GOLDEN GATE UNIVERSITY

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FINAL PROJECT

Analytical Queries: FP_School_Normalized

Professor- Respected Helen Yelluas

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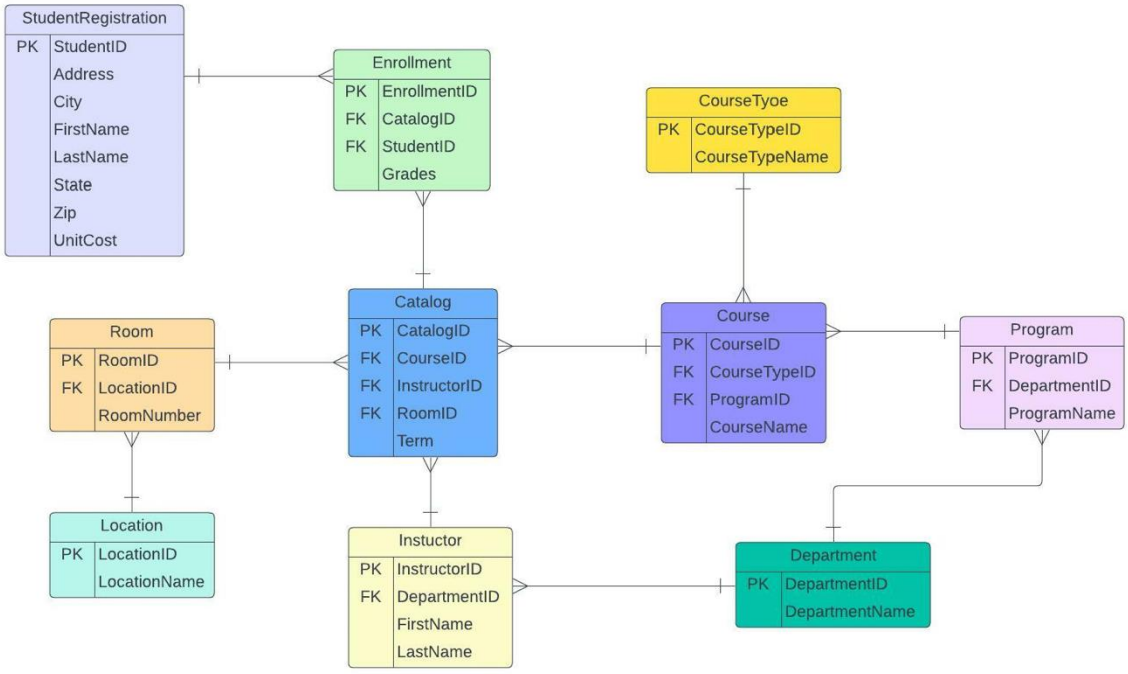
Introduction

I will be using the FP_School_Normalized as my database for the final project. The ERD below shows the normalized relationship of this database, which can be used in the database to reference students enrolled in particular classes, and students belonging to certain teachers and programs. It also shows the registration status of students with relevant course IDs and program enrollment. All primary and foreign keys are annotated on the ERD using PK or FK. The ERD below shows entities and related attributes with relationships.

