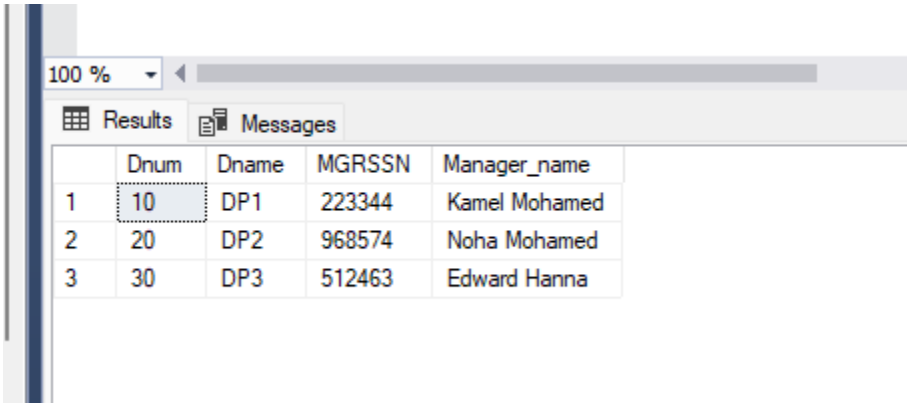
Task 8 (Joins Lab):

RESULT FOR COMPANY:

1. Display the department ID, department name, manager ID, and the full name of the manager.

```
select d.Dnum, d.Dname,d.MGRSSN,        --d-department
e.Fname + ' ' + e.Lname as Manager_name       ----e-employee
from Departments d
INNER join Employee e
  on e.SSN = d.MGRSSN;        --pk=SSN, FK=MGRSSN
```



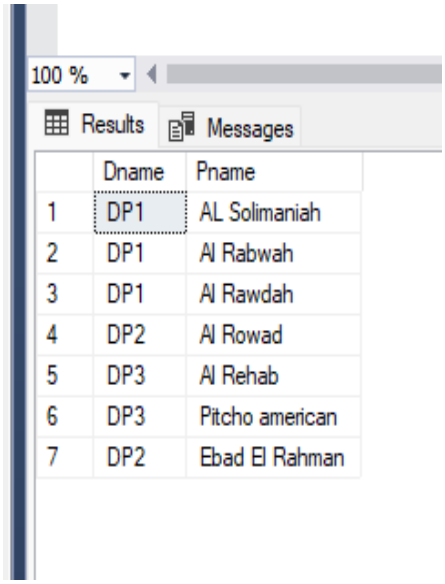
100 %

Results | Messages

	Dnum	Dname	MGRSSN	Manager_name
1	10	DP1	223344	Kamel Mohamed
2	20	DP2	968574	Noha Mohamed
3	30	DP3	512463	Edward Hanna

2. Display the names of departments and the names of the projects they control.

```
select d.Dname, p.Pname     ----p-project
from Departments d
inner join project p
on d.Dnum = p.Dnum;
```



100 %

Results | Messages

	Dname	Pname
1	DP1	AL Solimaniah
2	DP1	Al Rabwah
3	DP1	Al Rawdah
4	DP2	Al Rowad
5	DP3	Al Rehab
6	DP3	Pitcho american
7	DP2	Ebad El Rahman

3. Display full data of all dependents, along with the full name of the employee they depend on.

```sql
select dep.*,                ---dep.*,=full data of all dependents
e.Fname + ' ' + e.Lname as employee_name
from Dependent dep                      --dep=dependent
inner join Employee e
  on e.SSN = dep.ESSN;       --pk=SSN, FK=ESSN
```

Results | Messages

	ESSN	Dependent_name	Sex	Bdate	employee_name
1	112233	Hala Saied Ali	F	1970-10-18 00:00:00.000	Ahmed Ali
2	223344	Ahmed Kamel Shawki	M	1998-03-27 00:00:00.000	Kamel Mohamed
3	223344	Mona Adel Mohamed	F	1975-04-25 00:00:00.000	Kamel Mohamed
4	321654	Omar Amr Omran	M	1993-03-30 00:00:00.000	Amr Omran
5	321654	Ramy Amr Omran	M	1990-01-26 00:00:00.000	Amr Omran
6	321654	Sanaa Gawish	F	1973-05-16 00:00:00.000	Amr Omran
7	512463	Nora Ghaly	F	1976-06-22 00:00:00.000	Edward Hanna
8	512463	Sara Edward	F	2001-09-15 00:00:00.000	Edward Hanna

4. Display the project ID, name, and location of all projects located in Cairo or Alex.

```sql
select Pnumber as projectID,
Pname as name,
City as location
from project
where City in ('Cairo','Alex');
```

100 %

Results | Messages

	projectID	name	location
1	100	AL Solimaniah	Alex
2	500	Al Rehab	Cairo
3	600	Pitcho american	Cairo
4	700	Ebad El Rahman	Cairo

5. Display all project data where the project name starts with the letter 'A'.

```
select *
from project
where Pname like 'a%';
```

100 %

Results | Messages

	Pname	Pnumber	Plocation	City	Dnum
1	AL Solimaniah	100	Cairo_Alex Road	Alex	10
2	Al Rabwah	200	6th of October City	Giza	10
3	Al Rawdah	300	Zaied City	Giza	10
4	Al Rowad	400	Cairo_Faiyom Road	Giza	20
5	Al Rehab	500	Nasr City	Cairo	30

6. Display the IDs and names of employees in department 30 with a salary between 1000 and 2000 LE.

```
select e.SSN AS EmployeeID,
e.Fname + ' ' + e.Lname as Employee_name
from Employee e
INNER join Departments d
 on d.Dnum= e.Dno
where d.Dnum = 30
 and e.Salary between 1000 and 2000;
```

100 %

Results | Messages

	EmployeeID	Employee_name
1	512463	Edward Hanna
2	521634	Maged Raoof

7. Retrieve the names of employees in department 10 who work ≥ 10 hours/week on the "AL Rabwah" project.

```sql
select e.Fname + ' ' + e.Lname as Employee_name
from employee e
inner join Works_for w
on e.SSN = w.ESSn
inner join Project p
on w.Pno = p.Pnumber
where e.Dno = 10
  and p.Pname = 'al rabwah'
  and w.hours >= 10;
```

100 %

Results | Messages

	Employee_name
1	Kamel Mohamed

8. Find the names of employees who are directly supervised by "Kamel Mohamed".

```sql
select e.Fname + ' ' + e.Lname as Employee_name
from Employee e
Inner join Employee s
on e.SSN = s.Superssn     --pk=ssn, fk=superssn
where s.Fname = 'kamel'
  and s.Lname = 'mohamed';
```

