Task2

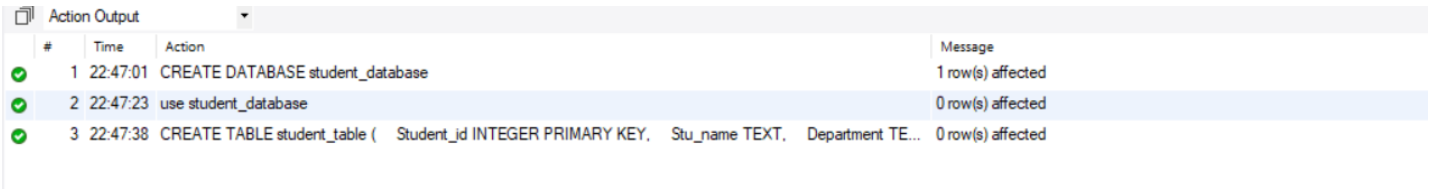
Project: Student Database Management System(PostgreSQL)

Objective: Design and implement a student database management system using PostgreSQL that allows storing and retrieving student information efficiently. The project will include the following tasks:

1. Database Setup

Create a database named "student_database."

Create a table called " student_table " with the following columns: Student_id (integer), Stu_name (text), Department (text), email_id (text),Phone_no (numeric), Address (text), Date_of_birth (date), Gender (text), Major (text), GPA (numeric),Grade (text) should be A,B,C etc.

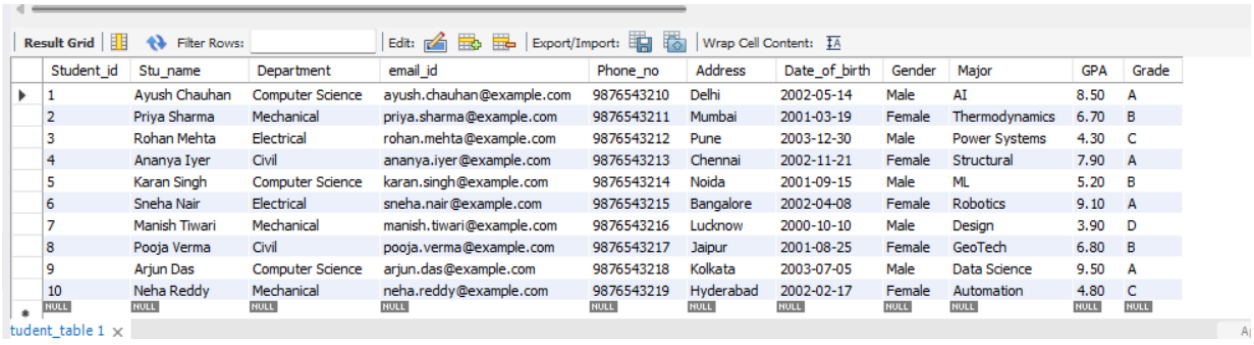


Action Output

#	Time	Action	Message
1	22:47:01	CREATE DATABASE student_database	1 row(s) affected
2	22:47:23	use student_database	0 row(s) affected
3	22:47:38	CREATE TABLE student_table (Student_id INTEGER PRIMARY KEY, Stu_name TEXT, Department TE...	0 row(s) affected

2. Data Entry

Insert 10 sample records into the "student_table" using INSERT command.



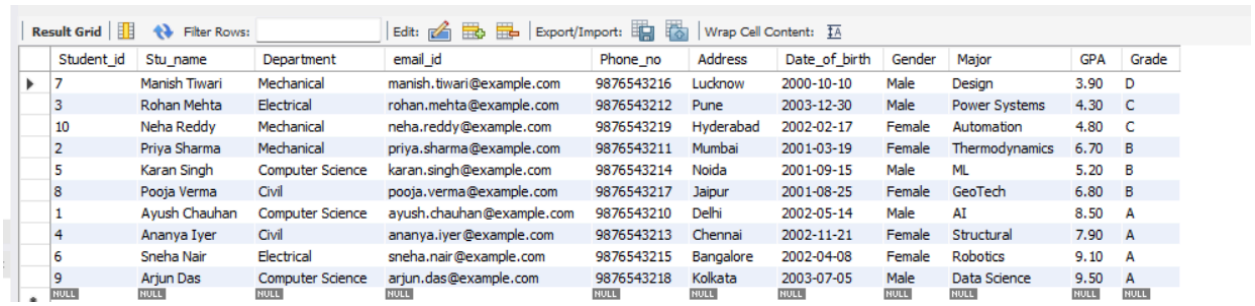
Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

