-- 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.

```
CREATE TABLE student_table (
Student_id INT,
Stu_name VARCHAR(100),
Department VARCHAR(100),
email_id VARCHAR(100),
Phone_no decimal(20,0),
Address VARCHAR(100),
Date_of_birth DATE,
Gender VARCHAR(100),
Major VARCHAR(100),
GPA DECIMAL(20,2),
Grade VARCHAR(10)
);
```

```
CREATE TABLE
INSERT 0 10
```

-- 2.Data Entry : Insert 10 sample records into the "student_table" using INSERT command.

```
INSERT INTO student_table VALUES (1, 'Clark','Computer Science','clark@example.com',1234567890,'DELHI','2004-05-15', 'Male', 'Software Engineering',9.8, 'A'),
(2, 'John','Computer Science','john@example.com',1234534890,'Gujrat','2005-04-19', 'Male', 'Civil Engineering',9.0, 'A'),
(3, 'Joseph','Computer Science','joseph@example.com',9834567890,'Goa','2003-10-15', 'Male', 'Electrical  Engineering',8.0, 'C'),
(4, 'Clara','Computer Science','clara@example.com',1234007890,'Haryana','2004-11-10', 'Female', 'Chemical  Engineering',7.4, 'C'),
```

(5, 'Matt','Computer Science','matt@example.com',1984567890,'DELHI','2004-01-05', 'Male', 'Software Engineering',7.5, 'C'),

(6, 'David','Computer Science','david@example.com',1234567890,'Mumbai','2005-02-23', 'Male', 'Electrical Engineering',6.6, 'D'),

(7, 'Deryl','Computer Science','derly@example.com',1234567890,'Chandigarh','2004-09-09', 'Male', 'Software Engineering',8.8, 'B'),

(8, 'Nora','Computer Science','nora@example.com',1234097890,'Mumbai','2006-05-25', 'Female', 'Chemical Engineering',9.5, 'A'),

(9, 'Amy','Computer Science','amy@example.com',1289567890,'DELHI','2004-12-27', 'Female', 'Software Engineering',4.5, 'E'),

(10, 'kyla','Computer Science','kyla@example.com',1114567890,'DELHI','2003-07-20', 'Female', 'Biomedical Engineering',4.8, 'E');

SELECT * FROM student_table;

student_id	stu_name	department	email_id	phone_no	address	date_of_birth	gender	major	gpa	grade
1	Clark	Computer Science	clark@example.com	1234567890	DELHI	2004-05-15	Male	Software Engineering	9.80	A
2	John	Computer Science	john@example.com	1234534890	Gujrat	2005-04-19	Male	Civil Engineering	9.00	A
3	Joseph	Computer Science	joseph@example.com	9834567890	Goa	2003-10-15	Male	Electrical Engineering	8.00	C
4	Clara	Computer Science	clara@example.com	1234007890	Haryana	2004-11-10	Female	Chemical Engineering	7.40	C
5	Matt	Computer Science	matt@example.com	1984567890	DELHI	2004-01-05	Male	Software Engineering	7.50	C
6	David	Computer Science	david@example.com	1234567890	Mumbai	2005-02-23	Male	Electrical Engineering	6.60	D
7	Deryl	Computer Science	derly@example.com	1234567890	Chandigarh	2004-09-09	Male	Software Engineering	8.80	B
8	Nora	Computer Science	nora@example.com	1234097890	Mumbai	2006-05-25	Female	Chemical Engineering	9.50	A
9	Amy	Computer Science	amy@example.com	1289567890	DELHI	2004-12-27	Female	Software Engineering	4.50	E
10	kyla	Computer Science	kyla@example.com	1114567890	DELHI	2003-07-20	Female	Biomedical Engineering	4.80	E

(10 rows)

-- 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.

```
SELECT * FROM student_table

ORDER BY

   CASE Grade

      WHEN 'A' THEN 1

      WHEN 'B' THEN 2

      WHEN 'C' THEN 3

      WHEN 'D' THEN 4

      WHEN 'E' THEN 5

      ELSE 6

   END ASC;
```

student_id	stu_name	department	email_id	phone_no	address	date_of_birth	gender	major	gpa	grade
2	John	Computer Science	john@example.com	1234534890	Gujrat	2005-04-19	Male	Civil Engineering	9.00	A
1	Clark	Computer Science	clark@example.com	1234567890	DELHI	2004-05-15	Male	Software Engineering	9.80	A
8	Nora	Computer Science	nora@example.com	1234097890	Mumbai	2006-05-25	Female	Chemical Engineering	9.50	A
7	Deryl	Computer Science	derly@example.com	1234567890	Chandigarh	2004-09-09	Male	Software Engineering	8.80	B
4	Clara	Computer Science	clara@example.com	1234007890	Haryana	2004-11-10	Female	Chemical Engineering	7.40	C
3	Joseph	Computer Science	joseph@example.com	9834567890	Goa	2003-10-15	Male	Electrical Engineering	8.00	C
5	Matt	Computer Science	matt@example.com	1984567890	DELHI	2004-01-05	Male	Software Engineering	7.50	C
6	David	Computer Science	david@example.com	1234567890	Mumbai	2005-02-23	Male	Electrical Engineering	6.60	D
9	Amy	Computer Science	amy@example.com	1289567890	DELHI	2004-12-27	Female	Software Engineering	4.50	E
10	kyla	Computer Science	kyla@example.com	1114567890	DELHI	2003-07-20	Female	Biomedical Engineering	4.80	E