00 %

Results | Messages

	Employee_name
1	Amr Omran

9. Retrieve the names of employees and the names of the projects they work on, sorted by project name.

```sql
select e.Fname + ' ' + e.Lname as Employee_name, p.Pname
from employee e
inner join Works_for w
on e.SSN = w.ESSn
inner join project p
on w.Pno = p.Pnumber
order by p.Pname;
```

100 %

Results | Messages

	Employee_name	Pname
1	Kamel Mohamed	Al Rabwah
2	Kamel Mohamed	Al Rawdah
3	Maged Raoof	Al Rawdah
4	Mariam Adel	Al Rawdah
5	Noha Mohamed	Al Rawdah
6	Kamel Mohamed	Al Rehab
7	Edward Hanna	Al Rehab
8	Maged Raoof	Al Rehab
9	Maged Raoof	Al Rowad
10	Mariam Adel	Al Rowad
11	Noha Mohamed	Al Rowad
12	Ahmed Ali	AL Solimaniah
13	Kamel Mohamed	AL Solimaniah
14	Mariam Adel	Ebad El Rahman
15	Noha Mohamed	Ebad El Rahman
16	Edward Hanna	Pitcho american
17	Maged Raoof	Pitcho american

10. For each project located in Cairo, display the project number, controlling department name, manager's last name, address, and birthdate.

```sql
select p.Pnumber, d.Dname, e.Lname, e.address, e.Bdate
from project p
inner join Departments d
on d.Dnum = p.Dnum
inner join Employee e
on e.SSN =  d.MGRSSN
where p.City = 'cairo';
```

100 %

Results | Messages

	Pnumber	Dname	Lname	address	Bdate
1	500	DP3	Hanna	18 Abaas El 3akaad St. Nasr City.Cairo	1972-08-19 00:00:00.000
2	600	DP3	Hanna	18 Abaas El 3akaad St. Nasr City.Cairo	1972-08-19 00:00:00.000
3	700	DP2	Mohamed	55 Orabi St. El Mohandiseen .Cairo	1975-01-02 00:00:00.000

11. Display all data of managers in the company.

```sql
select distinct e.*
from Employee e
inner join Departments d
on e.SSN = d.MGRSSN;
```

100 %

Results | Messages

	Fname	Lname	SSN	Bdate	Address	Sex	Salary	Superssn	Dno
1	Kamel	Mohamed	223344	1970-10-15 00:00:00.000	38 Mohy el dien abo el Ezz St.Cairo	M	1800	321654	10
2	Edward	Hanna	512463	1972-08-19 00:00:00.000	18 Abaas El 3akaad St. Nasr City.Cairo	M	1735	321654	30
3	Noha	Mohamed	968574	1975-01-02 00:00:00.000	55 Orabi St. El Mohandiseen .Cairo	F	1600	321654	20

12. Display all employees and their dependents, even if some employees have no dependents.

```sql
select e.Fname + ' ' + e.Lname as Employee_name, dep.*
from Employee e
left join dependent dep
on e.SSN = dep.ESSN;
```

100 %

Results | Messages

	Employee_name	ESSN	Dependent_name	Sex	Bdate
1	khalid salem	NULL	NULL	NULL	NULL
2	Ahmed Ali	112233	Hala Saied Ali	F	1970-10-18 00:00:00.000
3	Hanaa Sobhy	NULL	NULL	NULL	NULL
4	Kamel Mohamed	223344	Ahmed Kamel Shawki	M	1998-03-27 00:00:00.000
5	Kamel Mohamed	223344	Mona Adel Mohamed	F	1975-04-25 00:00:00.000
6	Amr Omran	321654	Omar Amr Omran	M	1993-03-30 00:00:00.000
7	Amr Omran	321654	Ramy Amr Omran	M	1990-01-26 00:00:00.000
8	Amr Omran	321654	Sanaa Gawish	F	1973-05-16 00:00:00.000
9	Edward Hanna	512463	Nora Ghaly	F	1976-06-22 00:00:00.000
10	Edward Hanna	512463	Sara Edward	F	2001-09-15 00:00:00.000
11	Maged Raoof	NULL	NULL	NULL	NULL
12	Mariam Adel	NULL	NULL	NULL	NULL
13	Noha Mohamed	NULL	NULL	NULL	NULL

RESULT FOR UNIVERSITY:

1. Display the department ID, name, and the full name of the faculty managing it.

```sql
select d.D_id, d.D_name, F.F_name as managername
from Department d
inner join Faculty f
on d.D_id = f.Dep_id;
```

100 %

Results | Messages

	D_id	D_name	managemame
1	1	Computer Science	Ali
2	2	Mathematics	Sara

2. Display each program's name and the name of the department offering it.

```sql
select c.Course_name, d.D_name
from Course c
inner join department d
on d.D_id = c.Dep_id;
```

100 %

Results | Messages

	Course_name	D_name
1	BSc CS	Computer Science
2	BSc Math	Mathematics

3. Display the full student data and the full name of their faculty advisor.

```sql
select s.*, f.F_name as advisorname
from student s
left join faculty f
on s.S_id = f.F_id;
```

100 %

Results | Messages

	S_id	F_name	L_name	age	Dep_id	Hos_id	Enrollment_date	Status	GPA	Advisor_id	advisorname
1	1	Ahmed	Omar	20	1	1	2023-01-15	Active	3.20	12	Ali
2	2	Fatma	Khalid	21	2	2	2022-09-01	Active	3.50	NULL	Sara
3	5	Widaad	khalifa	27	2	1	2022-02-04	Active	3.73	NULL	NULL
4	6	maya	khalifa	25	1	2	2023-04-21	Active	3.30	NULL	NULL

4. Display class IDs, course titles, and room locations for classes in buildings 'A' or 'B'.

```sql
select
    e.Exam_code as class_id,
    c.Course_name as course_title,
    e.room
from Exams e
inner join Course c
 on c.Dep_id = e.Dep_id
where e.room like 'A%' or e.room like 'B%';
```

100 %

Results | Messages

	class_id	course_title	room
1	1	BSc CS	A101
2	2	BSc Math	B202

5. Display full data about courses whose titles start with "I" (e.g., "Introduction to...").

```sql
select *
from course
where course_name like 'I%';       ---no course start with I
```