Entity Relationship Diagram



Analytical Queries

1. What is the total enrollment in math department by term?

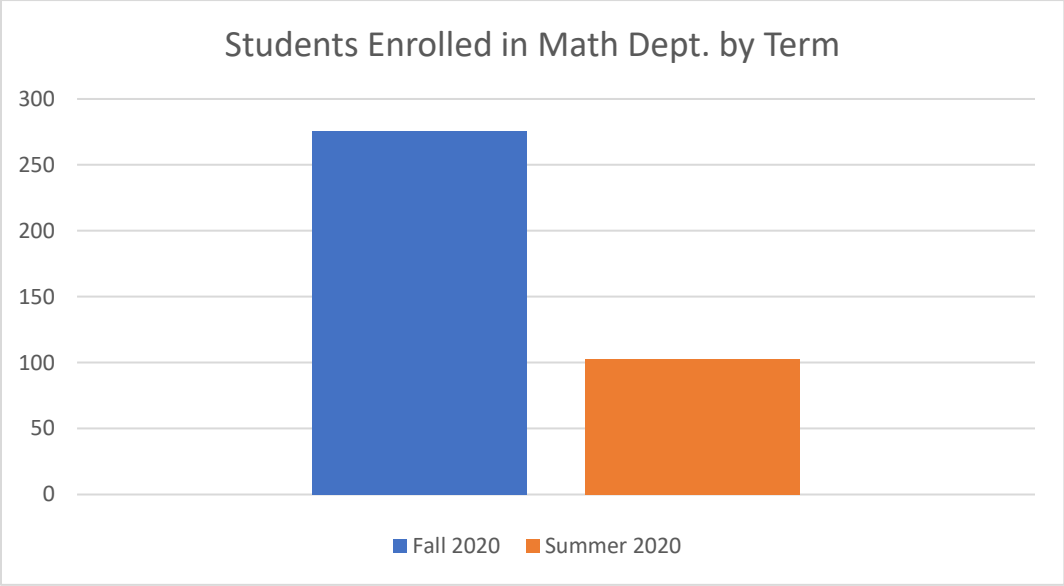
a. SQL Query

```
Select COUNT(E.EnrollmentID) AS "Enrolled", D.DepartmentName, C.Term
FROM FP_Department D
        JOIN FP_Instructor I ON D.DepartmentID = I.DepartmentID
        JOIN FP_Catalog C ON I.InstructorID = C.InstructorID
        JOIN FP_Enrollment E ON C.CatalogID = E.CatalogID
WHERE D.DepartmentName LIKE 'Math'
Group by D.DepartmentName, C.Term;
```

b. SQL Result

Enrolled	DepartmentName	Term
276	Math	Fall 2020
103	Math	Summer2020

c. Graph



2. What is the average GPA for online students by term?

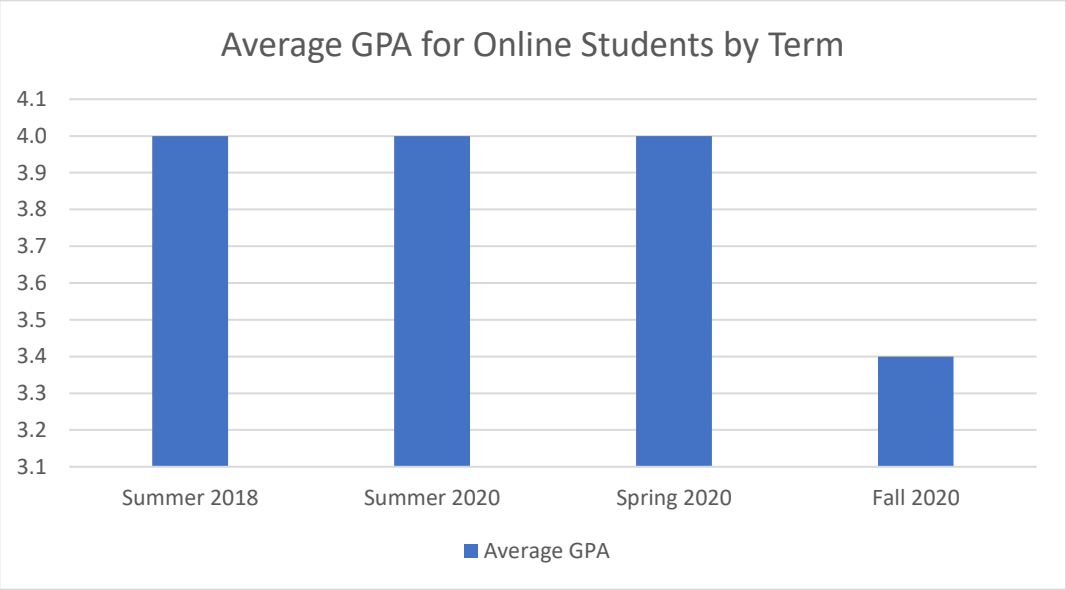
a. SQL Query

```
Select
        AVG(E.Grades) AS "GPA", C.Term, CT.CourseTypeName
FROM
        FP_Enrollment E
        Join FP_Catalog C ON C.CatalogID = E.CatalogID
        Join FP_Course CRS ON CRS.CourseID = C.CourseID
        Join FP_CourseType CT ON CT.CourseTypeID = CRS.CourseTypeID
Where CT.CourseTypeName like 'Online Enhanced'
Group by C.Term, CT.CourseTypeName;
```

