



Department of Computer Science and Engineering
Data Science

Academic Year: 2024-2025

Semester: V

Class / Branch: CSE(DS)

Subject: DWM LAB

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Date Of Performance: 25/07/24

Date Of Submission: 01/08/24

Experiment No. 2

Aim:- Implementation of all dimension tables and fact tables based on experiment 1 case study.

- i) Identifying the source tables and populating sample data
- ii) Implementation of dimensional data model i.e. Star schema, Snowflake schema and

Output:

- i) All the dimensional tables:

Creation :

```
mysql> create database Ticket_Reservation
-> ;
Query OK, 1 row affected (0.02 sec)

mysql> use Ticket_Reservation;
Database changed
mysql> show tables;
Empty set (0.00 sec)
```



```
mysql> create table coach(coach_id varchar(20) primary key,  
-> coach_type varchar(20),  
-> seats_reserved varchar(20),  
-> canteen_availability varchar(20));  
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> desc coach;
```

Field	Type	Null	Key	Default	Extra
coach_id	varchar(20)	NO	PRI	NULL	
coach_type	varchar(20)	YES		NULL	
seats_reserved	varchar(20)	YES		NULL	
canteen_availability	varchar(20)	YES		NULL	

```
4 rows in set (0.00 sec)
```

```
mysql> create table class(class_id varchar(20) primary key,  
-> class_name varchar(20),  
-> seat_per_coach varchar(20),  
-> class_amount varchar(20));  
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> desc class;
```

Field	Type	Null	Key	Default	Extra
class_id	varchar(20)	NO	PRI	NULL	
class_name	varchar(20)	YES		NULL	
seat_per_coach	varchar(20)	YES		NULL	
class_amount	varchar(20)	YES		NULL	

```
4 rows in set (0.00 sec)
```



```
mysql> alter table class add column coach_id varchar(20);
Query OK, 0 rows affected (0.02 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table class add foreign key (coach_id) references coach(coach_id);
Query OK, 0 rows affected (0.03 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc class;
```

Field	Type	Null	Key	Default	Extra
class_id	varchar(20)	NO	PRI	NULL	
class_name	varchar(20)	YES		NULL	
seat_per_coach	varchar(20)	YES		NULL	
class_amount	varchar(20)	YES		NULL	
coach_id	varchar(20)	YES	MUL	NULL	

```
5 rows in set (0.00 sec)
```

```
mysql> create table passenger(pas_id varchar(20) primary key,
-> pas_name varchar(20),
-> pas_age int,
-> class_id varchar(20),foreign key (class_id) references class(class_id));
Query OK, 0 rows affected (0.05 sec)

mysql> desc passenger;
```

Field	Type	Null	Key	Default	Extra
pas_id	varchar(20)	NO	PRI	NULL	
pas_name	varchar(20)	YES		NULL	
pas_age	int	YES		NULL	
class_id	varchar(20)	YES	MUL	NULL	

```
4 rows in set (0.00 sec)
```



```
mysql> create table train(train_code varchar(20) primary key,  
-> train_name varchar(20),  
-> start_time varchar(20),  
-> end_time varchar(20));  
Query OK, 0 rows affected (0.02 sec)
```

```
mysql> desc train;
```

Field	Type	Null	Key	Default	Extra
train_code	varchar(20)	NO	PRI	NULL	
train_name	varchar(20)	YES		NULL	
start_time	varchar(20)	YES		NULL	
end_time	varchar(20)	YES		NULL	

```
4 rows in set (0.00 sec)
```

```
mysql> create table ticket_reservation(PNR_no varchar(20) primary key,  
-> train_code varchar(20),  
-> foreign key (train_code) references train(train_code),  
-> from_station varchar(20),  
-> from_date varchar(20),  
-> to_date varchar(20));  
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> alter table ticket_reservation drop column from_station;  
Query OK, 0 rows affected (0.02 sec)  
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> desc ticket_reservation;
```

Field	Type	Null	Key	Default	Extra
PNR_no	varchar(20)	NO	PRI	NULL	
train_code	varchar(20)	YES	MUL	NULL	
from_date	varchar(20)	YES		NULL	
to_date	varchar(20)	YES		NULL	

```
4 rows in set (0.00 sec)
```




```
mysql> create table station(station_id varchar(20) primary key,
-> station_name varchar(20));
Query OK, 0 rows affected (0.02 sec)

mysql> desc station;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| station_id     | varchar(20)   | NO   | PRI | NULL    |       |
| station_name   | varchar(20)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> alter table passenger add column train_code varchar(20);
Query OK, 0 rows affected (0.02 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table passenger add foreign key (train_code) references train(train_code);
Query OK, 0 rows affected (0.04 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc passenger;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| pas_id         | varchar(20)   | NO   | PRI | NULL    |       |
| pas_name       | varchar(20)   | YES  |     | NULL    |       |
| pas_age        | int           | YES  |     | NULL    |       |
| class_id       | varchar(20)   | YES  | MUL | NULL    |       |
| train_code     | varchar(20)   | YES  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

