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/* Hello .. I'm MashaelAB,

I've created a Database with simple Tables and Random data, Here are some basic queries I've executed after linking the tables together.

If you have any questions or comments, please don't hesitate to communicate (mashaeldata@gmail.com) Thank you all. */

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/* First, I needed three simple tables (Students, Courses, and Grades) so that I could practice queries */

-- Therefore, I decided to I Design the table as shown in the image.

Students		
Student_ID	INT Not Null	PRIMARY KEY
First_Name	VARCHAR(50)	
Last_Name	VARCHAR(50)	
Gender	VARCHAR(20)	
Date_Birth	DATE	
Email	VARCHAR(100)	
Phone_Number	VARCHAR(20)	

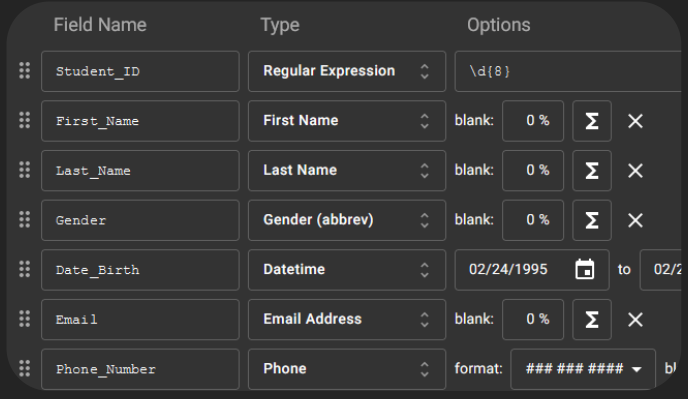
Courses		
Course_ID	INT Not Null	PRIMARY KEY
Course_Name	VARCHAR(100)	
Credit_Units	INT	
Instructor	VARCHAR(100)	
Semester	VARCHAR(20)	

Grades		
Grade_ID	INT Not Null	PRIMARY KEY
Student_ID	INT	FOREIGN KEY
Course_ID	INT	FOREIGN KEY
Student_Grade	INT	
Grade_Letter	VARCHAR(2)	

/* Second, I added random data from mockaroo along with some formulas to make the data organized and realistic. */

Formula

```
if(field('Student_Grade') >= 90, 'A',
  if(field('Student_Grade') >= 80, 'B',
    if(field('Student_Grade') >= 70, 'C',
      if(field('Student_Grade') >= 60, 'D', 'F')
    )
  )
)
```



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/*After that, I proceeded to build the database and import csv files */

-- Some simple queries :

```sql
--MashaelAB,
/* --------- Simple Queries --------- */

--  1) Display Full Name of the Student (ALIASING STETMENT)

    SELECT First_Name +' ' + Last_Name AS Student_Name
    FROM StudentGrade.dbo.Student

--  2) Display All Course Name In DataBase

    SELECT DISTINCT Course_Name AS Course_Name
    FROM StudentGrade.dbo.Course

--  3) Display Student Gender And Count

    SELECT Gender , COUNT(Gender) AS Students_Count
    FROM StudentGrade.dbo.Student
    GROUP BY Gender

-- 4) Update Student Table

    UPDATE StudentGrade.dbo.Student
    SET Phone_Number = '111-655-1111'
    WHERE Student_ID = 1
```

1)

	Student_Name
1	Abeer Raed
2	Walid Abdullah
3	Kareem Waleed
4	Ibrahim Amr
5	Sana Jamal
6	Maha Youssef
7	Ali Hisham
8	Abdullah Saeed
9	Nasser Kareem
10	Malak hmed
11	Mohammed Bashar
12	Bilal Jihad
13	Laila Tarik
14	Salma Khaled
15	Sarah Hatem

2)

	Course_Name
1	Agricultural Engineering
2	Agricultural Sciences
3	Applied Arts
4	Astronomy
5	Aviation
6	Biology
7	Chemistry
8	Digital Media
9	Economics
10	Educational Sciences
11	Engineering
12	Environmental Science
13	Foreign Languages
14	Geography
15	Geology
16	History

3)

	Gender	Students_Count
1	Female	254
2	Male	246

4)

	Student_ID	First_Name	Last_Name	Gender	Date_Birth	Email	Phone_Number
1	1	Abeer	Raed	Female	1997-07-12	sstayt0@mapquest.com	382-466-9527

	Student_ID	First_Name	Last_Name	Gender	Date_Birth	Email	Phone_Number
1	1	Abeer	Raed	Female	1997-07-12	sstayt0@mapquest.com	111-655-1111

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-- Join Tables :

```sql
/* --------- JION TABLES --------- */

-- Tow Table
    SELECT  First_Name ,[Last_Name ],Gender,Student_Grade,Grade_Letter
    FROM StudentGrade.dbo.Grade AS gr
    INNER JOIN  StudentGrade.dbo.Student AS st
        ON st.Student_ID = gr.Student_id


-- Three Table
    SELECT  First_Name ,[Last_Name ],Gender,Course_Name ,Student_Grade,Grade_Letter
    FROM StudentGrade.dbo.Grade AS gr
    INNER JOIN  StudentGrade.dbo.Student AS st
        ON st.Student_ID = gr.Student_id
    INNER JOIN  StudentGrade.dbo.Course AS cr
        ON gr.Course_ID = cr.Course_ID
```

-- Queries :

```sql
-- The Number of Students Enrolled in each Course Sorted in Descending Order

    SELECT  Course_Name ,COUNT(Student_id) AS Students_Count
    FROM StudentGrade.dbo.Student AS st
    INNER JOIN StudentGrade.dbo.Course AS cr
        ON st.Student_ID = cr.Course_ID
    GROUP BY Course_Name
    ORDER BY Students_Count DESC
```

