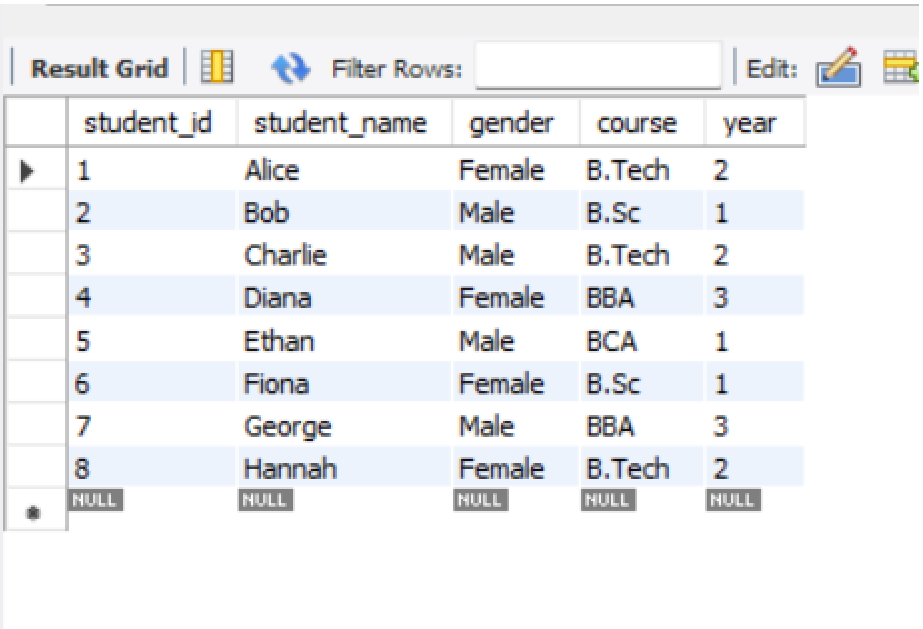
BT ID :- BT23CSE175
NAME:-YENNE TANOOJ KUMAR

```
create database hostelDB;
use hostelDB;
CREATE TABLE Students (
   student_id INT PRIMARY KEY,
   student_name VARCHAR(50),
   gender VARCHAR(10),
   course VARCHAR(50),
   year INT
);


CREATE TABLE Hostels (
   hostel_id INT PRIMARY KEY,
   hostel_name VARCHAR(50),
   capacity INT
);


CREATE TABLE Rooms (
   room_id INT PRIMARY KEY,
   hostel_id INT,
   room_number VARCHAR(10),
   capacity INT,
   FOREIGN KEY (hostel_id) REFERENCES Hostels(hostel_id)
);


CREATE TABLE Room_Allocation (
   allocation_id INT PRIMARY KEY,
   student_id INT,
   room_id INT,
   allocation_date DATE,
   FOREIGN KEY (student_id) REFERENCES Students(student_id),
    FOREIGN KEY (room_id) REFERENCES Rooms(room_id)
);


INSERT INTO Students VALUES
(1, 'Alice', 'Female', 'B.Tech', 2),
(2, 'Bob', 'Male', 'B.Sc', 1),
(3, 'Charlie', 'Male', 'B.Tech', 2),
(4, 'Diana', 'Female', 'BBA', 3),
(5, 'Ethan', 'Male', 'BCA', 1),
(6, 'Fiona', 'Female', 'B.Sc', 1),
(7, 'George', 'Male', 'BBA', 3),
(8, 'Hannah', 'Female', 'B.Tech', 2);


INSERT INTO Hostels VALUES
(1, 'Sunrise Hostel', 10),
(2, 'Moonlight Hostel', 8);


INSERT INTO Rooms VALUES
(1, 1, '101', 2),
(2, 1, '102', 2),
(3, 1, '103', 2),
(4, 2, '201', 2),
(5, 2, '202', 2),
(6, 2, '203', 2);


INSERT INTO Room_Allocation VALUES
(1, 1, 1, '2025-01-10'),
(2, 2, 1, '2025-01-11'),
(3, 3, 2, '2025-01-12'),
(4, 4, 2, '2025-01-13'),
(5, 5, 3, '2025-01-14'),
(6, 6, 3, '2025-01-15'),
(7, 7, 4, '2025-01-16'),
```