100 %

Results | Messages

Course_id	Course_name	Duration	Dep_id

6. Display names of students in program ID 3 whose GPA is between 2.5 and 3.5.

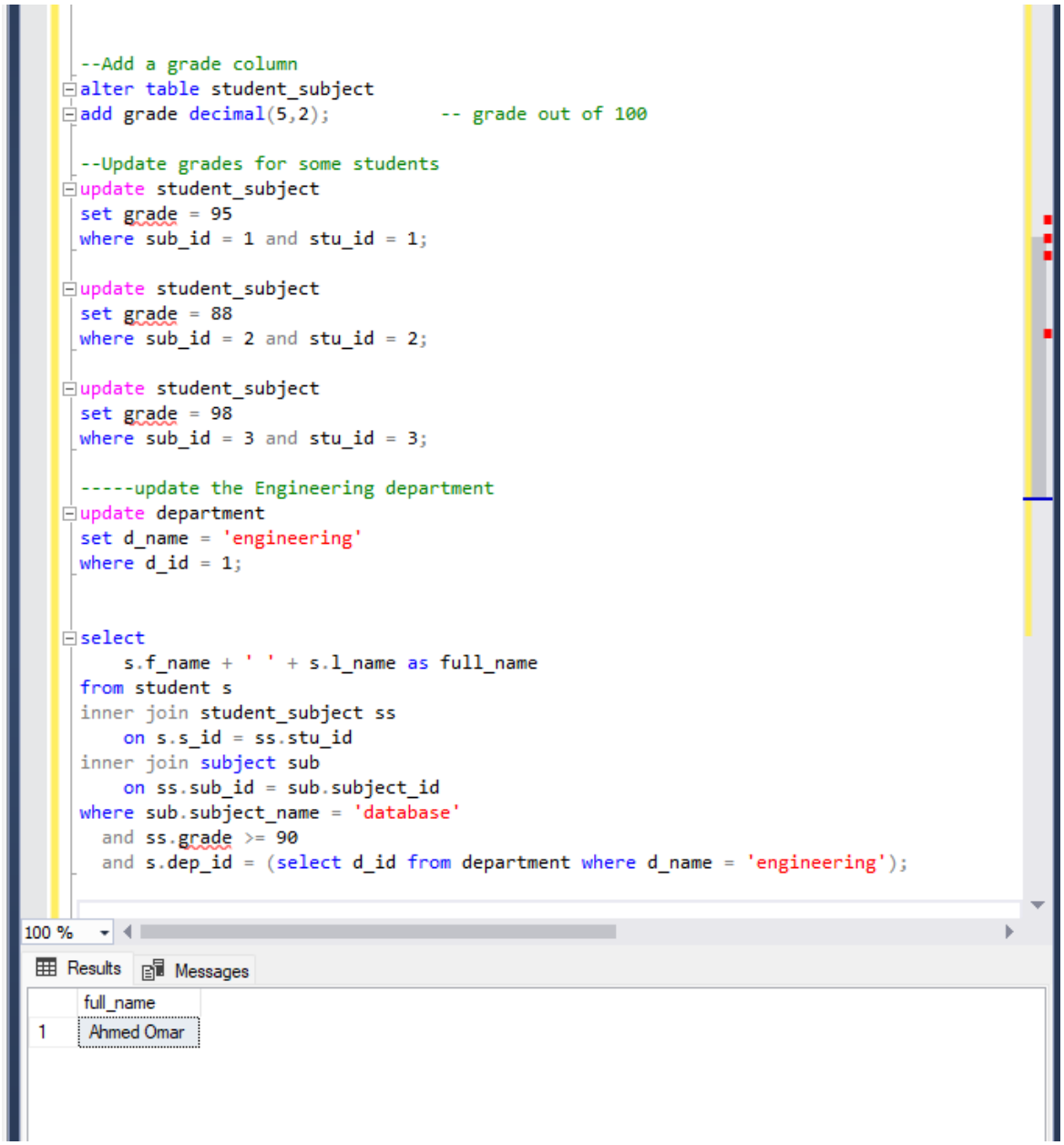
```sql
select
    s.F_name + ' ' + s.L_name as full_name,
    s.GPA
from student s
inner join student_course sc
    on s.s_id = sc.stu_id
where sc.cou_id = 3
  and s.GPA between 2.5 and 3.5;     --no course-id(3) with this GPA
```

100 %

Results | Messages

full_name	GPA

7. Retrieve student names in the Engineering program who earned grades ≥ 90 in the "Database" course.



```sql
--Add a grade column
alter table student_subject
add grade decimal(5,2);          -- grade out of 100

--Update grades for some students
update student_subject
set grade = 95
where sub_id = 1 and stu_id = 1;

update student_subject
set grade = 88
where sub_id = 2 and stu_id = 2;

update student_subject
set grade = 98
where sub_id = 3 and stu_id = 3;

-----update the Engineering department
update department
set d_name = 'engineering'
where d_id = 1;


select
    s.f_name + ' ' + s.l_name as full_name
from student s
inner join student_subject ss
    on s.s_id = ss.stu_id
inner join subject sub
    on ss.sub_id = sub.subject_id
where sub.subject_name = 'database'
  and ss.grade >= 90
  and s.dep_id = (select d_id from department where d_name = 'engineering');
```

100 %

Results | Messages

	full_name
1	Ahmed Omar

8. Find names of students who are advised by "Dr. Ahmed Hassan".

```sql
--insert into faculty
insert into faculty (f_name, mobile_no, department, salary, dep_id)
values ('dr. ahmed hassan', '999999999', 'engineering', 6000.00, 1);

--update students to set him as advisor
update student
set advisor_id = 3
where s_id = 1;

select
    s.F_name + ' ' + s.L_name as student_name
from student s
inner join Faculty f
    on s.advisor_id = f.f_id
where f.F_name = 'dr. ahmed hassan';
```

100 %

Results | Messages

	student_name
1	Ahmed Omar

9. Retrieve each student's name and the titles of courses they are enrolled in, ordered by course title.

```sql
select
    s.f_name + ' ' + s.l_name as student_name,
    c.course_name as course_title
from student s
inner join student_course sc
    on s.s_id = sc.stu_id
inner join course c
    on sc.cou_id = c.course_id
order by c.course_name;
```

100 %

Results | Messages

	student_name	course_title
1	Ahmed Omar	BSc CS
2	Fatma Khalid	BSc Math

10. For each class in Building 'Main', retrieve class ID, course name, department name, and faculty name teaching the class.

```sql
select
    e.exam_code as class_id,
    c.course_name,
    d.d_name as department_name,
    f.f_name as faculty_name
from exams e
inner join course c
    on e.dep_id = c.dep_id
inner join department d
    on c.dep_id = d.d_id
inner join faculty f
    on f.dep_id = d.d_id
where e.room like 'main%';      ------no main building
```

100 %

Results | Messages

class_id	course_name	department_name	faculty_name

11. Display all faculty members who manage any department.

```sql
select
    f.f_name as faculty_name
from faculty f
where f.dep_id is not null;
```

100 %

Results | Messages

	faculty_name
1	Ali
2	Sara
3	dr. ahmed hassan

12. Display all students and their advisors' names, even if some students don’t have advisors yet.

```sql
select
    s.f_name + ' ' + s.l_name as student_name,
    f.f_name  as advisor_name
from student s
left join faculty f
    on s.advisor_id = f.f_id;
```

