Part B

Airline reservation system:

Brief Introduction

The Airlines reservation System is an application of Database Management System which is used for booking and schedule information. It also provides time to time current information related to airlines schedules. It tracks all the details about the airlines booking, ticket booking. we create this code using MySQL database management system.

Aim of Micro-Project:

- To acquire knowledge about Database management system.
- To use various constraints, function and operators etc.by inbuilt functions in DBMS.
- To develop program to perform read and write operation to the given tables.

Course Outcome Addressed:

- Create database using SQL command.
- Manage database using SQL commands.
- Implement advanced SQL concepts on SQL.

Actual Procedure Followed

1. Decide subject for micro project.
2. Preparation and submission of Abstract
3. Collection of data
4. Discussion and outline of Content
5. Formulation of content
6. Editing of Content
7. Compilation of Report and Presentation
8. Final submission of Micro Project

- ## Applications:

1. Developing an airline reservation system for your airline business enhances the credibility of the airline company and instils the trust and loyalty of customers.

2. Many customers prefer using the airline's website to make their bookings as they can't easily trust other websites. Many flight booking websites turn out to be scams and travellers end up losing money.

3. The pricing on other airline reservation systems is not very transparent and it mostly rises as soon as the customer is about to make the payment at the checkout, whereas the pricing remains constant on the airline's website.

4. Booking directly with the airline's website also provides a lot of miles and points to customers which they can redeem on future flight bookings.

- ## Literature review:

Airline reservation systems (ARS) are systems that allow an airline to sell their inventory (seats). It contains information on schedules and fares and contains a database of reservations (or passenger name records) and of tickets issued (if applicable). ARSs are part of passenger service systems (PSS), which are applications supporting the direct contact with the passenger.
ARS eventually evolved into the computer reservations system (CRS). A computer reservation system is used for the reservations of a particular airline and interfaces with a global distribution system (GDS) which supports travel agencies and other distribution channels in making reservations for most major airlines in a single system. We make this project using MySQL database management system. We use various operators,
Functions, clauses, constraint.
1.Table – Basic unit of storage; composed rows and columns.
2.View – Logically represents subsets of data from one or more tables
3.Sequence – Generates primary key values
4.Index – Improves the performance of some queries
5.Synonym – Alternative name for an object
6. etc.

- **Resources Used:**

Sr.no	Name of Resources	Specification	Qty	Remark
1.	Software	Microsoft Word, MySQL workbench	1	
2.	Database Management Book	Tech-Neo publication	1	

Date : / /20

Subject Teacher **H.O.D** **Principal**

(Mrs. S. D. Raut) **(Dr.D.N.Rewadkar)** **(Dr.D.R.Nandanwar)**

- **We create 5 tables:**

  1. Passengers
  2. Booking office
  3. Flight
  4. Airplane
  5. Airport

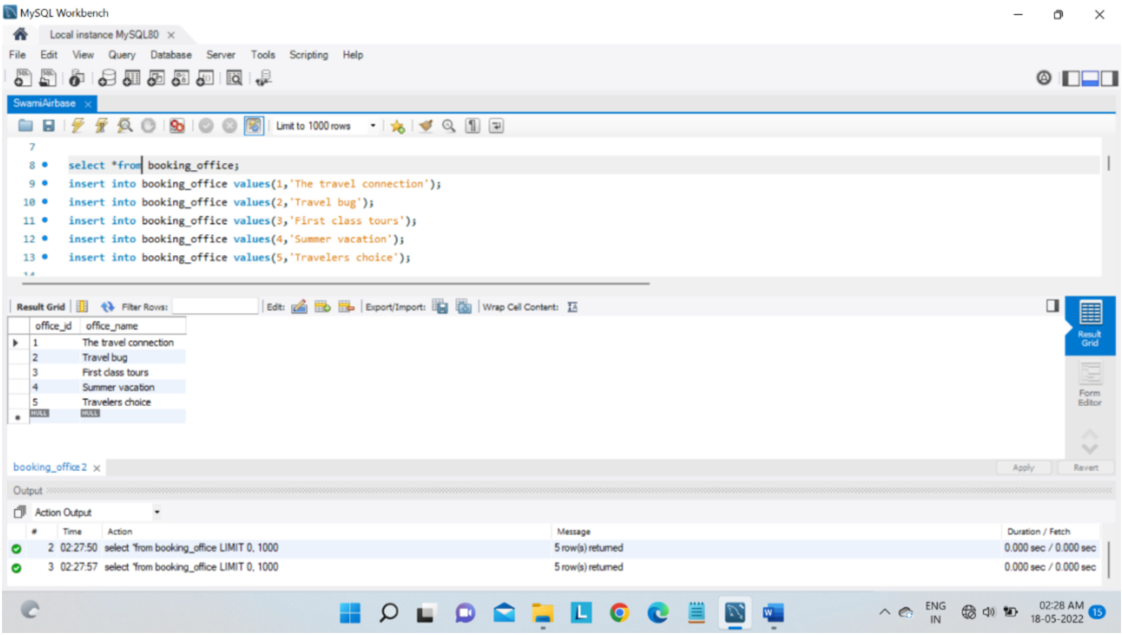
- **Query:**

(For creating database)

```
CREATE DATABASE swamiAirbase;
USE swamiAirbase;
```

(Creating table Booking office)

```
CREATE TABLE booking_office( office_id int not null,
office_name varchar (30),
primary key(office_id));

select *from booking_office;
insert into booking_office values (1,'The travel connection');
insert into booking_office values (2,'Travel bug');
insert into booking_office values (3,'First class tours');
insert into booking_office values (4,'Summer vacation');
insert into booking_office values (5,'Travelers choice');

drop table booking_office;
```



```
select *from booking_office;
insert into booking_office values(1,'The travel connection');
insert into booking_office values(2,'Travel bug');
insert into booking_office values(3,'First class tours');
insert into booking_office values(4,'Summer vacation');
insert into booking_office values(5,'Travelers choice');
```

office_id	office_name
1	The travel connection
2	Travel bug
3	First class tours
4	Summer vacation
5	Travelers choice
NULL	NULL

```
#  Time      Action                                      Message            Duration / Fetch
2  02:27:50  select *from booking_office LIMIT 0, 1000   5 row(s) returned  0.000 sec / 0.000 sec
3  02:27:57  select *from booking_office LIMIT 0, 1000   5 row(s) returned  0.000 sec / 0.000 sec
```