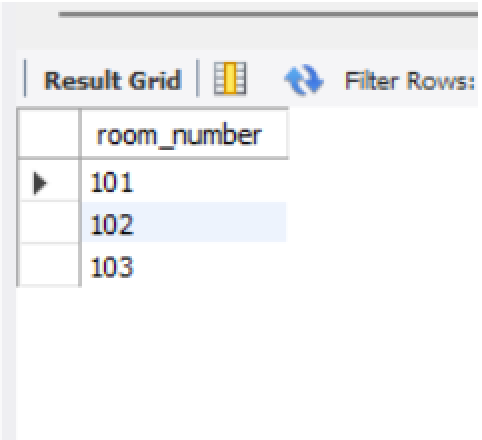
(8, 8, 5, '2025-01-17');

1.-- List all students
SELECT * FROM Students;



student_id	student_name	gender	course	year
1	Alice	Female	B.Tech	2
2	Bob	Male	B.Sc	1
3	Charlie	Male	B.Tech	2
4	Diana	Female	BBA	3
5	Ethan	Male	BCA	1
6	Fiona	Female	B.Sc	1
7	George	Male	BBA	3
8	Hannah	Female	B.Tech	2
NULL	NULL	NULL	NULL	NULL

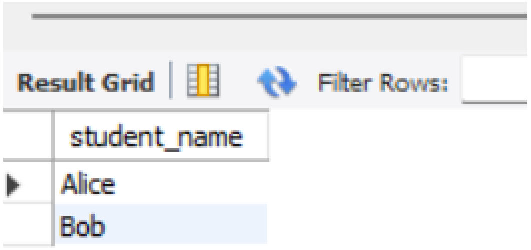
2. -- Find all rooms in Sunrise Hostel
SELECT room_number FROM Rooms
WHERE hostel_id = (SELECT hostel_id FROM Hostels WHERE hostel_name='Sunrise Hostel');



room_number
101
102
103

3. -- : Show students allocated to room 101

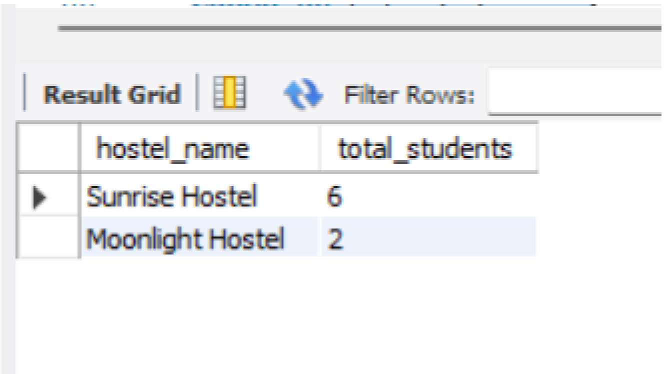
```
SELECT student_name FROM Students
WHERE student_id IN (SELECT student_id FROM Room_Allocation WHERE
room_id=1);
```



student_name
Alice
Bob

4.--: Count total students in each hostel

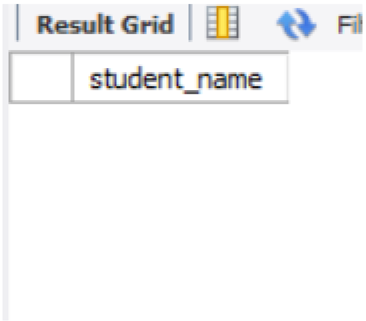
```
SELECT h.hostel_name, COUNT(ra.student_id) AS total_students
FROM Hostels h
JOIN Rooms r ON h.hostel_id = r.hostel_id
JOIN Room_Allocation ra ON r.room_id = ra.room_id
GROUP BY h.hostel_name;
```