100 %

Results | Messages

	student_name	advisor_name
1	Ahmed Omar	dr. ahmed hassan
2	Fatma Khalid	NULL
3	Widaad khalifa	NULL
4	maya khalifa	NULL

RESULT FOR AIRLINE:

1. Display each flight leg's ID, schedule, and the name of the airplane assigned to it.

```sql
select
    f.leg_no,
    f.scheduleddeptime,
    f.scheduledarrtime,
    a.t_name as airplanetype
from flightleg f
inner join leginstance l
on f.leg_no = l.legno
inner join airplane a
on l.airplaneid = a.airplane_id;
```

100 %

Results | Messages

	leg_no	scheduleddeptime	scheduledarrtime	airplanetype
1	1	08:00:00.0000000	09:30:00.0000000	A320
2	1	08:00:00.0000000	09:30:00.0000000	A320

2. Display all flight numbers and the names of the departure and arrival airports.

```sql
select
    fl.f_id as flight_no,
    a1.airpor_name as departure_airport,
    a2.airpor_name as arrival_airport
from flightleg fl
inner join airport a1
on fl.depairportcode = a1.airport_code
inner join airport a2
on fl.arrairportcode = a2.airport_code;
```

100 %

Results | Messages

	flight_no	departure_airport	arrival_airport
1	1	Muscat Intl	Dubai Intl
2	1	Cairo International Airport	Dubai Intl

3. Display all reservation data with the name and phone of the customer who made each booking.

```sql
select r.*,
    l.leginstanceid,
    l.departuretime,
    l.arrivaltime
from reservation r
inner join leginstance l
on r.leg_instanceid = l.leginstanceid;
```

100 %

Results | Messages

	ReservationID	SeatNumber	CustomerName	CustomerPhone	Leg_InstanceID	leginstanceid	departuretime	arrivaltime
1	1	12A	Ahmed Ali	99887766	10	10	2025-01-10 08:05:00.000	2025-01-10 09:35:00.000
2	3	18C	Mohammed Ali	NULL	300	300	2025-06-10 09:00:00.000	2025-06-10 12:00:00.000

4. Display IDs and locations of flights departing from 'CAI' or 'DXB'.

```sql
select
    fl.leg_no,
    a.city as departure_city,
    a.state as departure_state,
    a.airpor_name as departure_airport
from flightleg fl
inner join airport a
on fl.depairportcode = a.airport_code
where a.airport_code in ('cai', 'dxb');
```

100 %

Results | Messages

	leg_no	departure_city	departure_state	departure_airport
1	8	Cairo	Egypt	Cairo International Airport

5. Display full data of flights whose names start with 'A'.

```sql
--alter
alter table Flight
add Flight_Name varchar(50);

--update
update Flight
set Flight_Name = 'A110'
where Flight_No = 1;

update Flight
set Flight_Name = 'B220'
where Flight_No = 2;

--
select * from Flight;

--
select *
from Flight
where Flight_Name like 'A%';
```

100 %

Results | Messages

	Flight_No	Restriction	Weekdays	Airline	Flight_Name
1	1	No restriction	Sun,Mon,Wed	Oman Air	A110

6. List customers who have bookings with total payment between 3000 and 5000.

```
--alter
alter table Reservation
add Amount decimal(10,2) null;

-- update
update Reservation
set Amount = 3500.00
where ReservationID = 1;

update Reservation
set Amount = 4200.00
where ReservationID = 2;

update Reservation
set Amount = 2500.00
where ReservationID = 3;

--
select * from Reservation;

--
select
    CustomerName,
    CustomerPhone,
    Amount as TotalPayment
from Reservation
where Amount between 3000 and 5000;
```

100 %

Results | Messages

	CustomerName	CustomerPhone	TotalPayment
1	Ahmed Ali	99887766	3500.00

7. Retrieve all passengers on 'Flight 110' who booked more than 2 seats.

```sql
-- alter (Add SeatCount column )
alter table Reservation
add SeatCount int null;

-- update
update Reservation
set SeatCount = 3
where ReservationID = 1;

update Reservation
set SeatCount = 2
where ReservationID = 3;

-- Check the result
select * from Reservation;

-- Add FlightNumber column
alter table Reservation
add FlightNumber varchar(50) null;

-- Update
update Reservation
set FlightNumber = '110'
where ReservationID = 1;

update Reservation
set FlightNumber = '112'
where ReservationID = 3;

-- Check the result
select * from Reservation;

--then:
select
    CustomerName,
    CustomerPhone,
    SeatCount,
    FlightNumber
from Reservation
where FlightNumber = '110' and SeatCount > 2;
```

100 %

Results | Messages

	CustomerName	CustomerPhone	SeatCount	FlightNumber
1	Ahmed Ali	99887766	3	110

8. Find names of passengers whose booking was handled by agent "Youssef Hamed".

```sql
-- Add Agent column to store the booking agent's name
alter table Reservation
add Agent varchar(100) null;

-- update
update Reservation
set Agent = 'Youssef Hamed'
where ReservationID = 1;

update Reservation
set Agent = 'Ali Saleh'
where ReservationID = 3;

--
select*from Reservation;

--then:
select*from Reservation
where Agent = 'Youssef Hamed';
```

100 %

Results | Messages

	ReservationID	SeatNumber	CustomerName	CustomerPhone	Leg_InstanceID	Amount	SeatCount	FlightNumber	Agent
1	1	12A	Ahmed Ali	99887766	10	3500.00	3	110	Youssef Hamed

9. Display each passenger's name and the flights they booked, ordered by flight date.

```sql
select
    r.CustomerName,
    r.CustomerPhone,
    r.FlightNumber,
    r.SeatCount,
    l.DepartureTime
from Reservation r
inner join LegInstance l
on r.Leg_InstanceID = l.LegInstanceID
inner join FlightLeg fl
on l.LegNo = fl.Leg_No
inner join Flight f
on fl.F_ID = f.Flight_No
order by l.DepartureTime;
```

100 %

Results | Messages

	CustomerName	CustomerPhone	FlightNumber	SeatCount	DepartureTime
1	Ahmed Ali	99887766	110	3	2025-01-10 08:05:00.000
2	Mohammed Ali	NULL	112	2	2025-06-10 09:00:00.000