(10 rows)

-- 4.Query for Male Students:.Implement a query to retrieve information about all male students from the "student_table."

```
SELECT * FROM student_table

WHERE Gender = 'Male';
```

student_id	stu_name	department	email_id	phone_no	address	date_of_birth	gender	major	gpa	grade
1	Clark	Computer Science	clark@example.com	1234567890	DELHI	2004-05-15	Male	Software Engineering	9.80	A
2	John	Computer Science	john@example.com	1234534890	Gujrat	2005-04-19	Male	Civil Engineering	9.00	A
3	Joseph	Computer Science	joseph@example.com	9834567890	Goa	2003-10-15	Male	Electrical Engineering	8.00	C
5	Matt	Computer Science	matt@example.com	1984567890	DELHI	2004-01-05	Male	Software Engineering	7.50	C
6	David	Computer Science	david@example.com	1234567890	Mumbai	2005-02-23	Male	Electrical Engineering	6.60	D
7	Deryl	Computer Science	derly@example.com	1234567890	Chandigarh	2004-09-09	Male	Software Engineering	8.80	B

(6 rows)

-- 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."

```
SELECT * FROM student_table

WHERE gpa < 5.0;
```

student_id	stu_name	department	email_id	phone_no	address	date_of_birth	gender	major	gpa	grade
9	Amy	Computer Science	amy@example.com	1289567890	DELHI	2004-12-27	Female	Software Engineering	4.50	E
10	kyla	Computer Science	kyla@example.com	1114567890	DELHI	2003-07-20	Female	Biomedical Engineering	4.80	E

(2 rows)

-- 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."

```
UPDATE student_table

SET email_id = 'jos@example.com', GRADE ='B'

WHERE Stu_name = 'Joseph';

SELECT * FROM student_table;
```

```
UPDATE 1
 student_id | stu_name |    department    |     email_id      |  phone_no  |  address   | date_of_birth | gender |         major          | gpa  | grade
------------+----------+------------------+-------------------+------------+------------+---------------+--------+------------------------+------+-------
          1 | Clark    | Computer Science | clark@example.com | 1234567890 | DELHI      | 2004-05-15    | Male   | Software Engineering   | 9.80 | A
          2 | John     | Computer Science | john@example.com  | 1234534890 | Gujrat     | 2005-04-19    | Male   | Civil Engineering      | 9.00 | A
          4 | Clara    | Computer Science | clara@example.com | 1234007890 | Haryana    | 2004-11-10    | Female | Chemical  Engineering  | 7.40 | C
          5 | Matt     | Computer Science | matt@example.com  | 1984567890 | DELHI      | 2004-01-05    | Male   | Software Engineering   | 7.50 | C
          6 | David    | Computer Science | david@example.com | 1234567890 | Mumbai     | 2005-02-23    | Male   | Electrical  Engineering| 6.60 | D
          7 | Deryl    | Computer Science | derly@example.com | 1234567890 | Chandigarh | 2004-09-09    | Male   | Software Engineering   | 8.80 | B
          8 | Nora     | Computer Science | nora@example.com  | 1234097890 | Mumbai     | 2006-05-25    | Female | Chemical  Engineering  | 9.50 | A
          9 | Amy      | Computer Science | amy@example.com   | 1289567890 | DELHI      | 2004-12-27    | Female | Software Engineering   | 4.50 | E
         10 | kyla     | Computer Science | kyla@example.com  | 1114567890 | DELHI      | 2003-07-20    | Female | Biomedical  Engineering| 4.80 | E
          3 | Joseph   | Computer Science | jos@example.com   | 9834567890 | Goa        | 2003-10-15    | Male   | Electrical  Engineering| 8.00 | B
(10 rows)
```

-- 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."

```
SELECT
Stu_name AS Name,
    EXTRACT(YEAR FROM AGE(CURRENT_DATE, Date_of_birth))::INT AS Age
FROM
    student_table
WHERE grade = 'B';
```

```
   name  | age
--------+-----
 Deryl  |  21
 Joseph |  22
(2 rows)
```

-- 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.

```
SELECT
    Department,
    Gender,
     ROUND(AVG(GPA), 2) AS Average_GPA
FROM
    student_table
GROUP BY
    Department,
    Gender;
```

```
    department    | gender | average_gpa
------------------+--------+-------------
 Computer Science | Female |        6.55
 Computer Science | Male   |        8.28
(2 rows)
```

-- 9.Table Renaming : Rename the "student_table" to "student_info" using the appropriate SQL statement.

ALTER TABLE student_table RENAME TO student_info;

\pset title 'student_info'

```
ALTER TABLE
Title is "student_info".
```

-- 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.

```
SELECT
    Stu_name,
    GPA
FROM
    student_info
WHERE
    GPA = (SELECT MAX(GPA) FROM student_info);
```

```
  student_info
 stu_name | gpa
----------+------
 Clark    | 9.80
(1 row)
```