hostel_name	total_students
Sunrise Hostel	6
Moonlight Hostel	2

5.-- List unallocated students

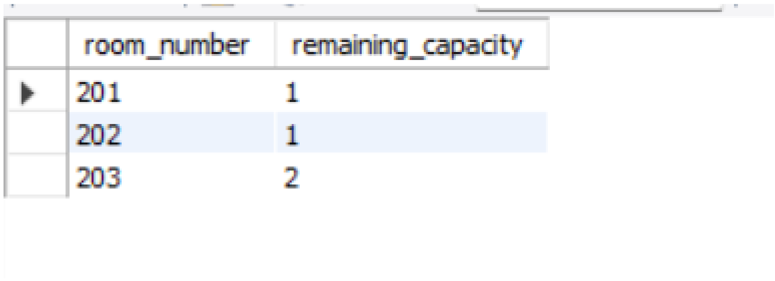
```
SELECT student_name FROM Students
WHERE student_id NOT IN (SELECT student_id FROM Room_Allocation);
```



student_name

6.--: Find rooms with remaining capacity

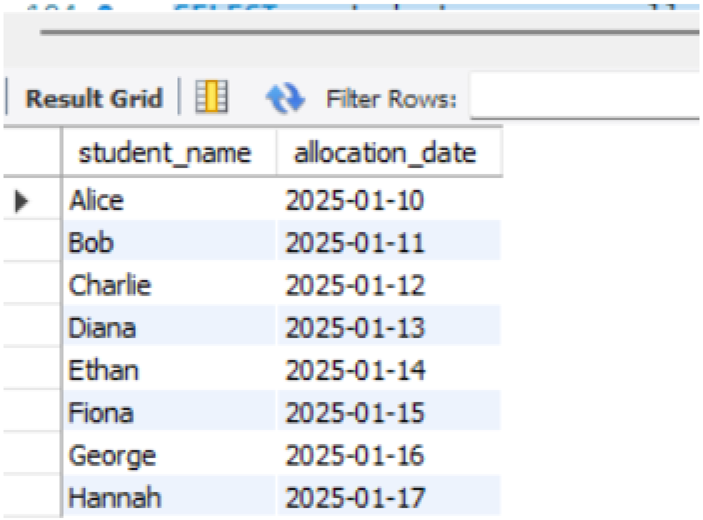
```
SELECT r.room_number, (r.capacity - COUNT(ra.student_id)) AS
remaining_capacity
FROM Rooms r
LEFT JOIN Room_Allocation ra ON r.room_id = ra.room_id
GROUP BY r.room_id, r.room_number, r.capacity
HAVING remaining_capacity > 0;
```



room_number	remaining_capacity
201	1
202	1
203	2

7.-- : Get allocation date for each student

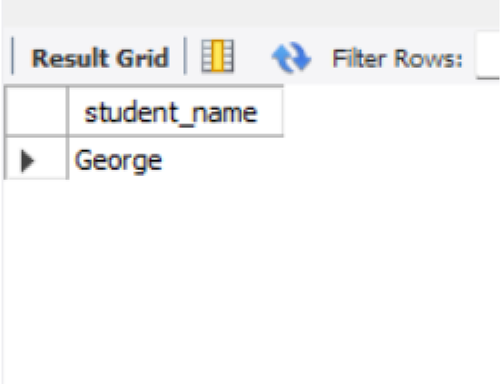
```
SELECT s.student_name, ra.allocation_date
FROM Students s
JOIN Room_Allocation ra ON s.student_id = ra.student_id;
```



student_name	allocation_date
Alice	2025-01-10
Bob	2025-01-11
Charlie	2025-01-12
Diana	2025-01-13
Ethan	2025-01-14
Fiona	2025-01-15
George	2025-01-16
Hannah	2025-01-17