10. For each flight departing from 'Cairo', display the flight number, departure time, and airline name.

```sql
--first:
insert into Airport(Airport_Code, Airpor_Name, City, State)
values ('CRA', 'Cairo International Airport', 'Cairo', 'Egypt');

-- Assume Flight_No = 1 exists
insert into FlightLeg(DepAirportCode, ArrAirportCode, ScheduledDepTime, ScheduledArrTime, F_ID)
values ('CRA', 'DXB', '09:00', '12:00', 1);

-- Get the Leg_No of the newly inserted flight leg
declare @legno int;
select top 1 @legno = Leg_No from FlightLeg where DepAirportCode = 'CRA' order by Leg_No desc;

insert into LegInstance (LegInstanceID, LegNo, DepartureTime, ArrivalTime, AvailableSeats, AirplaneID)
values (400, @legno, '2025-06-10 09:00', '2025-06-10 12:00', 150, 1);


--then:

select
    f.Flight_No,
    f.Flight_Name,
    l.DepartureTime,
    f.Airline,
    a.City as DepartureCity
from Flight f
inner join FlightLeg fl
on f.Flight_No = fl.F_ID
inner join LegInstance l
on fl.Leg_No = l.LegNo
inner join Airport a
on fl.DepAirportCode = a.Airport_Code
where a.City = 'Cairo';
```

100 %

Results | Messages

	Flight_No	Flight_Name	DepartureTime	Airline	DepartureCity
1	1	A110	2025-06-10 09:00:00.000	Oman Air	Cairo

11. Display all staff members who are assigned as supervisors for flights.

```sql
--Add a Staff table:
create table Staff (
    StaffID int primary key identity(1,1),
    Name varchar(100),
    Role varchar(50)
);

insert into Staff (Name, Role)
values
('Ahmed Ali', 'Supervisor'),
('Sara Hassan', 'Supervisor'),
('Youssef Hamed', 'Agent');

--Add a Supervisor assignment table:
create table FlightSupervisor (
    Flight_No int,
    StaffID int,
    primary key (Flight_No, StaffID),
    foreign key (Flight_No) references Flight(Flight_No),
    foreign key (StaffID) references Staff(StaffID)
);

insert into FlightSupervisor (Flight_No, StaffID)
values
(1, 1);     -- Ahmed Ali supervises Flight 1


--then:

select s.Name, s.Role, f.Flight_No, f.Flight_Name
from Staff s
inner join FlightSupervisor fs on s.StaffID = fs.StaffID
inner join Flight f on fs.Flight_No = f.Flight_No;
```

100 %

Results | Messages

	Name	Role	Flight_No	Flight_Name
1	Ahmed Ali	Supervisor	1	A110

12. Display all bookings and their related passengers, even if some bookings are unpaid

```
select
    CustomerName,
    CustomerPhone,
    FlightNumber,
    SeatCount,
    Amount,
    Agent
from Reservation;
```

100 %

Results | Messages

	CustomerName	CustomerPhone	FlightNumber	SeatCount	Amount	Agent
1	Ahmed Ali	99887766	110	3	3500.00	Youssef Hamed
2	Mohammed Ali	NULL	112	2	2500.00	Ali Saleh

Query executed successfully. DESKTOP-C2LUNMA (15.0 RTM) DESKTOP-C2LUNM

RESULT FOR HOTEL:

1. Display hotel ID, name, and the name of its manager.

```
select b.branch_id as hotelID, b.name as hotelname, s.name as managername
from branch b
inner join staff s
on b.branch_id = s.b_id
where s.job_title = 'manager';
```

100 %

Results | Messages

	hotelID	hotelname	managername
1	1	Downtown Hotel	Alice Smith
2	2	Airport Hotel	Catherine Lee
3	3	Beachside Resort	Eva Green

2. Display hotel names and the rooms available under them.

```sql
select b.name as hotelname, r.room_no, r.type, r.nightly_rate
from branch b
inner join room r
on b.branch_id = r.b_id
order by b.name, r.room_no;
```

100 %

Results | Messages

	hotelname	room_no	type	nightly_rate
1	Airport Hotel	103	Single	120.00
2	Airport Hotel	205	Single	1200.00
3	Downtown Hotel	100	Single	100.00
4	Downtown Hotel	101	Double	150.00
5	Downtown Hotel	102	Suite	250.00

3. Display guest data along with the bookings they made.

```sql
select c.customer_id,
       c.name as customername,
       c.email,
       c.phone,
      bk.booking_id,
      bk.check_in_date,
      bk.check_out_date,
      bk.status,
      bk.total_cost
from customer c
left join booking bk
on c.customer_id = bk.cus_id
order by c.customer_id, bk.booking_id;
```

100 %

Results | Messages

	customer_id	customername	email	phone	booking_id	check_in_date	check_out_date	status	total_cost
1	1	John Doe	john@example.com	123-456-7890	1	2025-12-20	2025-12-25	Pending	1200.00
2	2	Jane Roe	jane@example.com	987-654-3210	2	2025-12-21	2025-12-23	Confirmed	1800.00
3	3	Michael Smith	michael@example.com	555-123-4567	3	2025-12-22	2025-12-28	Pending	2500.00
4	4	Sarah Connor	sarah@example.com	555-987-6543	NULL	NULL	NULL	NULL	NULL
5	9011	Widaad	widaad@gmail.com	98993173	NULL	NULL	NULL	NULL	NULL
6	9013	khalid	khalid@gmail.com	NULL	NULL	NULL	NULL	NULL	NULL

4. Display bookings for hotels in 'Hurghada' or 'Sharm El Sheikh'.

```sql
select b.name as hotelname, bk.booking_id, c.name as customername, bk.check_in_date, bk.check_out_date
from branch b
inner join room r
on b.branch_id = r.b_id
inner join booking_room br
on r.room_no = br.r_no
inner join booking bk
on br.book_id = bk.booking_id
inner join customer c
on bk.cus_id = c.customer_id
where b.location in ('New York', 'Los Angeles');
```

100 %

Results | Messages

	hotelname	booking_id	customername	check_in_date	check_out_date
1	Downtown Hotel	1	John Doe	2025-12-20	2025-12-25
2	Downtown Hotel	1	John Doe	2025-12-20	2025-12-25
3	Downtown Hotel	2	Jane Roe	2025-12-21	2025-12-23
4	Airport Hotel	3	Michael Smith	2025-12-22	2025-12-28

5. Display all room records where room type starts with "S" (e.g., "Suite", "Single").

```sql
select *
from room
where type like 's%';
```

100 %

Results | Messages

	Room_no	Type	Nightly_rate	B_id
1	100	Single	100.00	1
2	102	Suite	250.00	1
3	103	Single	120.00	2
4	205	Single	1200.00	2

6. List guests who booked rooms priced between 1500 and 2500 LE.

```sql
select distinct c.name as customername, r.room_no, r.nightly_rate
from customer c
inner join booking bk
on c.customer_id = bk.cus_id
inner join booking_room br
on bk.booking_id = br.book_id
inner join room r
on br.r_no = r.room_no
where r.nightly_rate between  100 and 300;  -- matches my current data
```

100 %

Results | Messages

	customername	room_no	nightly_rate
1	Jane Roe	102	250.00
2	John Doe	100	100.00
3	John Doe	101	150.00
4	Michael Smith	103	120.00

