20)	YES		NULL	
Buyer_country	varchar(20)	YES		NULL	
Buyer_pin	int	YES		NULL	

insert into Buyer_table values (010,'Ramesh',1,'Student','Maharashtra','Mumbai','India',28);
insert into Buyer_table values (011,'Sahil',2,'Student','Maharashtra','Mumbai','India',12);
insert into Buyer_table values (112,"Alex",10,"Faculty","Maharashtra","Pune","India",128);

Buyer_key	Buyer_name	Buyer_no	Buyer_type	Buyer_state	Buyer_city	Buyer_country	Buyer_pin
▶ 10	Ramesh	1	Student	Maharashtra	Mumbai	India	28
11	Sahil	2	Student	Maharashtra	Mumbai	India	12
112	Alex	10	Faculty	Maharashtra	Pune	India	128

Creation of Consigner table

Create table Consigner_table (
    Cons_key int(20), Cons_name
    varchar(20), Cons_code
    int(20) Cons_type
    varchar(20), Cons_state
    varchar(20), Cons_city
    varchar(20), Cons_country
    varchar(20), Cons_pin int(20)
    );

Field	Type	Null	Key	Default	Extra
▶ Cons_key	int	YES		NULL	
Cons_name	varchar(20)	YES		NULL	
Cons_code	int	YES		NULL	
Cons_type	varchar(20)	YES		NULL	
Cons_state	varchar(20)	YES		NULL	
Cons_city	varchar(20)	YES		NULL	
Cons_country	varchar(20)	YES		NULL	
Cons_pin	int	YES		NULL	

insert into Consigner_table values (01,"TCL",201,"Domestic","Maharashtra","Mumbai","India", 28);
insert into Consigner_table values (02,"TCL",202,"Domestic","Maharashtra","Mumbai", "India", 12);
insert into Consigner_table values (22,"Global",252,"Domestic","Maharashtra","Pune", "India", 128);

Cons_key	Cons_name	Cons_code	Cons_type	Cons_state	Cons_city	Cons_country	Cons_pin
1	TCL	201	Domestic	Maharashtra	Mumbai	India	28
2	TCL	202	Domestic	Maharashtra	Mumbai	India	12
22	Global	252	Domestic	Maharashtra	Pune	India	128

Creation of Time table

```
Create table Time (
        Time_id int(20),
        Date date,
        Month varchar(10),
        Quarter varchar(10),
        Year varchar(10)
        );
```

Field	Type	Null	Key	Default	Extra
Time_id	int	YES		NULL	
Date	date	YES		NULL	
Month	varchar(10)	YES		NULL	
Quarter	varchar(10)	YES		NULL	
Year	varchar(10)	YES		NULL	

```
insert into Time values (1,20230102,"Jan","Q1",2023);
insert into Time values (2,20230204,"Feb","Q1",2023);
insert into Time values (3,20230617,"Jun","Q2",2023);
insert into Time values (4,20231208,"Dec","Q4",2023);
```

Time_id	Date	Month	Quarter	Year
1	2023-01-02	Jan	Q1	2023
2	2023-02-04	Feb	Q1	2023
3	2023-06-17	Jun	Q2	2023
4	2023-12-08	Dec	Q4	2023

Snowflake schema

Creation of Fact table

```
Create table fact_table (
Item_key int(20), Cons_key int(20), Buyer_key int(20), Time_id int(20),
Low_estimate int(20),
High_estimate int(20),
Reserved_price int(20),
FOREIGN KEY (Item_key) REFERENCES Item_table(Item_key),
FOREIGN KEY (Cons_key) REFERENCES Consigner_table(Cons_key),
FOREIGN KEY (Buyer_key) REFERENCES Buyer_table(Buyer_key),
FOREIGN KEY (Time_id) REFERENCES Time(Time_id)
);
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
Item_key	int	YES	MUL	NULL	
Cons_key	int	YES	MUL	NULL	
Buyer_key	int	YES	MUL	NULL	
Time_id	int	YES	MUL	NULL	
Low_estimate	int	YES		NULL	
High_estimate	int	YES		NULL	
Reserved_price	int	YES		NULL	

```
insert into fact_table values (101,01,010,1,20,50,35);
insert into fact_table values (104,22,112,2,1000,1500,1200);
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Item_key	Cons_key	Buyer_key	Time_id	Low_estimate	High_estimate	Reserved_price
101	1	10	1	20	50	35
104	22	112	2	1000	1500	1200

Creation of Item table

```
Create table Item_table (
        Item_key int(20),
        Item_name varchar(20),
        Item_no int(20),
        Department varchar(20),
        Sold_flag varchar(20)
        );
```

	Field	Type	Null	Key	Default	Extra
▶	Item_key	int	NO	PRI	NULL	
	Item_name	varchar(20)	YES		NULL	
	Item_no	int	YES		NULL	
	Department	varchar(20)	YES		NULL	
	Sold_flag	varchar(20)	YES		NULL	

insert into item_table values (101,'cookies',10,'Snacks','India');
insert into item_table values (102,'Lays',20,'Snacks','India');
insert into item_table values (103,'GTA',10,'Games','India');
insert into item_table values (104,'NFS',30,'Games','India');