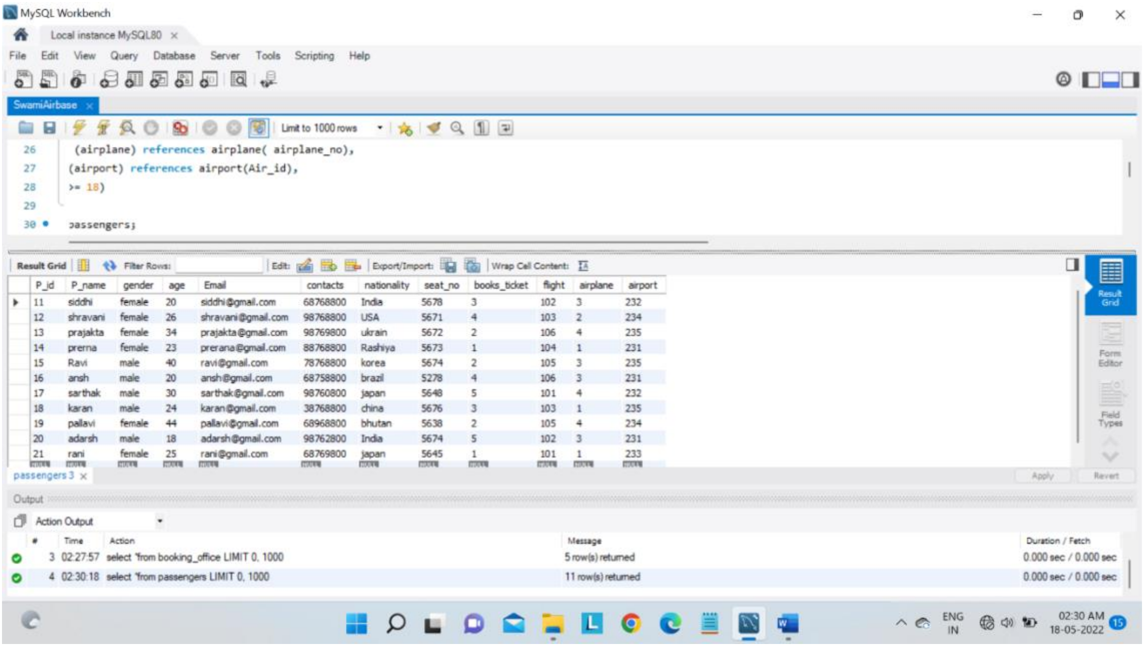
(Creating table passengers)

```
create TABLE passengers(P_id int not null,
 P_name varchar(30) not null, gender varchar (10) default' unknown ',
 age int not null, Email varchar(100)not null,
 contacts float(12) not null, nationality varchar (30),
 seat_no float (10), books_ticket int not null,flight int not null,
 airplane int not null,airport int not null,
 primary key (P_id),
 foreign key(books_ticket) references booking_office(office_id),
 foreign key(flight) references flight(flight_id),
 foreign key (airplane) references airplane( airplane_no),
 foreign key(airport) references airport(Air_id),
 check (age >= 18)
 );
 drop table passengers;
```

(For inserting data in passengers table)

```
select *from passengers;
insert into passengers
values(11,'siddhi','female','20','siddhi@gmail.com','68768758','India','5678','3','102','3','232');
insert into passengers
values(12,'shravani','female','26','shravani@gmail.com','98768758','USA','5671','4','103','2','234');
insert into passengers
values(13,'prajakta','female','34','prajakta@gmail.com','98769758','ukrain','5672','2','106','4','235');
insert into passengers
values(14,'prerna','female','23','prerana@gmail.com','88768758','Rashiya','5673','1','104','1','231');
insert into passengers
values(15,'Ravi','male','40','ravi@gmail.com','78768758','korea','5674','2','105','3','235');
insert into passengers
values(17,'sarthak','male','30','sarthak@gmail.com','98760758','japan','5648','5','101','4','232');
insert into passengers
values(16,'ansh','male','20','ansh@gmail.com','68758758','brazil','5278','4','106','3','231');
insert into passengers
values(18,'karan','male','24','karan@gmail.com','38768758','china','5676','3','103','1','235');
insert into passengers
values(19,'pallavi','female','44','pallavi@gmail.com','68968758','bhutan','5638','2','105','4','234');
insert into passengers
values(20,'adarsh','male','18','adarsh@gmail.com','98762758','India','5674','5','102','3','231');
```

insert into passengers values(21,'rani','female ','25','rani@gmail.com','68769758','japan','5645','1','101','1','233');
insert into passengers values(22,'shrikant','male','15','shrikant@gmail.com','68768758','korea','5678','3','105','5','233');



```
 (airplane) references airplane( airplane_no),
(airport) references airport(Air_id),
>= 18)

passengers;
```

P_id	P_name	gender	age	Email	contacts	nationality	seat_no	books_ticket	flight	airplane	airport
11	siddhi	female	20	siddhi@gmail.com	68768800	India	5678	3	102	3	232
12	shravani	female	26	shravani@gmail.com	98768800	USA	5671	4	103	2	234
13	prajakta	female	34	prajakta@gmail.com	98769800	ukrain	5672	2	106	4	235
14	prerna	female	23	prerana@gmail.com	88768800	Rashiya	5673	1	104	1	231
15	Ravi	male	40	ravi@gmail.com	78768800	korea	5674	2	105	3	235
16	ansh	male	20	ansh@gmail.com	68758800	brazil	5278	4	106	3	231
17	sarthak	male	30	sarthak@gmail.com	98760800	japan	5648	5	101	4	232
18	karan	male	24	karan@gmail.com	38768800	china	5676	3	103	1	235
19	pallavi	female	44	pallavi@gmail.com	68968800	bhutan	5638	2	105	4	234
20	adarsh	male	18	adarsh@gmail.com	98762800	India	5674	5	102	3	231
21	rani	female	25	rani@gmail.com	68769800	japan	5645	1	101	1	233

```
#  Time      Action                                  Message             Duration / Fetch
3  02:27:57  select *from booking_office LIMIT 0, 1000  5 row(s) returned   0.000 sec / 0.000 sec
4  02:30:18  select *from passengers LIMIT 0, 1000      11 row(s) returned  0.000 sec / 0.000 sec
```