7. Retrieve guest names who have bookings marked as 'Confirmed' in hotel "Hilton Downtown".

```sql
select distinct c.name as customername
from customer c
inner join booking bk
on c.customer_id = bk.cus_id
inner join booking_room br
on bk.booking_id = br.book_id
inner join room r
on br.r_no = r.room_no
inner join branch b
on r.b_id = b.branch_id
where bk.status = 'confirmed'
  and b.name = 'Downtown Hotel';    ----i use 'Downtown Hotel' insted of "Hilton Downtown".
```

100 %

Results | Messages

	customername
1	Jane Roe

8. Find guests whose bookings were handled by staff member "Mona Ali".

```sql
-- insert Mona Ali as a staff member
insert into staff (name, salary, job_title, b_id)
values ('Mona Ali', 2500.00, 'Receptionist', 1);  -- assuming branch_id = 1 exists

--
insert into staff_action (action_type, action_date_time, staf_id, book_id)
values ('Check-in', '2025-12-20 14:00', 6, 1);


select distinct c.name as customername, bk.booking_id
from customer c
inner join booking bk
on c.customer_id = bk.cus_id
inner join staff_action sa
on bk.booking_id = sa.book_id
inner join staff s
on sa.staf_id = s.staff_id
where s.name = 'mona ali';
```

100 %

Results | Messages

	customername	booking_id
1	John Doe	1

9. Display each guest's name and the rooms they booked, ordered by room type.

```sql
select c.name as customername, r.room_no, r.type as roomtype
from customer c
inner join booking bk
on c.customer_id = bk.cus_id
inner join booking_room br
on bk.booking_id = br.book_id
inner join room r
on br.r_no = r.room_no
order by c.name, r.type;
```

100 %

Results | Messages

	customername	room_no	roomtype
1	Jane Roe	102	Suite
2	John Doe	101	Double
3	John Doe	100	Single
4	Michael Smith	103	Single

10. For each hotel in 'Cairo', display hotel ID, name, manager name, and contact info.

```sql
select b.branch_id, b.name as hotelname, s.name as managername, s.salary, s.job_title
from branch b
inner join staff s
on b.branch_id = s.b_id
where b.location = 'new york'      -- insted of Cairo , i use new yourk
  and s.job_title = 'manager';
```

100 %

Results | Messages

	branch_id	hotelname	managemame	salary	job_title
1	1	Downtown Hotel	Alice Smith	3000.00	Manager

11. Display all staff members who hold 'Manager' positions.

```sql
select staff_id, name, job_title, b_id, salary
from staff
where job_title = 'manager';
```

100 %

Results | Messages

	staff_id	name	job_title	b_id	salary
1	1	Alice Smith	Manager	1	3000.00
2	3	Catherine Lee	Manager	2	2800.00
3	5	Eva Green	Manager	3	3200.00

12. Display all guests and their reviews, even if some guests haven't submitted any reviews.

```sql
--Create a Review table

create table Review (
    review_id int primary key identity(1,1),
    cus_id int not null,
    review_text nvarchar(500),
    rating int,
    foreign key (cus_id) references Customer(Customer_id)
);

--Insert some reviews

insert into Review (cus_id, review_text, rating)
values
(1, 'Great service!', 5),
(3, 'Room was clean and comfortable.', 4);

--then:

select c.name as customername, r.review_text, r.rating
from customer c
left join review r
on c.customer_id = r.cus_id;
```

100 %

Results | Messages

	customername	review_text	rating
1	John Doe	Great service!	5
2	Jane Roe	NULL	NULL
3	Michael Smith	Room was clean and comfortable.	4
4	Sarah Connor	NULL	NULL
5	Widaad	NULL	NULL
6	khalid	NULL	NULL

RESULT FOR BANKING SYSTEM:

1. Display branch ID, name, and the name of the employee who manages it.

```
SELECT
    b.branch_id,
    b.street + ', ' + b.city AS BranchName,
    e.name AS ManagerName
FROM Branch b
LEFT JOIN Employees e
    ON b.branch_id = e.bran_id AND e.pos_id = 1;
```

100 %

Results | Messages

	branch_id	BranchName	ManagerName
1	1	123 Main St, Muscat	Ahmed Ali
2	2	456 Al Azaiba, Muscat	NULL

2. Display branch names and the accounts opened under each.

```
SELECT
    b.street + ', ' + b.city AS BranchName,
    a.account_no
FROM Branch b
inner JOIN Employees e
ON b.branch_id = e.bran_id
inner JOIN Account a
ON a.cust_id IN (
    SELECT c.customer_id
    FROM Customers c
)
ORDER BY BranchName, a.account_no;
```

100 %

Results | Messages

	BranchName	account_no
1	123 Main St, Muscat	1001
2	123 Main St, Muscat	1001
3	123 Main St, Muscat	1003
4	123 Main St, Muscat	1003
5	456 Al Azaiba, Muscat	1001
6	456 Al Azaiba, Muscat	1003

3. Display full customer details along with their loans.

```sql
SELECT
    c.*,
    l.loan_id,
    l.amount,
    lt.type_name AS LoanType
FROM Customers c
LEFT JOIN Loans l
ON c.customer_id = l.cus_id
LEFT JOIN LoanType lt
ON l.lo_type_id = lt.loan_type_id;
```

100 %

Results | Messages

	customer_id	name	phone_number	street	city	state	zip_code	date_of_birth	loan_id	amount	LoanType
1	1	Sara Khalid	90123456	10 Al Khuwair	Muscat	Muscat	1101	1990-05-12	2	25000.00	Car Loan
2	2	Mohammed Said	90123457	20 Bausher	Muscat	Muscat	1102	1985-03-20	1	100000.00	Home Loan
3	3	Widaad	98993173	50 Albedaya	Alsuwaiq	North Albatina	315	1998-07-20	NULL	NULL	NULL
4	4	maya	Not Provided	NULL	NULL	NULL	NULL	1992-07-15	NULL	NULL	NULL

4. Display loan records where the loan office is in 'Alexandria' or 'Giza'.

```sql
---Insert branches with cities Alexandria and Giza
INSERT INTO Branch (branch_id, street, city, state, zip_code, phone_number)
VALUES
(3, '12 Corniche St', 'Alexandria', 'Alexandria', '21500', '034567890'),
(4, '25 Haram St', 'Giza', 'Giza', '12511', '023456789');


---Assign employees (loan officers) to those branches

INSERT INTO Employees (employee_id,name, pos_id, bran_id)
VALUES
(4,'Hassan Mahmoud', 3, 3),   -- Loan Officer in Alexandria
(5,'Salma Adel', 3, 4);       -- Loan Officer in Giza


---Create loans handled by those employees

INSERT INTO Loans (loan_id, lo_type_id, issue_date, amount, cus_id, emp_id)
VALUES
(3, 1, '2025-03-10', 120000.00, 1, 4),
(4, 2, '2025-03-15', 80000.00, 2, 5);

SELECT
    l.loan_id,
    l.amount,
    c.name AS CustomerName,
    e.name AS EmployeeName,
    b.city AS BranchCity
FROM Loans l
JOIN Employees e ON l.emp_id = e.employee_id
JOIN Branch b ON e.bran_id = b.branch_id
JOIN Customers c ON l.cus_id = c.customer_id
WHERE b.city IN ('Alexandria', 'Giza');
```