Student_id	Stu_name	Department	email_id	Phone_no	Address	Date_of_birth	Gender	Major	GPA	Grade
1	Ayush Chauhan	Computer Science	ayush.chauhan@example.com	9876543210	Delhi	2002-05-14	Male	AI	8.50	A
2	Priya Sharma	Mechanical	priya.sharma@example.com	9876543211	Mumbai	2001-03-19	Female	Thermodynamics	6.70	B
3	Rohan Mehta	Electrical	rohan.mehta@example.com	9876543212	Pune	2003-12-30	Male	Power Systems	4.30	C
4	Ananya Iyer	Civil	ananya.iyer@example.com	9876543213	Chennai	2002-11-21	Female	Structural	7.90	A
5	Karan Singh	Computer Science	karan.singh@example.com	9876543214	Noida	2001-09-15	Male	ML	5.20	B
6	Sneha Nair	Electrical	sneha.nair@example.com	9876543215	Bangalore	2002-04-08	Female	Robotics	9.10	A
7	Manish Tiwari	Mechanical	manish.tiwari@example.com	9876543216	Lucknow	2000-10-10	Male	Design	3.90	D
8	Pooja Verma	Civil	pooja.verma@example.com	9876543217	Jaipur	2001-08-25	Female	GeoTech	6.80	B
9	Arjun Das	Computer Science	arjun.das@example.com	9876543218	Kolkata	2003-07-05	Male	Data Science	9.50	A
10	Neha Reddy	Mechanical	neha.reddy@example.com	9876543219	Hyderabad	2002-02-17	Female	Automation	4.80	C

tudent_table 1

3. Student Information Retrieval

Develop a query to retrieve all students' information from the "student_table" and sort them in descending order by their grade.

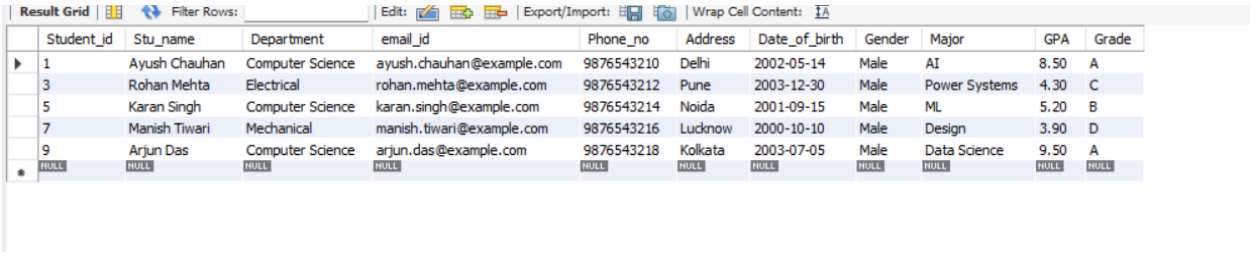


Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

Student_id	Stu_name	Department	email_id	Phone_no	Address	Date_of_birth	Gender	Major	GPA	Grade
7	Manish Tiwari	Mechanical	manish.tiwari@example.com	9876543216	Lucknow	2000-10-10	Male	Design	3.90	D
3	Rohan Mehta	Electrical	rohan.mehta@example.com	9876543212	Pune	2003-12-30	Male	Power Systems	4.30	C
10	Neha Reddy	Mechanical	neha.reddy@example.com	9876543219	Hyderabad	2002-02-17	Female	Automation	4.80	C
2	Priya Sharma	Mechanical	priya.sharma@example.com	9876543211	Mumbai	2001-03-19	Female	Thermodynamics	6.70	B
5	Karan Singh	Computer Science	karan.singh@example.com	9876543214	Noida	2001-09-15	Male	ML	5.20	B
8	Pooja Verma	Civil	pooja.verma@example.com	9876543217	Jaipur	2001-08-25	Female	GeoTech	6.80	B
1	Ayush Chauhan	Computer Science	ayush.chauhan@example.com	9876543210	Delhi	2002-05-14	Male	AI	8.50	A
4	Ananya Iyer	Civil	ananya.iyer@example.com	9876543213	Chennai	2002-11-21	Female	Structural	7.90	A
6	Sneha Nair	Electrical	sneha.nair@example.com	9876543215	Bangalore	2002-04-08	Female	Robotics	9.10	A
9	Arjun Das	Computer Science	arjun.das@example.com	9876543218	Kolkata	2003-07-05	Male	Data Science	9.50	A