	Course_Name	Students_Count
1	Educational Sciences	28
2	Astronomy	25
3	Economics	25
4	History	21
5	Geography	21
6	Psychology	21
7	Social Sciences	18
8	Mathematics	18
9	Environmental Science	18
10	Foreign Languages	17
11	Journalism and Media	17
12	Law	17
13	Chemistry	17

```sql
--Number of Students in Each Semester

    SELECT  Semester,COUNT(Student_ID) AS Students_Count
    FROM StudentGrade.dbo.Student AS st
    INNER JOIN  StudentGrade.dbo.Course AS cr
        ON st.Student_ID = cr.Course_ID
    GROUP BY Semester
```

	Semester	Students_Count
1	First	161
2	Second	174
3	Summer	165

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-- Queries :

```sql
-- Avrage of Grade in each Course Sorted in Descending Order

    SELECT  Course_Name , AVG(Student_Grade)  AS Avrage_Grades ,
    MAX(Student_Grade)  AS Max_Grade , MIN(Student_Grade)  AS MIN_Grade
    FROM StudentGrade.dbo.Grade AS gr
    INNER JOIN StudentGrade.dbo.Course AS cr
        ON gr.Grade_ID = cr.Course_ID
    GROUP BY Course_Name
    ORDER BY Avrage_Grades DESC
```

	Course_Name	Avrage_Grades	Max_Grade	MIN_Grade
1	Physiology	84	99	53
2	Social Sciences	78	100	43
3	Pathology	74	95	41
4	Agricultural Sciences	73	98	40
5	Political Science	72	93	40
6	Literature	71	99	49
7	Biology	71	95	41
8	Educational Sciences	71	100	43
9	Journalism and Media	71	94	44
10	Chemistry	70	98	48
11	Astronomy	70	100	40

-- Queries (HAVING STETMENT) :

```sql
--Names of Students Enrolled in more than one Course along with the Total Number of Units
--(HAVING STETMENT)

    SELECT First_Name ,[Last_Name ] , count(Course_Name) AS Courses_Count ,sum([Credit_Units ]) AS Sum_Units
    FROM StudentGrade.dbo.Grade AS gr
    INNER JOIN  StudentGrade.dbo.Student AS st
        ON st.Student_ID = gr.Student_id
    INNER JOIN  StudentGrade.dbo.Course AS cr
        ON gr.Course_ID = cr.Course_ID
    GROUP BY Course_Name ,First_Name ,[Last_Name ],[Credit_Units ]
    HAVING COUNT(Course_Name) > 1
```

	First_Name	Last_Name	Courses_Count	Sum_Units
1	Rania	Tarik	2	6
2	Mohammed	Zuhair	2	4
3	Rasha	Bashar	2	4
4	Nour	Kamal	2	6
5	Dina	Abdullah	2	6
6	Bilal	Fadi	2	2
7	Malak	Nabil	2	2
8	Zainab	Rashid	2	2
9	Abdullah	Saeed	2	4
10	Khaled	Abdullah	2	4
11	Laila	Bilal	2	4
12	Abeer	Rashid	2	2

-- Queries (CASE STETMENT) :

```sql
/* ---- A query That Displays the Totle Number of Students in Each Course
        along with the Number of Students who Passed and Failed. (CASE STETMENT)--------- */


    SELECT Course_Name,count(st.Student_ID) AS Students_Count,
        SUM(CASE WHEN Student_Grade >= 60 THEN 1 ELSE 0 END) AS Passed_Students,
        SUM(CASE WHEN Student_Grade < 60 THEN 1 ELSE 0 END) AS Failed_Students
    FROM StudentGrade.dbo.Grade AS gr
    INNER JOIN  StudentGrade.dbo.Student AS st
        ON st.Student_ID = gr.Student_id
    INNER JOIN  StudentGrade.dbo.Course AS cr
        ON gr.Course_ID = cr.Course_ID
    GROUP BY Course_Name
    ORDER BY Failed_Students DESC --which course has the most failures
```

	Course_Name	Students_Count	Passed_Students	Failed_Students
1	Psychology	26	13	13
2	Educational Sciences	30	19	11
3	Astronomy	25	16	9
4	Mathematics	21	12	9
5	Geography	21	12	9
6	Medicine	15	7	8
7	Biology	16	8	8
8	Economics	28	20	8
9	Digital Media	17	10	7
10	Agricultural Engineering	19	12	7
11	Environmental Science	13	6	7
12	History	19	13	6
13	Chemistry	16	10	6
14	Pathology	18	12	6

```sql
-- Course_Grade (CASE STETMENT)

    SELECT First_Name,[Last_Name ],Student_Grade,   Grade_Letter,
        CASE
        WHEN Grade_Letter = 'A' THEN 'Excellent'
        WHEN Grade_Letter = 'B' THEN 'Very Good'
        WHEN Grade_Letter = 'C' THEN 'Good'
        WHEN Grade_Letter = 'D' THEN 'Passing'
        ELSE 'Failed'
        END AS Course_Grade
    FROM StudentGrade.dbo.Grade AS gr
    INNER JOIN  StudentGrade.dbo.Student AS st
        ON st.Student_ID = gr.Student_id
```

	First_Name	Last_Name	Student_Grade	Grade_Letter	Course_Grade
1	Sana	Jamal	72	C	Good
2	Ali	Hisham	86	B	Very Good
3	Abdullah	Saeed	65	D	Passing
4	Abdullah	Saeed	40	F	Failed
5	Nasser	Kareem	51	F	Failed
6	Nasser	Kareem	54	F	Failed
7	Mohammed	Bashar	46	F	Failed
8	Omar	Kareem	60	D	Passing
9	Omar	Kareem	99	A	Excellent

/* All Queries in **GetHub @mashaellab**

Thank you all */