## inner join

(for joining table passengers with table booking_office table flight, table airplane and table airport table)

select *from passengers inner join booking_office
ON passengers.books_ticket= booking_office.office_id
inner join flight
on passengers.flight= flight.flight_id
inner join airplane
on passengers.airplane= airplane.airplane_no
inner join airport
on passengers.airport= airport.Air_id;

set sql_safe_updates =0;
(for displaying info of passenger named prajakta)
select *from passengers where P_name = 'prajakta';

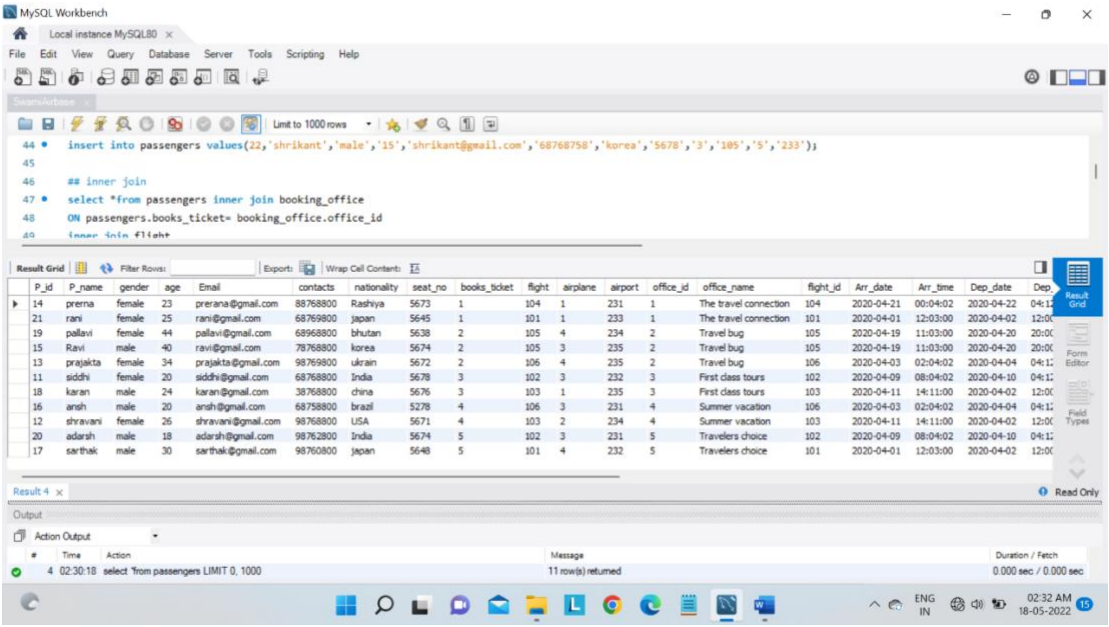
(for updating age of passenger named ravi)
update passengers set age= 22 where P_name = 'ravi';

(for deleting info of passenger whose id is 21)
delete from passengers where P_id ='21';

Alter table passengers add Ps_addr varchar (100);

alter table passengers drop Ps_addr;
alter table passengers rename to tourist;
alter table tourist rename passengers;

select *from passengers where flight between 101 and 103;
select *from passengers where age < 25;
select *from passengers where P_name = 'siddhi';
select *from passengers where age between 18 and 25;
select *from passengers where nationality like 'I%';
select *from passengers where nationality like '%A%';
select min(age) from passengers;
select max(age) from passengers;
select avg(age) from passengers;
select sum(age) from passengers;
select count(age) from passengers;



```
insert into passengers values(22,'shrikant','male','15','shrikant@gmail.com','68768758','korea','5678','3','105','5','233');

## inner join
select *from passengers inner join booking_office
ON passengers.books_ticket= booking_office.office_id
inner join flight
```

P_id	P_name	gender	age	Email	contacts	nationality	seat_no	books_ticket	flight	airplane	airport	office_id	office_name	flight_id	Arr_date	Arr_time	Dep_date	Dep_
14	prerna	female	23	prerana@gmail.com	88768800	Rashiya	5673	1	104	1	231	1	The travel connection	104	2020-04-21	00:04:02	2020-04-22	04:12
21	rani	female	25	rani@gmail.com	68769800	japan	5645	1	101	1	233	1	The travel connection	101	2020-04-01	12:03:00	2020-04-02	12:0
19	pallavi	female	44	pallavi@gmail.com	68968800	bhutan	5638	2	105	4	234	2	Travel bug	105	2020-04-19	11:03:00	2020-04-20	20:0
15	Ravi	male	40	ravi@gmail.com	78768800	korea	5674	2	105	3	235	2	Travel bug	105	2020-04-19	11:03:00	2020-04-20	20:0
13	prajakta	female	34	prajakta@gmail.com	98769800	ukrain	5672	2	106	4	235	2	Travel bug	106	2020-04-03	02:04:02	2020-04-04	04:1
11	siddhi	female	20	siddhi@gmail.com	68768800	India	5678	3	102	3	232	3	First class tours	102	2020-04-09	08:04:02	2020-04-10	04:1
18	karan	male	24	karan@gmail.com	38768800	china	5676	3	103	1	235	3	First class tours	103	2020-04-11	14:11:00	2020-04-02	12:0
16	ansh	male	20	ansh@gmail.com	68758800	brazil	5278	4	106	3	231	4	Summer vacation	106	2020-04-03	02:04:02	2020-04-04	04:1
12	shravani	female	26	shravani@gmail.com	98768800	USA	5671	4	103	2	234	4	Summer vacation	103	2020-04-11	14:11:00	2020-04-02	12:0
20	adarsh	male	18	adarsh@gmail.com	98762800	India	5674	5	102	3	231	5	Travelers choice	102	2020-04-09	08:04:02	2020-04-10	04:1
17	sarthak	male	30	sarthak@gmail.com	98760800	japan	5648	5	101	4	232	5	Travelers choice	101	2020-04-01	12:03:00	2020-04-02	12:0

```
#  Time      Action                                Message              Duration / Fetch
4  02:30:18  select *from passengers LIMIT 0, 1000  11 row(s) returned   0.000 sec / 0.000 sec
```

#clauses

<u>(For displaying info of passengers names and age)</u>
select (age),P_name from passengers group by P_name ;