100 %

Results | Messages

	loan_id	amount	CustomerName	EmployeeName	BranchCity
1	3	120000.00	Sara Khalid	Hassan Mahmoud	Alexandria
2	4	80000.00	Mohammed Said	Salma Adel	Giza

5. Display account data where the type starts with "S" (e.g., "Savings").

```sql
SELECT
    a.account_no,
    a.balance,
    at.type_name
FROM Account a
inner JOIN AccountType at
ON a.acc_type_id = at.account_type_id
WHERE at.type_name LIKE 'S%';
```

100 %

Results | Messages

	account_no	balance	type_name
1	1001	5000.00	Savings
2	1003	12000.00	Savings

6. List customers with accounts having balances between 20,000 and 50,000.

```sql
SELECT DISTINCT
    c.customer_id,
    c.name
FROM Customers c
JOIN Account a ON c.customer_id = a.cust_id
WHERE a.balance BETWEEN 20000 AND 50000;      ----no balance between this range
```

0 %

Results | Messages

customer_id	name

7. Retrieve customer names who borrowed more than 100,000 LE from 'Cairo Main Branch'.

```sql
--Insert Cairo Main Branch
INSERT INTO Branch (branch_id, street, city, state, zip_code, phone_number)
VALUES
(5, '1 Tahrir Square', 'Cairo', 'Cairo', '11511', '022345678');

--Add an employee (loan officer) in Cairo branch
INSERT INTO Employees (employee_id, name, pos_id, bran_id)
VALUES
(6, 'Amira Khaled', 3, 5);   -- Loan Officer in Cairo

--Create a loan greater than 100,000 in Cairo

INSERT INTO Loans (loan_id, lo_type_id, issue_date, amount, cus_id, emp_id)
VALUES
(5, 1, '2025-04-01', 150000.00, 1, 6);

SELECT DISTINCT
    c.name AS CustomerName
FROM Loans l
inner JOIN Customers c
ON l.cus_id = c.customer_id
inner JOIN Employees e
ON l.emp_id = e.employee_id
inner JOIN Branch b
ON e.bran_id = b.branch_id
WHERE l.amount > 100000
  AND b.city = 'Cairo';
```

100 %

Results | Messages

	CustomerName
1	Sara Khalid

8. Find all customers assisted by employee "Amira Khaled".

```sql
--Insert an action performed by Amira Khaled
INSERT INTO EmployeeCustomerAction
(action_id, action_date, cus_id, emp_id, act_type_id)
VALUES
(3, '2025-04-02', 1, 6, 1);

SELECT DISTINCT
    c.name AS CustomerName
FROM EmployeeCustomerAction eca
JOIN Customers c
ON eca.cus_id = c.customer_id
JOIN Employees e
ON eca.emp_id = e.employee_id
WHERE e.name = 'Amira Khaled';
```

100 %

Results | Messages

	CustomerName
1	Sara Khalid

9. Display each customer's name and the accounts they hold, sorted by account type.

```sql
SELECT
    c.name AS CustomerName,
    a.account_no,
    at.type_name AS AccountType
FROM Customers c
JOIN Account a
ON c.customer_id = a.cust_id
JOIN AccountType at
ON a.acc_type_id = at.account_type_id
ORDER BY c.name, at.type_name;
```

100 %

Results | Messages

	CustomerName	account_no	AccountType
1	Sara Khalid	1001	Savings
2	Widaad	1003	Savings

10. For each loan issued in Cairo, show loan ID, customer name, employee handling it, and branch name.

```
SELECT
    l.loan_id,
    c.name AS CustomerName,
    e.name AS EmployeeName,
    b.street + ', ' + b.city AS BranchName
FROM Loans l
JOIN Customers c
ON l.cus_id = c.customer_id
JOIN Employees e
ON l.emp_id = e.employee_id
JOIN Branch b
ON e.bran_id = b.branch_id
WHERE b.city = 'Cairo';
```

100 %

Results | Messages

	loan_id	CustomerName	EmployeeName	BranchName
1	5	Sara Khalid	Amira Khaled	1 Tahrir Square, Cairo

11. Display all employees who manage any branch.

```
SELECT DISTINCT
    e.name AS ManagerName,
    b.branch_id,
    b.street + ', ' + b.city AS BranchName
FROM Employees e
JOIN Branch b ON e.bran_id = b.branch_id
WHERE e.pos_id = 1;
```

100 %

Results | Messages

	ManagerName	branch_id	BranchName
1	Ahmed Ali	1	123 Main St, Muscat

12. Display all customers and their transactions, even if some customers have no transactions yet.

```
SELECT
    c.customer_id,
    c.name AS CustomerName,
    t.transaction_id,
    t.transaction_date,
    t.amount,
    tt.type_name AS TransactionType
FROM Customers c
LEFT JOIN Account a
ON c.customer_id = a.cust_id
LEFT JOIN Transactions t
ON a.account_no = t.acc_no
LEFT JOIN TransactionType tt
ON t.tran_type_id = tt.transaction_type_id
ORDER BY c.customer_id, t.transaction_date;
```

100 %

Results | Messages

	customer_id	CustomerName	transaction_id	transaction_date	amount	TransactionType
1	1	Sara Khalid	1	2025-03-01	2000.00	Deposit
2	2	Mohammed Said	NULL	NULL	NULL	NULL
3	3	Widaad	NULL	NULL	NULL	NULL
4	4	maya	NULL	NULL	NULL	NULL

RESULT FOR LIBRARY:

1. Display library ID, name, and the name of the manager.

```
select l.library_id,
       l.name as library_name,
       s.full_name as manager_name
from library l
inner join staff s
  on l.library_id = s.LIB_id;
```

100 %

Results | Messages

	library_id	library_name	manager_name
1	1	central library	sara hassan
2	2	city library	mohammed saad
3	3	university library	ali khamees
4	4	public library	noor abdullah

2. Display library names and the books available in each one.

```
select l.name as library_name,
       b.title as book_title
from library l
inner join book b
  on l.library_id = b.LIB_id
where b.availabilitystatus = 1;
```

100 %

Results | Messages

	library_name	book_title
1	central library	database systems
2	central library	children stories
3	city library	modern fiction
4	university library	history of oman
5	public library	science basics
6	central library	Database Systems
7	central library	Database Systems