```
mysql> create table fact_sales(PNR_no varchar(20),foreign key (PNR_no) references
ticket_reservation(PNR_no),
-> station_id varchar(20), foreign key (station_id) references station(station
_id),
-> class_id varchar(20), foreign key (class_id) references class(class_id),
-> train_code varchar(20), foreign key (train_code) references train(train_cod
e),
-> pas_id varchar(20), foreign key (pas_id) references passenger(pas_id),
-> no_of_tickets_sold int,
-> total_amount int);
Query OK, 0 rows affected (0.04 sec)

mysql> desc fact_sales;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| PNR_no         | varchar(20)   | YES  | MUL | NULL    |       |
| station_id     | varchar(20)   | YES  | MUL | NULL    |       |
| class_id       | varchar(20)   | YES  | MUL | NULL    |       |
| train_code     | varchar(20)   | YES  | MUL | NULL    |       |
| pas_id         | varchar(20)   | YES  | MUL | NULL    |       |
| no_of_tickets_sold | int          | YES  |     | NULL    |       |
| total_amount   | int           | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)
```



```
mysql> show tables;
+-----+
| Tables_in_ticket_reservation |
+-----+
| class
| coach
| fact_sales
| passenger
| station
| ticket_reservation
| train
+-----+
7 rows in set (0.00 sec)
```

Insertion :

```
mysql> insert into train_details(train_id,total_km,start_station,end_station,via,time_req)
values ("ABC101",2000,"panvel","thrissur","ratnagiri","25hrs"),
-> ("DEF102",2600,"thane","guruvayoor","goa","32hrs"),
-> ("GHI103",100,"miraroad","churchgate","kandivali","2hrs"),
-> ("JKL104",250,"LTT","delhi","gujrat","20hrs"),
-> ("MNO105",2000,"karnataka","assam","aurangabad","36hrs");
Query OK, 5 rows affected (0.00 sec)
Records: 5 Duplicates: 0 Warnings: 0

mysql> select * train_details;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that correspond
s to your MySQL server version for the right syntax to use near 'train_details' at line 1
mysql> select * from train_details;
+-----+-----+-----+-----+-----+-----+
| train_id | total_km | start_station | end_station | via | time_req |
+-----+-----+-----+-----+-----+-----+
| ABC101 | 2000 | panvel | thrissur | ratnagiri | 25hrs |
| DEF102 | 2600 | thane | guruvayoor | goa | 32hrs |
| GHI103 | 100 | miraroad | churchgate | kandivali | 2hrs |
| JKL104 | 250 | LTT | delhi | gujrat | 20hrs |
| MNO105 | 2000 | karnataka | assam | aurangabad | 36hrs |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```



```
mysql> insert into train(train_code,train_name,start_time,end_time,train_id) values
-> (1234,"netravati_express","11am","next_day_3pm","ABC101")
-> (13141516,"delhi_express","2pm","next_day_12pm","JKL104"),
-> (17181920,"assam_express","3am","2_days_1pm","MNO105"),
-> (5678,"gareebbrath","9am","next_day_2pm","DEF102"),
-> (9101112,"bombay_express","10am","12pm","GHI103");
Query OK, 5 rows affected (0.00 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> select * from train;
```

train_code	train_name	start_time	end_time	train_id
1234	netravati_express	11am	next_day_3pm	ABC101
13141516	delhi_express	2pm	next_day_12pm	JKL104
17181920	assam_express	3am	2_days_1pm	MNO105
5678	gareebbrath	9am	next_day_2pm	DEF102
9101112	bombay_express	10am	12pm	GHI103

```
5 rows in set (0.00 sec)
```

```
mysql> insert into ticket_reservation(PNR_no,train_code,from_date,to_date) values
-> (1122,13141516,24/7/2023,25/7/2023),
-> (2233,5678,29/9/2021,30/9/2021),
-> (4455,9101112,12/4/2023,12/4/2023),
-> (6677,1234,1/8/2024,2/8/2024),
-> (8899,17181920,15/3/2023,17/3/2023);
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> desc fact_sales;
```