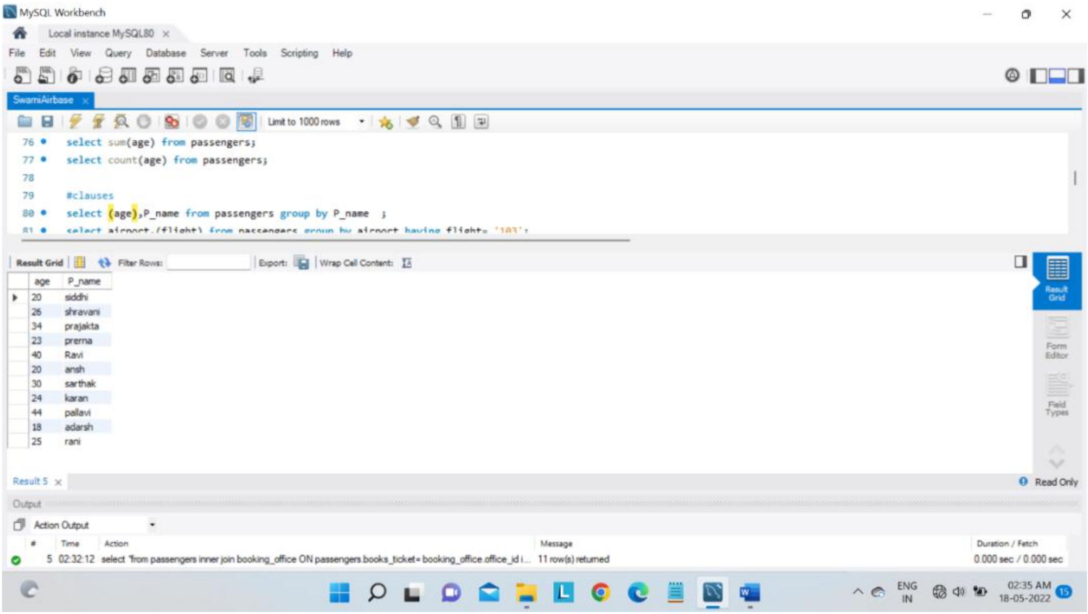
<u>(For displaying airport of passengers of flight 103)</u>
select airport,(flight) from passengers group by airport having flight= '103';

<u>(For displaying names of passengers of airport 231)</u>
select P_name,(airport) from passengers group by P_name having airport='23

<u>(For displaying passengers id and age)</u>
SELECT P_id, (age) from passengers group by P_id;

(For displaying maximum age of each flight)

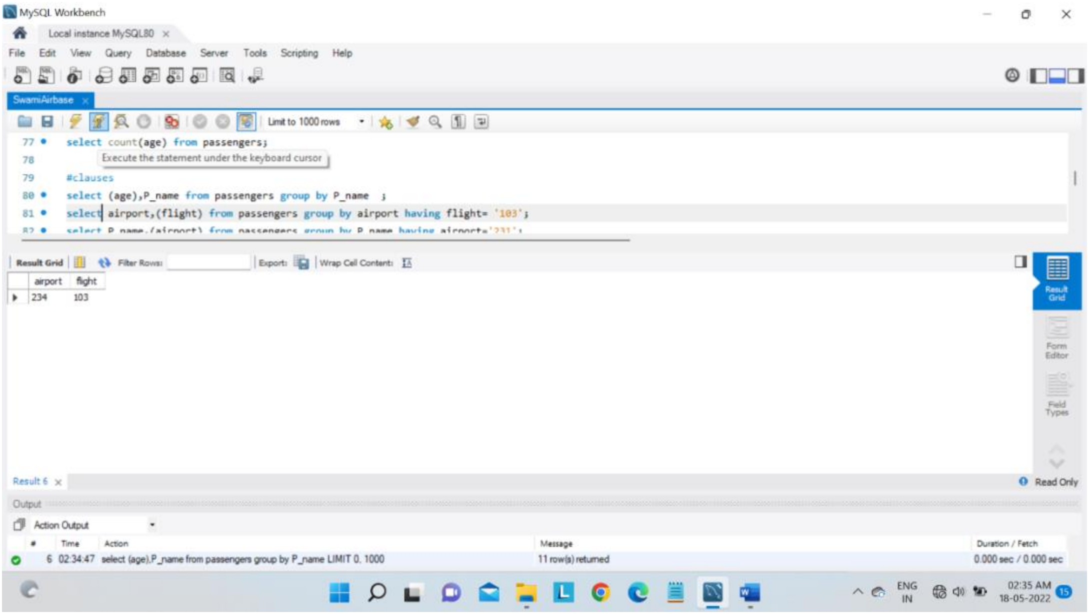
select max(age),P_name from passengers group by P_name having max(age) <=20;
select flight,(P_name) from passengers group by flight ;
select *from passengers order by age desc;



```
select sum(age) from passengers;
select count(age) from passengers;

#clauses
select (age),P_name from passengers group by P_name  ;
select airport,(flight) from passengers group by airport having flight= '103';
```

age	P_name
20	siddhi
26	shravani
34	prajakta
23	prerna
40	Ravi
20	ansh
30	sarthak
24	karan
44	pallavi
18	adarsh
25	rani

```
#  Time      Action                                                                                   Message              Duration / Fetch
5  02:32:12  select *from passengers inner join booking_office ON passengers.books_ticket= booking_office.office_id i...  11 row(s) returned  0.000 sec / 0.000 sec
```



MySQL Workbench
Local instance MySQL80
File Edit View Query Database Server Tools Scripting Help
SwamiAirbase
Limit to 1000 rows
Execute the statement under the keyboard cursor