4. Query for Male Students:

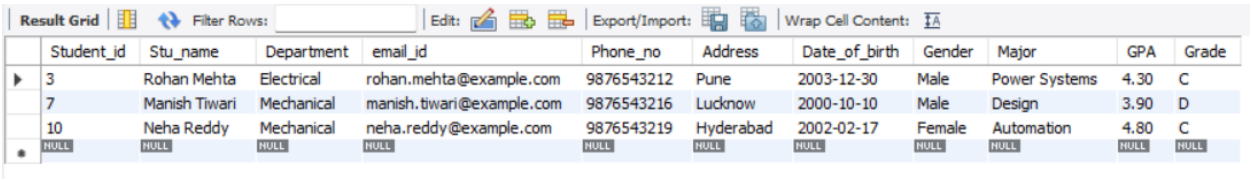
.Implement a query to retrieve information about all male students from the "student_table."



Student_id	Stu_name	Department	email_id	Phone_no	Address	Date_of_birth	Gender	Major	GPA	Grade
1	Ayush Chauhan	Computer Science	ayush.chauhan@example.com	9876543210	Delhi	2002-05-14	Male	AI	8.50	A
3	Rohan Mehta	Electrical	rohan.mehta@example.com	9876543212	Pune	2003-12-30	Male	Power Systems	4.30	C
5	Karan Singh	Computer Science	karan.singh@example.com	9876543214	Noida	2001-09-15	Male	ML	5.20	B
7	Manish Tiwari	Mechanical	manish.tiwari@example.com	9876543216	Lucknow	2000-10-10	Male	Design	3.90	D
9	Arjun Das	Computer Science	arjun.das@example.com	9876543218	Kolkata	2003-07-05	Male	Data Science	9.50	A

5. Query for Students with GPA less than 5.0

Create a query to fetch the details of students who have a GPA less than 5.0 from the "student_table."

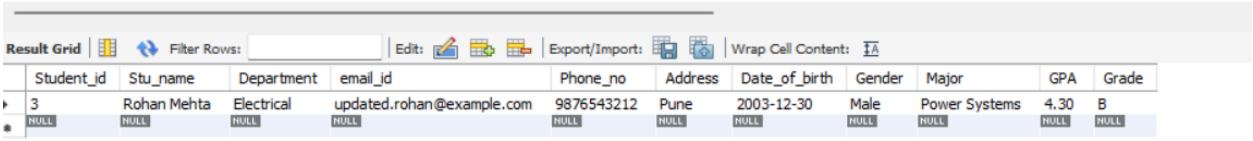


Student_id	Stu_name	Department	email_id	Phone_no	Address	Date_of_birth	Gender	Major	GPA	Grade
3	Rohan Mehta	Electrical	rohan.mehta@example.com	9876543212	Pune	2003-12-30	Male	Power Systems	4.30	C
7	Manish Tiwari	Mechanical	manish.tiwari@example.com	9876543216	Lucknow	2000-10-10	Male	Design	3.90	D
10	Neha Reddy	Mechanical	neha.reddy@example.com	9876543219	Hyderabad	2002-02-17	Female	Automation	4.80	C

6. Update Student Email and Grade

Write an update statement to modify the email and grade of a student with a specific ID in the "student_table."

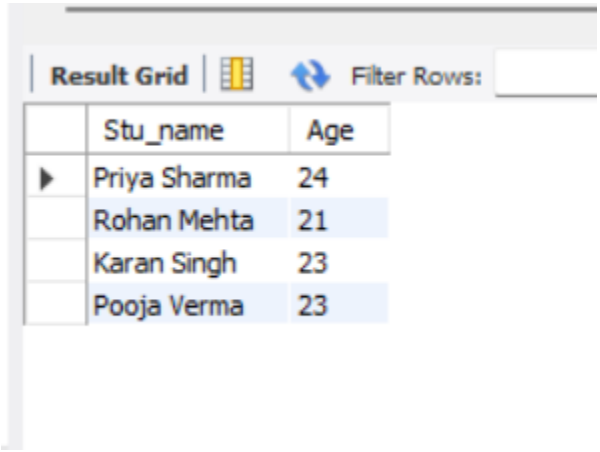
```
61
62 •  Update student_table
63    Set email_id = 'updated.rohan@example.com',
64        Grade = 'B'
65    Where Student_id = 3;
66
67 •  Select * from student_table
68    Where Student_id = 3;
69
```



Student_id	Stu_name	Department	email_id	Phone_no	Address	Date_of_birth	Gender	Major	GPA	Grade
3	Rohan Mehta	Electrical	updated.rohan@example.com	9876543212	Pune	2003-12-30	Male	Power Systems	4.30	B

7. Query for Students with Grade "B"

Develop a query to retrieve the names and ages of all students who have a grade of "B" from the "student_table."