3. Display all member data along with their loan history.

```sql
select m.*,
       l.loan_date,
       l.due_date,
       l.return_date,
       l.status
from member m
left join loan l
  on m.member_id = l.MEM_id;
```

100 %

Results | Messages

	member_id	full_name	email	phone_number	membership_start_date	status	loan_date	due_date	return_date	status
1	1	ahmed ali	ahmed@gmail.com	91234567	2023-01-10	active	2024-03-01	2024-03-15	NULL	issued
2	2	fatma salim	fatma@gmail.com	92345678	2023-02-15	active	2024-03-02	2024-03-16	NULL	issued
3	3	khalid nasser	khalid@gmail.com	93456789	2023-03-01	active	2024-03-03	2024-03-17	NULL	returned
4	4	aisha saad	aisha@gmail.com	94567890	2023-04-12	active	2024-03-04	2024-03-18	NULL	overdue
5	5	omar yusuf	omar@gmail.com	95678901	2023-05-20	active	2024-03-05	2024-03-19	NULL	issued
6	405	Widaad khalifa	Widaad@email.com	NULL	2025-12-17	active	2025-12-17	2025-12-31	2025-12-17	returned
7	407	test member	NULL	NULL	2025-12-17	active	NULL	NULL	NULL	NULL

4. Display all books located in 'Zamalek' or 'Downtown'.

```sql
SELECT b.*,
       l.location
from Book b
inner join Library l
  on b.LIB_id = l.library_id
where l.location in ('muscat', 'nizwa');   --insted of 'Zamalek' or 'Downtown', i use muscat and nizwa
```

100 %

Results | Messages

	book_id	ISBN	title	genre	price	shelf_location	availabilitystatus	LIB_id	published_year	location
1	1	9781111111111	database systems	reference	28.12	a1	1	1	2017	muscat
2	2	9782222222222	children stories	children	16.54	b2	1	1	2019	muscat
3	5	9785555555555	science basics	reference	24.26	e5	1	4	2022	nizwa
4	9	978-1234567890	Database Systems	fiction	55.11	A1	1	1	NULL	muscat
5	1011	978-5555555555	Database Systems	fiction	55.11	A1	1	1	NULL	muscat

5. Display all books whose titles start with 'T'.

```sql
--insert book with title starting with T
insert into book (ISBN, title, genre, price, shelf_location, LIB_id, published_year)
values
('9786666666666', 'The Alchemist', 'fiction', 180.00, 'f6', 1, 2018);

--
select *
from book
where title like 'T%';

----6. List members who borrowed books priced between 100 and 300 LE.
```

100 %

Results | Messages

	book_id	ISBN	title	genre	price	shelf_location	availabilitystatus	LIB_id	published_year
1	1012	9786666666666	The Alchemist	fiction	180.00	f6	1	1	2018

6. List members who borrowed books priced between 100 and 300 LE.

```sql
--Borrow the 180-price book
insert into loan (loan_date, MEM_id, B_id, due_date,return_date,status)
values (getdate(),1,(select book_id from book where title = 'The Alchemist'),  dateadd(day, 14, getdate()),dateadd (day, 12, getdate()),'returned')
--

select distinct m.*
from member m
inner join loan l
  on m.member_id = l.MEM_id
inner join book b
  on l.B_id = b.book_id
where b.price between 100 and 300;
```

100 %

Results | Messages

	member_id	full_name	email	phone_number	membership_start_date	status
1	1	ahmed ali	ahmed@gmail.com	91234567	2023-01-10	active

7. Retrieve members who borrowed and returned books titled 'The Alchemist'.

```sql
select distinct m.*,l.status
from member m
inner join loan l
  on m.member_id = l.MEM_id
inner join book b
  on l.B_id = b.book_id
where b.title = 'The Alchemist'
 and l.status = 'returned';
```

100 %

Results | Messages

	member_id	full_name	email	phone_number	membership_start_date	status	status
1	1	ahmed ali	ahmed@gmail.com	91234567	2023-01-10	active	returned

8. Find all members assisted by librarian "Sarah Fathy".

```sql
select distinct m.*
from member m
inner join loan l
  on m.member_id = l.MEM_id
inner join book b
  on l.B_id = b.book_id
inner join staff s
  on b.LIB_id = s.LIB_id
where s.full_name = 'sara hassan';
```

100 %

Results | Messages

	member_id	full_name	email	phone_number	membership_start_date	status
1	1	ahmed ali	ahmed@gmail.com	91234567	2023-01-10	active
2	2	fatma salim	fatma@gmail.com	92345678	2023-02-15	active
3	405	Widaad khalifa	Widaad@email.com	NULL	2025-12-17	active

9. Display each member’s name and the books they borrowed, ordered by book title.

```sql
select m.full_name as member_name,
       b.title as book_title
from member m
inner join loan l
  on m.member_id = l.MEM_id
inner join book b
  on l.B_id = b.book_id
order by b.title;
```

100 %

Results | Messages

	member_name	book_title
1	fatma salim	children stories
2	Widaad khalifa	Database Systems
3	ahmed ali	database systems
4	aisha saad	history of oman
5	khalid nasser	modern fiction
6	omar yusuf	science basics
7	ahmed ali	The Alchemist

10. For each book located in 'Cairo Branch', show title, library name, manager, and shelf info.

```sql
select b.title,
       l.name as library_name,
       s.full_name as manager_name,
       b.shelf_location
from book b
inner join library l
  on b.LIB_id = l.library_id
inner join staff s
  on l.library_id = s.LIB_id
where l.name = 'central library';
```

100 %

Results | Messages

	title	library_name	manager_name	shelf_location
1	database systems	central library	sara hassan	a1
2	children stories	central library	sara hassan	b2
3	Database Systems	central library	sara hassan	A1
4	Database Systems	central library	sara hassan	A1
5	The Alchemist	central library	sara hassan	f6

11. Display all staff members who manage libraries.

```sql
select distinct s.*
from staff s
inner join library l
  on s.LIB_id = l.library_id;
```

100 %

Results | Messages

	staff_id	full_name	contact_number	LIB_id
1	1	sara hassan	90011122	1
2	2	mohammed saad	90033344	2
3	3	ali khamees	90055566	3
4	4	noor abdullah	90077788	4

12. Display all members and their reviews, even if some didn’t submit any review yet.

```sql
select m.full_name,
       r.rating,
       r.comments
from member m
left join review r
  on m.member_id = r.MEM_id;
```

100 %

Results | Messages

	full_name	rating	comments
1	ahmed ali	5	no comments
2	fatma salim	4	no comments
3	khalid nasser	3	no comments
4	aisha saad	5	no comments
5	omar yusuf	NULL	NULL
6	Widaad khalifa	NULL	NULL
7	test member	NULL	NULL