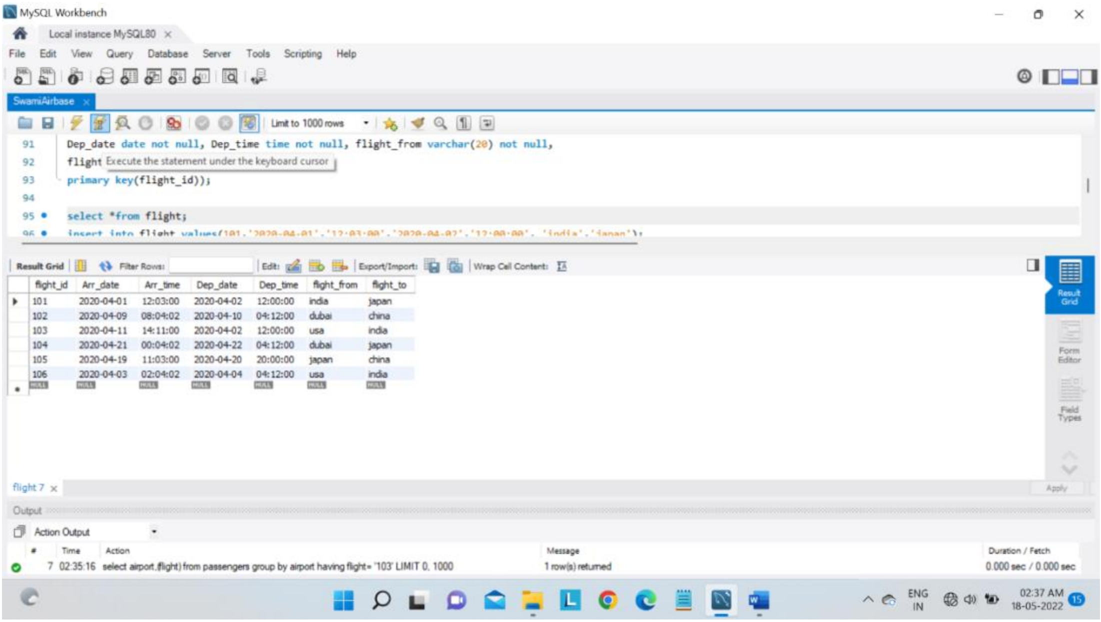
```
select count(age) from passengers;

#clauses
select (age),P_name from passengers group by P_name  ;
select airport,(flight) from passengers group by airport having flight= '103';
select P_name,(airport) from passengers group by P_name having airport='231';
```

airport	flight
234	103

```
#  Time      Action                                                       Message              Duration / Fetch
6  02:34:47  select (age),P_name from passengers group by P_name LIMIT 0, 1000  11 row(s) returned  0.000 sec / 0.000 sec
```

(Creating table flight)

```
CREATE TABLE flight( flight_id int not null,
Arr_date date not null, Arr_time time not null,
Dep_date date not null, Dep_time time not null, flight_from varchar(20) not null,
flight_to varchar (20) not null,
primary key(flight_id));

select *from flight;
insert into flight values(101,'2020-04-01','12:03:00','2020-04-02','12:00:00',
'india','japan');
insert into flight values(102,'2020-04-09','08:04:02','2020-04-
10','04:12:00','dubai','china');
insert into flight values(103,'2020-04-11','14:11:00','2020-04-02','12:00:00',
'usa','india');
insert into flight values(104,'2020-04-21','0:04:02','2020-04-
22','04:12:00','dubai','japan');
insert into flight values(105,'2020-04-19','11:03:00','2020-04-20','20:00:00',
'japan','china');
insert into flight values(106,'2020-04-03','02:04:02','2020-04-
04','04:12:00','usa','india');
```



```
Dep_date date not null, Dep_time time not null, flight_from varchar(20) not null,
flight
primary key(flight_id));

select *from flight;
insert into flight values(101,'2020-04-01','12:03:00','2020-04-02','12:00:00', 'india','japan');
```

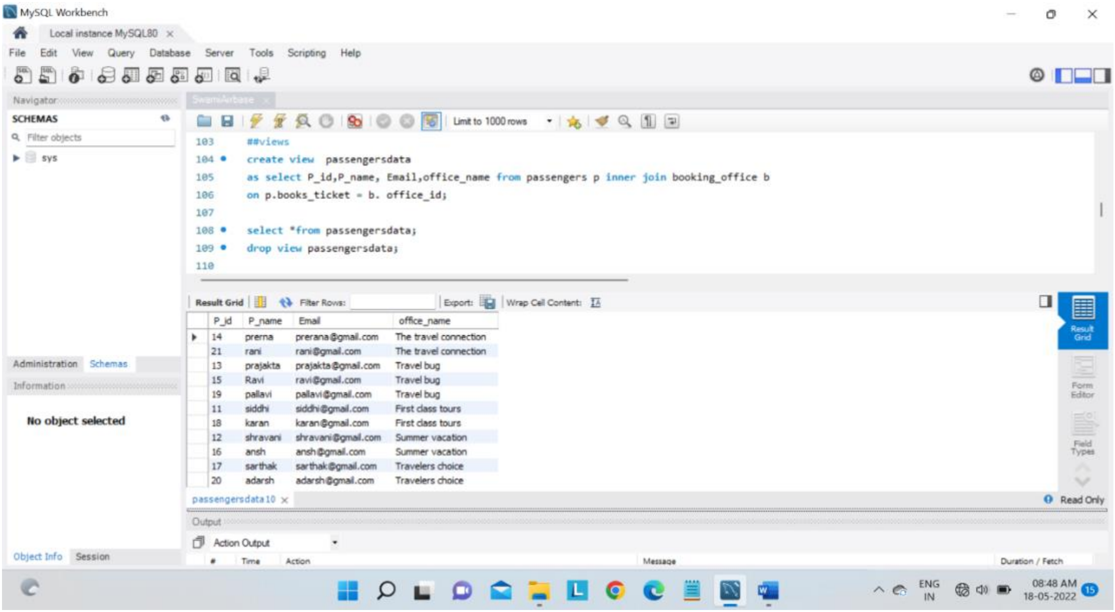
flight_id	Arr_date	Arr_time	Dep_date	Dep_time	flight_from	flight_to
101	2020-04-01	12:03:00	2020-04-02	12:00:00	india	japan
102	2020-04-09	08:04:02	2020-04-10	04:12:00	dubai	china
103	2020-04-11	14:11:00	2020-04-02	12:00:00	usa	india
104	2020-04-21	00:04:02	2020-04-22	04:12:00	dubai	japan
105	2020-04-19	11:03:00	2020-04-20	20:00:00	japan	china
106	2020-04-03	02:04:02	2020-04-04	04:12:00	usa	india
NULL	NULL	NULL	NULL	NULL	NULL	NULL

#	Time	Action	Message	Duration / Fetch
7	02:35:16	select airport,flight) from passengers group by airport having flight= '103' LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec

##views

(For creating view with passenger’s id,name,email and booking office,ticket and office id)

```
create view passengersdata
as select P_id,P_name, Email,office_name from passengers p inner join booking_office b
on p.books_ticket = b. office_id;

select *from passengersdata;
drop view passengersdata;

alter view  passengersdata
as select P_id,P_name, Email,office_name, Arr_date,Dep_date
,Air_name,airport_name from passengers p inner join booking_office b
on p.books_ticket = b. office_id
inner join flight f
on p.flight = f.flight_id
inner join airplane c
on p.airplane= c.airplane_no
inner join airport a
on p.airport= a.Air_id;

select P_name,(airport_name) from passengersdata group by P_name ;
SELECT P_name,(Air_name)from passengersdata group by P_name;

update passengersdata set Ps_name = Rani where Ps_id = 104;
select *from passengersdata where P_name ='prajakta';
drop view passengersdata;

select Day ('2020-04-11')  as dayofmonth;
select month('2020-04-03') as month;
select year('2020-04-21') as year;
```



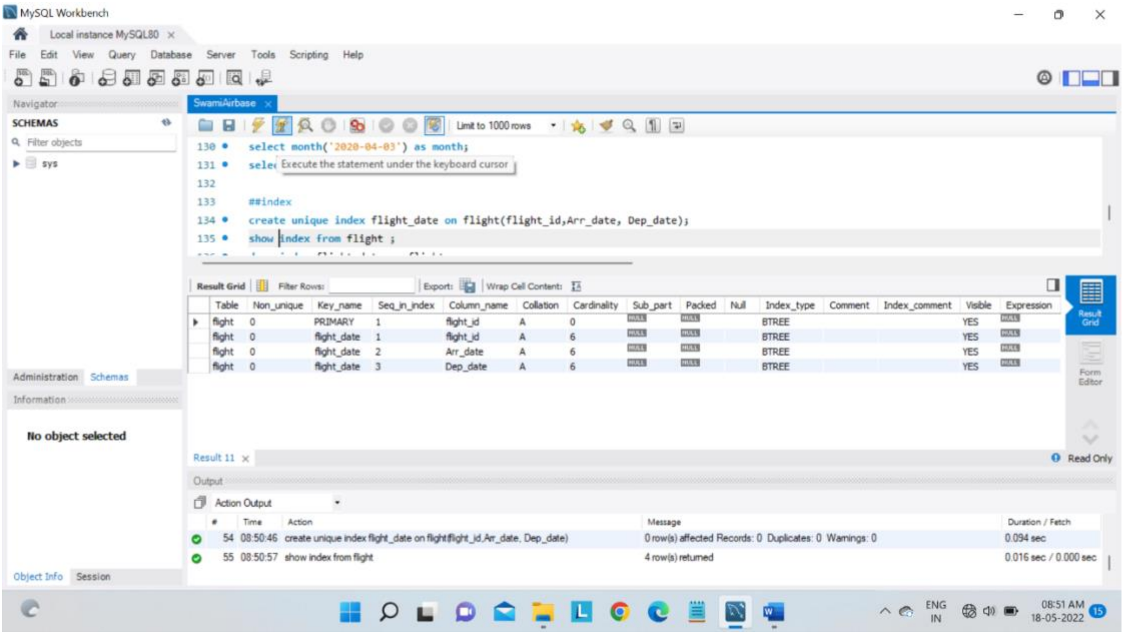
```
##views
create view  passengersdata
as select P_id,P_name, Email,office_name from passengers p inner join booking_office b
on p.books_ticket = b. office_id;

select *from passengersdata;
drop view passengersdata;
```

P_id	P_name	Email	office_name
14	prerna	prerana@gmail.com	The travel connection
21	rani	rani@gmail.com	The travel connection
13	prajakta	prajakta@gmail.com	Travel bug
15	Ravi	ravi@gmail.com	Travel bug
19	pallavi	pallavi@gmail.com	Travel bug
11	siddhi	siddhi@gmail.com	First class tours
18	karan	karan@gmail.com	First class tours
12	shravani	shravani@gmail.com	Summer vacation
16	ansh	ansh@gmail.com	Summer vacation
17	sarthak	sarthak@gmail.com	Travelers choice
20	adarsh	adarsh@gmail.com	Travelers choice

##index

(for numbering flight id,arrangement date,department date)

create unique index flight_date on flight(flight_id,Arr_date, Dep_date);
show index from flight ;
drop index flight_date on flight;



```
select month('2020-04-03') as month;
sele

##index
create unique index flight_date on flight(flight_id,Arr_date, Dep_date);
show index from flight ;
```

Table	Non_unique	Key_name	Seq_in_index	Column_name	Collation	Cardinality	Sub_part	Packed	Null	Index_type	Comment	Index_comment	Visible	Expression
flight	0	PRIMARY	1	flight_id	A	0	NULL	NULL		BTREE			YES	NULL
flight	0	flight_date	1	flight_id	A	6	NULL	NULL		BTREE			YES	NULL
flight	0	flight_date	2	Arr_date	A	6	NULL	NULL		BTREE			YES	NULL
flight	0	flight_date	3	Dep_date	A	6	NULL	NULL		BTREE			YES	NULL

#	Time	Action	Message	Duration / Fetch
54	08:50:46	create unique index flight_date on flight(flight_id,Arr_date, Dep_date)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.094 sec
55	08:50:57	show index from flight	4 row(s) returned	0.016 sec / 0.000 sec

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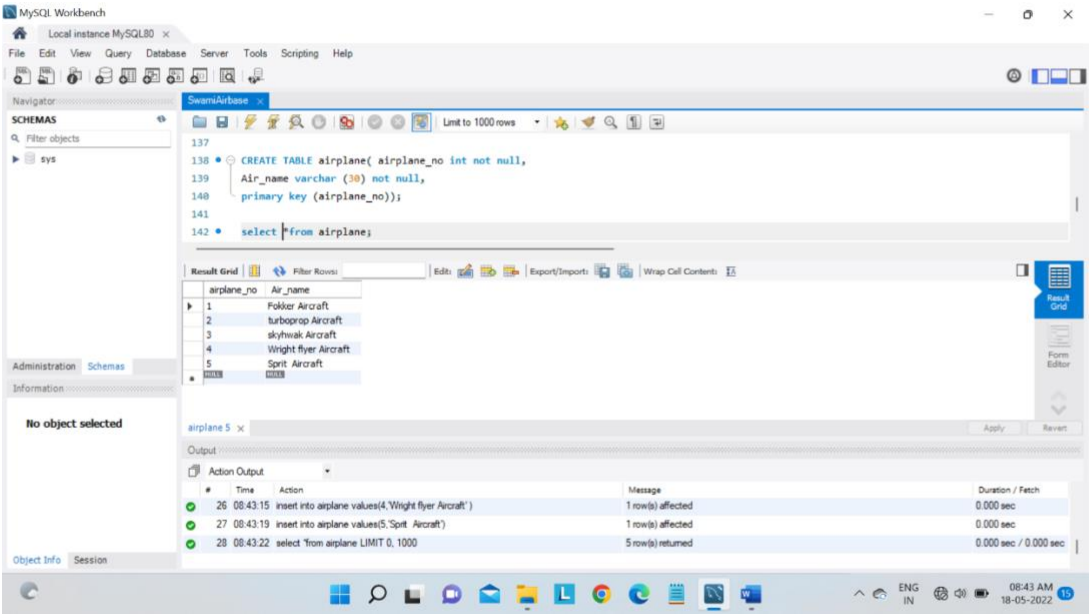
(Creating table airplane)