	Item_key	Item_name	Item_no	Department	Sold_flag
▶	101	cookies	10	Snacks	India
	102	Lays	20	Snacks	India
	103	GTA	10	Games	India
	104	NFS	30	Games	India
＊	NULL	NULL	NULL	NULL	NULL

<u>Creation of Buyer table</u>

Create table Buyer_table (
      Buyer_key int(20),
      Buyer_name varchar(20),
      Buyer_no int(20),
      Buyer_type varchare(20),
      );

	Field	Type	Null	Key	Default	Extra
▶	Buyer_key	int	NO	PRI	NULL	
	Buyer_name	varchar(20)	YES		NULL	
	Buyer_no	int	YES		NULL	
	Buyer_type	varchar(20)	YES		NULL	

```
insert into Buyer_table values (010,'Ramesh',1,'Student');
insert into Buyer_table values (011,'Sahil',2,'Student');
insert into Buyer_table values (112,"Alex",10,"Faculty");
```

Buyer_key	Buyer_name	Buyer_no	Buyer_type
10	Ramesh	1	Student
11	Sahil	2	Student
112	Alex	10	Faculty
NULL	NULL	NULL	NULL

Creation of Consigner table

```
Create table Consigner_table (
        Cons_key int(20),
        Cons_name varchar(20),
        Cons_code int(20)
        Cons_type varchar(20),
        );
```

Field	Type	Null	Key	Default	Extra
Cons_key	int	NO	PRI	NULL	
Cons_name	varchar(20)	YES		NULL	
Cons_code	int	YES		NULL	
Cons_type	varchar(20)	YES		NULL	

```
insert into Consigner_table values (01,"TCL",201,"Domestic");
insert into Consigner_table values (02,"TCL",202,"Domestic");
insert into Consigner_table values (22,"Global",252,"Domestic");
```

Cons_key	Cons_name	Cons_code	Cons_type
1	TCL	201	Domestic
2	TCL	202	Domestic
22	Global	252	Domestic
NULL	NULL	NULL	NULL

<u>Creation of Time table</u>

Create table Time (
        Time_id int(20),
        Date date,
        Month varchar(10),
        Quarter varchar(10),
        Year varchar(10)
        );

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
Time_id	int	NO	PRI	NULL	
Date	date	YES		NULL	
Month	varchar(10)	YES		NULL	
Quarter	varchar(10)	YES		NULL	
Year	varchar(10)	YES		NULL	

insert into Time values (1,20230102,"Jan","Q1",2023);
insert into Time values (2,20230204,"Feb","Q1",2023);
insert into Time values (3,20230617,"Jun","Q2",2023);
insert into Time values (4,20231208,"Dec","Q4",2023);

Result Grid | Filter Rows: | Edit:

Time_id	Date	Month	Quarter	Year
1	2023-01-02	Jan	Q1	2023
2	2023-02-04	Feb	Q1	2023
3	2023-06-17	Jun	Q2	2023
4	2023-12-08	Dec	Q4	2023
NULL	NULL	NULL	NULL	NULL

<u>Creation of address table</u>

Create table buyer_address(
        Buyer_state varchar(20),
        Buyer_city varchar(20),
        Buyer_country varchar(20),
        Buyer_pin int(10)
        );

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
Buyer_state	varchar(20)	YES		NULL	
Buyer_city	varchar(20)	YES		NULL	
Buyer_country	varchar(20)	YES		NULL	
Buyer_pin	int	YES		NULL	

insert into buyer_address values('Maharashtra','Mumbai','India',28);
insert into buyer_address values('Maharashtra','Mumbai','India',12);
insert into buyer_address values('Maharashtra','Pune','India',128);

| Buyer_state	Buyer_city	Buyer_country	Buyer_pin
Maharashtra	Mumbai	India	28
Maharashtra	Mumbai	India	28
Maharashtra	Mumbai	India	12
Maharashtra	Pune	India	128

Create table consigner_address(
        Cons_state varchar(20),
        Cons_city varchar(20),
Cons_country varchar(20), Cons_pin
        int(20)
        );

Field	Type	Null	Key	Default	Extra
Cons_state	varchar(20)	YES		NULL	
Cons_city	varchar(20)	YES		NULL	
Cons_country	varchar(20)	YES		NULL	
Cons_pin	int	YES		NULL	

insert into consigner_address values('Maharashtra','Mumbai','India',28);
insert into consigner_address values('Maharashtra','Mumbai','India',12);
insert into consigner_address values('Maharashtra','Pune','India',128);

Cons_state	Cons_city	Cons_country	Cons_pin
Maharashtra	Mumbai	India	28
Maharashtra	Mumbai	India	12
Maharashtra	Pune	India	128

Conclusion: Here we are able to implement dimensional tables and fact tables based on case study.