8.--: List male students in Moonlight Hostel

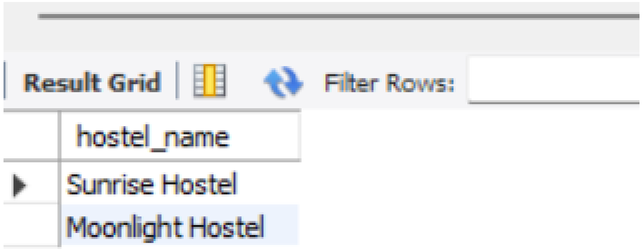
```
SELECT s.student_name FROM Students s
JOIN Room_Allocation ra ON s.student_id = ra.student_id
JOIN Rooms r ON ra.room_id = r.room_id
JOIN Hostels h ON r.hostel_id = h.hostel_id
WHERE s.gender='Male' AND h.hostel_name='Moonlight Hostel';
```



student_name
George

9.--: Find hostels with more than 1 student allocated

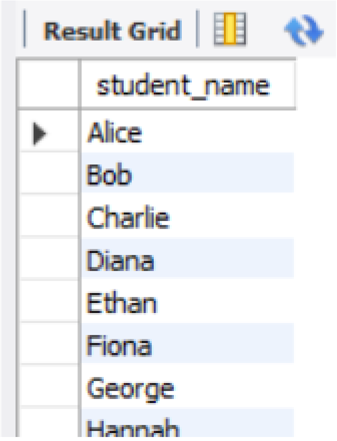
```
SELECT h.hostel_name FROM Hostels h
JOIN Rooms r ON h.hostel_id = r.hostel_id
JOIN Room_Allocation ra ON r.room_id = ra.room_id
GROUP BY h.hostel_name
HAVING COUNT(ra.student_id) > 1;
```



hostel_name
Sunrise Hostel
Moonlight Hostel

10.--: Show students allocated in alphabetical order

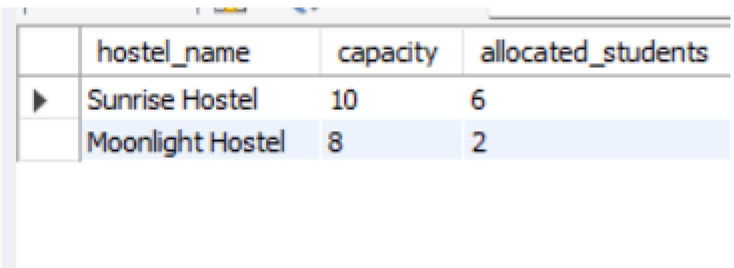
```
SELECT s.student_name FROM Students s
JOIN Room_Allocation ra ON s.student_id = ra.student_id
ORDER BY s.student_name;
```



student_name
Alice
Bob
Charlie
Diana
Ethan
Fiona
George
Hannah

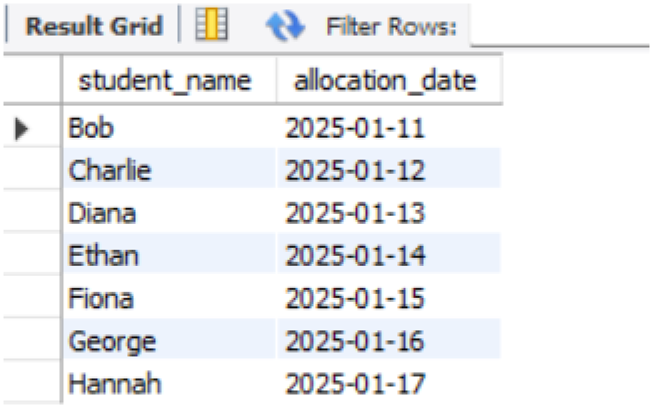
11.-- : Display hostel capacity vs allocated students

```
SELECT h.hostel_name, h.capacity, COUNT(ra.student_id) AS
allocated_students
FROM Hostels h
LEFT JOIN Rooms r ON h.hostel_id = r.hostel_id
LEFT JOIN Room_Allocation ra ON r.room_id = ra.room_id
GROUP BY h.hostel_name, h.capacity;
```