CREATE TABLE airplane(airplane_no int not null,
Air_name varchar (30) not null,
primary key (airplane_no));

select *from airplane;
insert into airplane values(1,'Fokker Aircraft');
insert into airplane values(2,'turboprop Aircraft');
insert into airplane values(3,'skyhwak Aircraft');
insert into airplane values(4,'Wright flyer Aircraft');
insert into airplane values(5,'Sprit Aircraft');



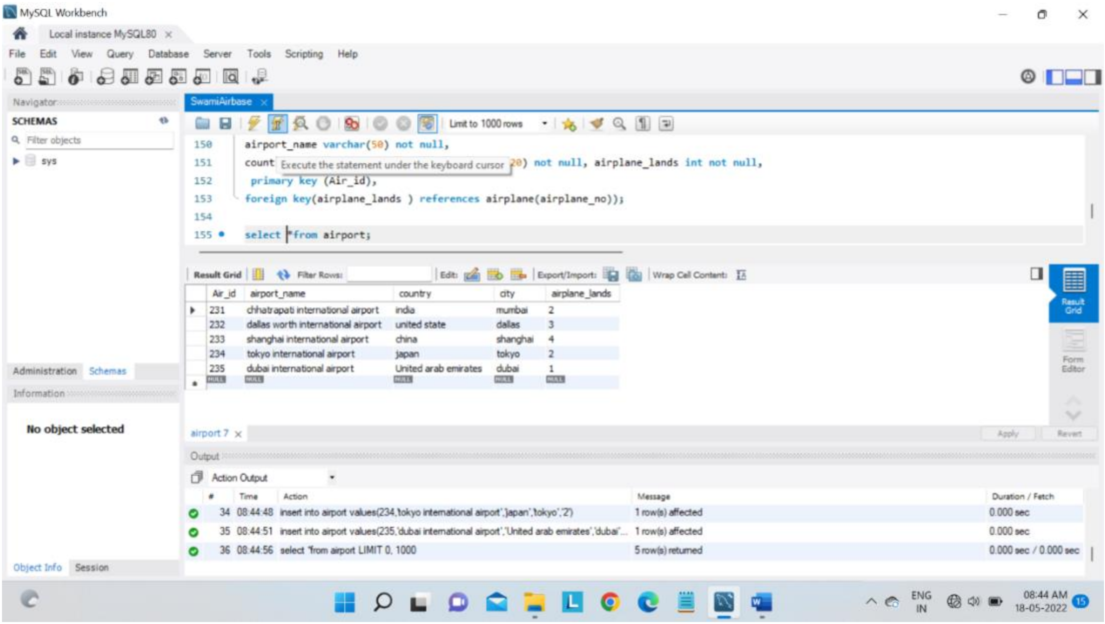
```
CREATE TABLE airplane( airplane_no int not null,
Air_name varchar (30) not null,
primary key (airplane_no));

select *from airplane;
```

airplane_no	Air_name
1	Fokker Aircraft
2	turboprop Aircraft
3	skyhwak Aircraft
4	Wright flyer Aircraft
5	Sprit Aircraft
NULL	NULL

#	Time	Action	Message	Duration / Fetch
26	08:43:15	insert into airplane values(4,'Wright flyer Aircraft')	1 row(s) affected	0.000 sec
27	08:43:19	insert into airplane values(5,'Sprit Aircraft')	1 row(s) affected	0.000 sec
28	08:43:22	select *from airplane LIMIT 0, 1000	5 row(s) returned	0.000 sec / 0.000 sec

(for creating table airport)

CREATE TABLE airport(Air_id int not null,
airport_name varchar(50) not null,
country varchar (50)not null, city varchar (20) not null, airplane_lands int not null,
 primary key (Air_id),
foreign key(airplane_lands) references airplane(airplane_no));
drop table airport ;
select *from airport;
insert into airport values(231,'chhatrapati international airport','india','mumbai','2');
insert into airport values(232,'dallas worth international airport','united state','dallas','3');
insert into airport values(233,'shanghai international airport','china','shanghai','4');
insert into airport values(234,'tokyo international airport','japan','tokyo','2');
insert into airport values(235,'dubai international airport','United arab emirates','dubai','1');



```
airport_name varchar(50) not null,
count                                              20) not null, airplane_lands int not null,
 primary key (Air_id),
foreign key(airplane_lands ) references airplane(airplane_no));

select *from airport;
```

Air_id	airport_name	country	city	airplane_lands
231	chhatrapati international airport	india	mumbai	2
232	dallas worth international airport	united state	dallas	3
233	shanghai international airport	china	shanghai	4
234	tokyo international airport	japan	tokyo	2
235	dubai international airport	United arab emirates	dubai	1
NULL	NULL	NULL	NULL	NULL

#	Time	Action	Message	Duration / Fetch
34	08:44:48	insert into airport values(234,'tokyo international airport','japan','tokyo','2')	1 row(s) affected	0.000 sec
35	08:44:51	insert into airport values(235,'dubai international airport','United arab emirates','dubai'...	1 row(s) affected	0.000 sec
36	08:44:56	select *from airport LIMIT 0, 1000	5 row(s) returned	0.000 sec / 0.000 sec

(for changing the case of names of airport)

select lower(Air_name) as lowercaseAir_name from airport;
select upper(Air_name) as uppercaseAir_name from airport;
select concat(city) as new_city from airport;