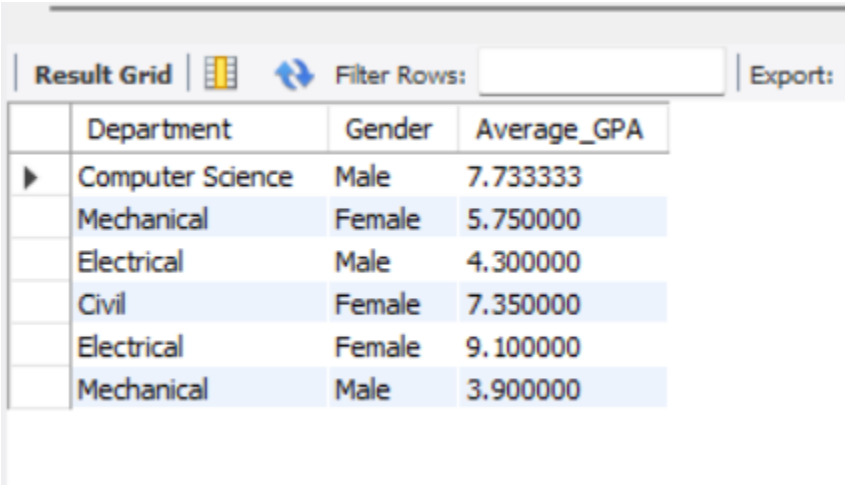


Result Grid | Filter Rows:

Stu_name	Age
Priya Sharma	24
Rohan Mehta	21
Karan Singh	23
Pooja Verma	23

8. Grouping and Calculation

Create a query to group the "student_table" by the "Department" and "Gender" columns and calculate the average GPA for each combination.

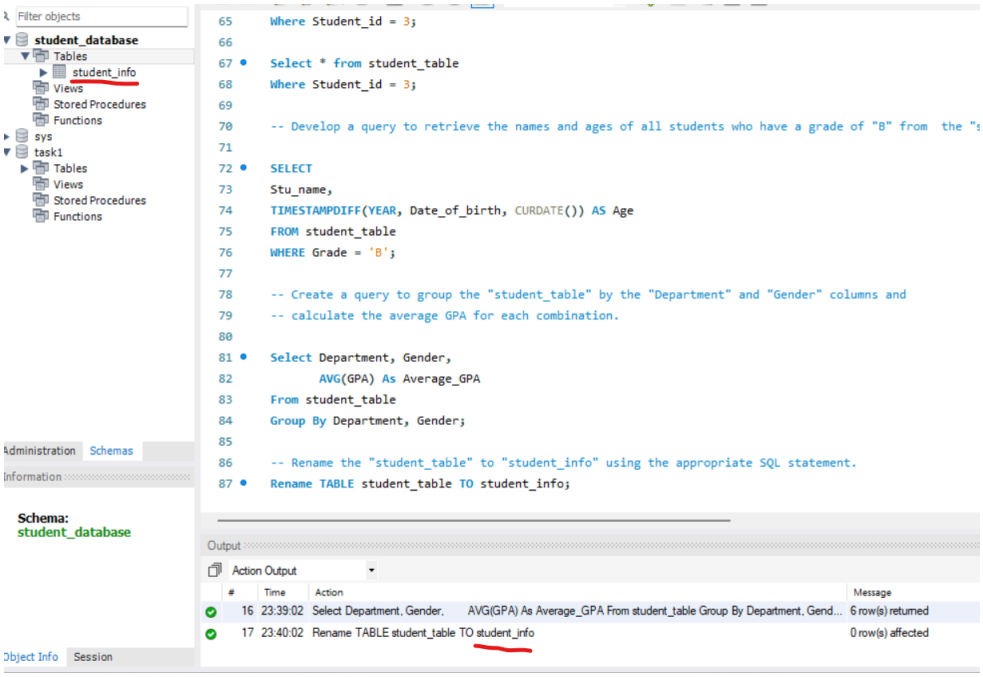


Result Grid | Filter Rows: | Export:

Department	Gender	Average_GPA
Computer Science	Male	7.733333
Mechanical	Female	5.750000
Electrical	Male	4.300000
Civil	Female	7.350000
Electrical	Female	9.100000
Mechanical	Male	3.900000

9. Table Renaming

Rename the "student_table" to "student_info" using the appropriate SQL statement.



10. Retrieve Student with Highest GPA

Write a query to retrieve the name of the student with the highest GPA from the "student_info" table.