Field	Type	Null	Key	Default	Extra
PNR_no	varchar(20)	YES	MUL	NULL	
station_id	varchar(20)	YES	MUL	NULL	
class_id	varchar(20)	YES	MUL	NULL	
train_code	varchar(20)	YES	MUL	NULL	
pas_id	varchar(20)	YES	MUL	NULL	
no_of_tickets_sold	int	YES		NULL	
total_amount	int	YES		NULL	

```
7 rows in set (0.00 sec)
```




```
mysql> insert into station(station_id,station_name,zone) values
-> ("A101","kandivali","mumbai"),
-> ("B302","thrissur","kerala"),
-> ("D295","miraroad","bhayander"),
-> ("F534","guruvayoor","thrissur"),
-> ("Z206","dombivali","thane");
Query OK, 5 rows affected (0.00 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> select * from station;
+-----+-----+-----+
| station_id | station_name | zone |
+-----+-----+-----+
| A101       | kandivali    | mumbai |
| B302       | thrissur     | kerala |
| D295       | miraroad     | bhayander |
| F534       | guruvayoor   | thrissur |
| Z206       | dombivali    |thane |
+-----+-----+-----+
5 rows in set (0.00 sec)
```

```
mysql> select * from passenger;
Empty set (0.00 sec)

mysql> insert into passenger(pas_id,pas_name,pas_age,class_id,train_code) values
-> (11,"gauri",20,2,1234),
-> (12,"vivek",25,4,9101112),
-> (13,"akshata",18,1,13141516),
-> (14,"mohini",21,5,17181920),
-> (15,"yash",30,4,5678);
Query OK, 5 rows affected (0.00 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> select * from passenger;
+-----+-----+-----+-----+-----+
| pas_id | pas_name | pas_age | class_id | train_code |
+-----+-----+-----+-----+-----+
| 11     | gauri    | 20     | 2        | 1234       |
| 12     | vivek    | 25     | 4        | 9101112    |
| 13     | akshata  | 18     | 1        | 13141516   |
| 14     | mohini   | 21     | 5        | 17181920   |
| 15     | yash     | 30     | 4        | 5678       |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```




```
mysql> insert into fact_sales(PNR_no,station_id,class_id,train_code,pas_id,
-> no_of_tickets_sold,total_amount) values
-> (1122,"A101",1,1234,11,54,56000),
-> (2233,"B302",2,5678,12,24,46000),
-> (4455,"D295",3,9101112,13,89,425000),
-> (6677,"F534",4,13141516,14,66,189000),
-> (8899,"Z206",5,17181920,15,15,23000);
```

Query OK, 5 rows affected (0.00 sec)
Records: 5 Duplicates: 0 Warnings: 0

```
mysql> select * from fact_sales;
```

PNR_no	station_id	class_id	train_code	pas_id	no_of_tickets_sold	total_amount
1122	A101	1	1234	11	54	56000
2233	B302	2	5678	12	24	46000
4455	D295	3	9101112	13	89	425000
6677	F534	4	13141516	14	66	189000
8899	Z206	5	17181920	15	15	23000

5 rows in set (0.00 sec)

```
mysql> insert into coach(coach_id,coach_type,seats_reserved,canteen_availability) values
-> ("A1","seating",10,"yes"),
-> ("A2","seating",15,"no"),
-> ("B2","sleeper",44,"yes"),
-> ("B1","sleeper",52,"yes"),
-> ("C1","sleeper",46,"no");
```

Query OK, 5 rows affected (0.02 sec)
Records: 5 Duplicates: 0 Warnings: 0

```
mysql> select * from coach;
```

coach_id	coach_type	seats_reserved	canteen_availability
A1	seating	10	yes
A2	seating	15	no
B1	sleeper	52	yes
B2	sleeper	44	yes
C1	sleeper	46	no

5 rows in set (0.00 sec)

```
mysql> insert into class(class_id,class_name,seat_per_coach,price,coach_id) value
-> (1,"1st_class",30,"4500rs","A1"),
-> (2,"1st_class",30,"4000rs","A2"),
-> (3,"2nd_class",50,"3500rs","B1"),
-> (4,"2nd_class",60,"3000rs","B2"),
-> (5,"3rd_class",80,"1000rs","C1");
```

Query OK, 5 rows affected (0.00 sec)
Records: 5 Duplicates: 0 Warnings: 0

```
mysql> select * from class;
```

class_id	class_name	seat_per_coach	price	coach_id
1	1st_class	30	4500rs	A1
2	1st_class	30	4000rs	A2
3	2nd_class	50	3500rs	B1
4	2nd_class	60	3000rs	B2
5	3rd_class	80	1000rs	C1

5 rows in set (0.00 sec)



ii) Basic Queries :

```
mysql> select * from class natural join fact_sales where class_id  
=4;
```

class_id	class_name	seat_per_coach	price	coach_id	PNR_no	station_id	train_code	pas_id	no_of_tickets_sold	total_amount
4	2nd_class	60	3000rs	B2	6677	F534	13141516	14	66	189000

1 row in set (0.00 sec)

```
mysql> select min(price) from class where class_id=(select class_id from  
-> fact_sales where no_of_tickets_sold =54);
```

min(price)
4500rs

1 row in set (0.00 sec)

```
mysql> select count(pas_name) from passenger where pas_id  
=(select pas_id from train where train_code=5678);
```

count(pas_name)
5

1 row in set (0.01 sec)