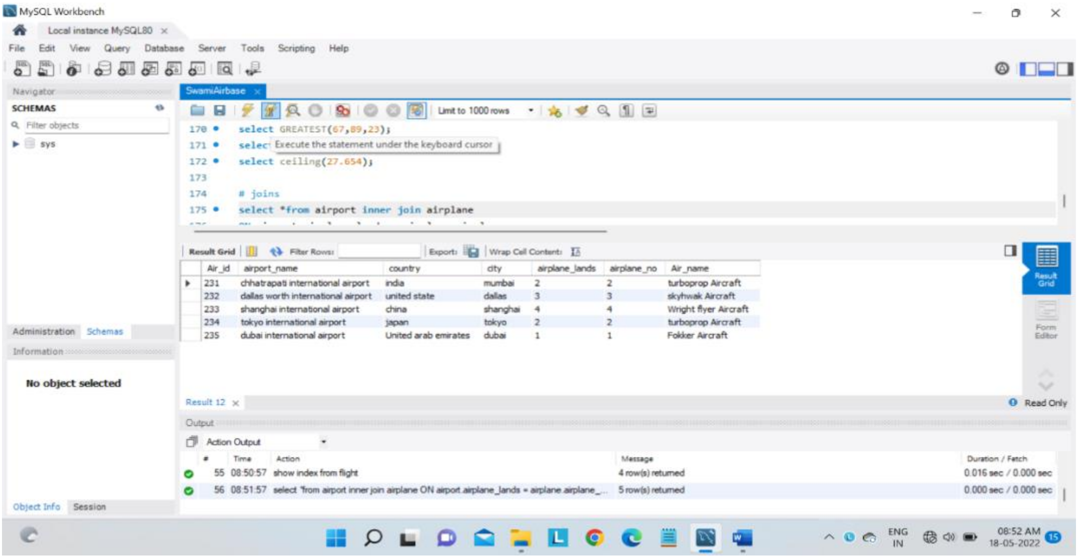
# joins

(For joining table airport to table airplane)

select *from airport inner join airplane
ON airport.airplane_lands = airplane.airplane_no;

select a.air_id,a.Air_name,a.country,
b.Air_name from airport a inner join airplane b
on a.airplane_lands = b.airplane_no;

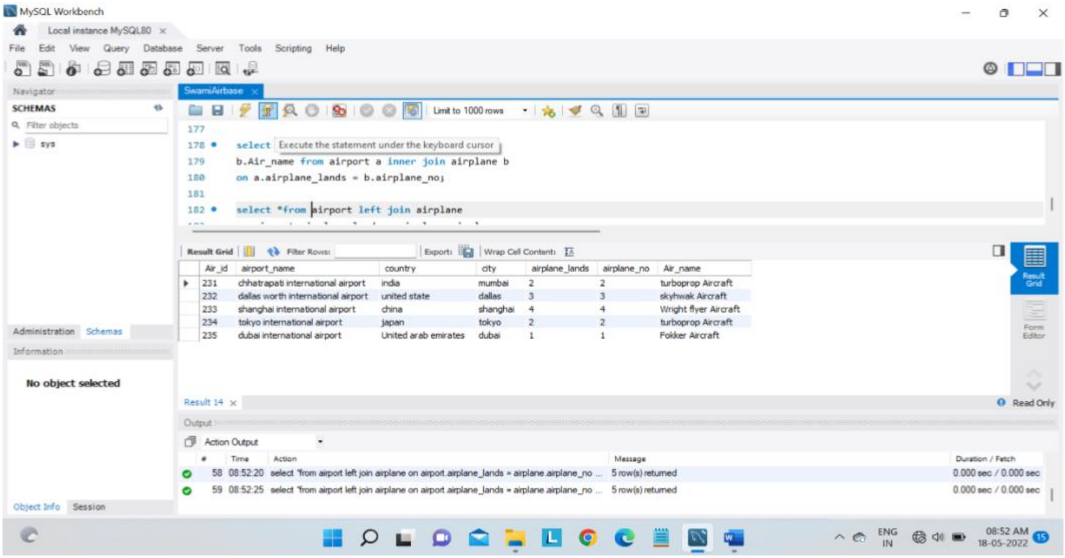
select *from airport left join airplane
on airport.airplane_lands = airplane.airplane_no;



```
select GREATEST(67,89,23);
selec
select ceiling(27.654);

# joins
select *from airport inner join airplane
```

Air_id	airport_name	country	city	airplane_lands	airplane_no	Air_name
231	chhatrapati international airport	india	mumbai	2	2	turboprop Aircraft
232	dallas worth international airport	united state	dallas	3	3	skyhwak Aircraft
233	shanghai international airport	china	shanghai	4	4	Wright flyer Aircraft
234	tokyo international airport	japan	tokyo	2	2	turboprop Aircraft
235	dubai international airport	United arab emirates	dubai	1	1	Fokker Aircraft

```
#   Time      Action                                                                    Message             Duration / Fetch
55  08:50:57  show index from flight                                                    4 row(s) returned   0.016 sec / 0.000 sec
56  08:51:57  select *from airport inner join airplane ON airport.airplane_lands = airplane.airplane_...  5 row(s) returned   0.000 sec / 0.000 sec
```



```

select
b.Air_name from airport a inner join airplane b
on a.airplane_lands = b.airplane_no;

select *from airport left join airplane
```

Air_id	airport_name	country	city	airplane_lands	airplane_no	Air_name
231	chhatrapati international airport	india	mumbai	2	2	turboprop Aircraft
232	dallas worth international airport	united state	dallas	3	3	skyhwak Aircraft
233	shanghai international airport	china	shanghai	4	4	Wright flyer Aircraft
234	tokyo international airport	japan	tokyo	2	2	turboprop Aircraft
235	dubai international airport	United arab emirates	dubai	1	1	Fokker Aircraft

```
#   Time      Action                                                                        Message             Duration / Fetch
58  08:52:20  select *from airport left join airplane on airport.airplane_lands = airplane.airplane_no ...  5 row(s) returned   0.000 sec / 0.000 sec
59  08:52:25  select *from airport left join airplane on airport.airplane_lands = airplane.airplane_no ...  5 row(s) returned   0.000 sec / 0.000 sec
```

- **Skills developed:**
  1. Working with team.
  2. Logic development.
  3. Solving logical problems
  4. Error handling.

- **Conclusion:**
  This project helped us in gaining valuable information and practical knowledge on several topics like making query web using MYSQL database management system. The entire system is secured. Also the project helped us understanding about the development phases of a project and software development life cycle. We learned how to test different features of a project.