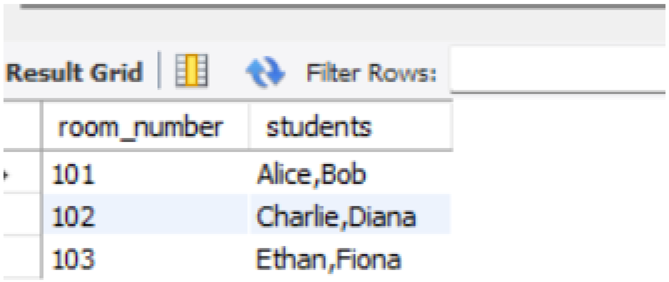
hostel_name	capacity	allocated_students
Sunrise Hostel	10	6
Moonlight Hostel	8	2

12. --: List students allocated after a specific date
SELECT s.student_name, ra.allocation_date FROM Students s
JOIN Room_Allocation ra ON s.student_id = ra.student_id
WHERE ra.allocation_date > '2025-01-10';



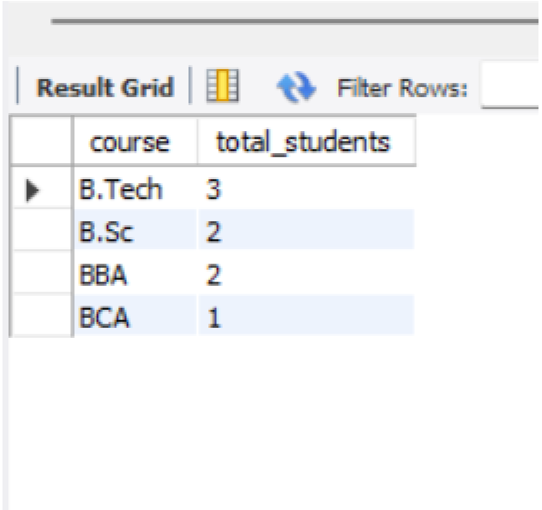
student_name	allocation_date
Bob	2025-01-11
Charlie	2025-01-12
Diana	2025-01-13
Ethan	2025-01-14
Fiona	2025-01-15
George	2025-01-16
Hannah	2025-01-17

13.--: Find students sharing the same room
SELECT r.room_number, GROUP_CONCAT(s.student_name) AS students
FROM Rooms r
JOIN Room_Allocation ra ON r.room_id = ra.room_id
JOIN Students s ON ra.student_id = s.student_id
GROUP BY r.room_number
HAVING COUNT(s.student_id) > 1;



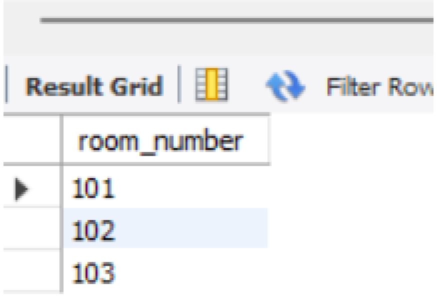
room_number	students
101	Alice,Bob
102	Charlie,Diana
103	Ethan,Fiona

14.-- : Count students by course in hostels
SELECT s.course, COUNT(ra.student_id) AS total_students
FROM Students s
LEFT JOIN Room_Allocation ra ON s.student_id = ra.student_id
GROUP BY s.course;



course	total_students
B.Tech	3
B.Sc	2
BBA	2
BCA	1

15.--: Find rooms fully occupied
SELECT r.room_number FROM Rooms r
JOIN Room_Allocation ra ON r.room_id = ra.room_id
GROUP BY r.room_id, r.capacity, r.room_number
HAVING COUNT(ra.student_id) = r.capacity;



room_number
101
102
103