b. SQL Result

GPA	Term	CourseTypeName
3.3878	Fall 2020	Online Enhanced
4.0000	Spring2020	Online Enhanced
4.0000	Summer2018	Online Enhanced
4.0000	Summer2020	Online Enhanced

c. Graph



3. What is the total amount of students enrolled in each program by term?

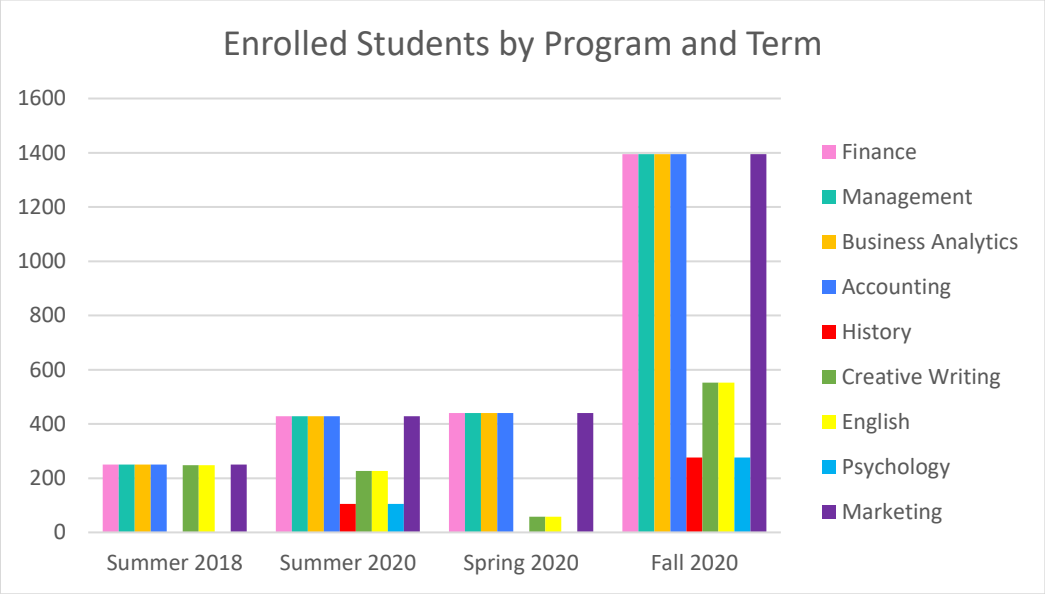
a. SQL Query

```
SELECT COUNT(e.StudentID) as "Students Enrolled in Program",
p.ProgramName, c.Term
FROM FP_Program p
        JOIN FP_Instructor i ON p.DepartmentID = i.DepartmentID
        JOIN FP_Catalog c ON i.InstructorID = c.InstructorID
        JOIN FP_Enrollment e ON c.CatalogID = e.CatalogID
GROUP BY p.ProgramName, c.Term
Order by c.Term
```

b. SQL Result

Students Enrolled in Program	ProgramName	Term ▲ 1
1395	Finance	Fall 2020
1395	Management	Fall 2020
1395	Business Analytics	Fall 2020
1395	Accounting	Fall 2020
276	History	Fall 2020
552	Creative Writing	Fall 2020
552	English	Fall 2020
276	Psychology	Fall 2020
1395	Marketing	Fall 2020
440	Marketing	Spring2020
440	Finance	Spring2020
58	Creative Writing	Spring2020
440	Management	Spring2020
58	English	Spring2020
440	Business Analytics	Spring2020
440	Accounting	Spring2020
248	Creative Writing	Summer2018
248	English	Summer2018
250	Marketing	Summer2018
250	Finance	Summer2018
250	Management	Summer2018
250	Business Analytics	Summer2018
250	Accounting	Summer2018
428	Finance	Summer2020
226	Creative Writing	Summer2020
428	Management	Summer2020
226	English	Summer2020
428	Business Analytics	Summer2020
105	Psychology	Summer2020
428	Accounting	Summer2020
428	Marketing	Summer2020
105	History	Summer2020

c. Graph



4. How many students were enrolled in in-person/online classes? (by term)

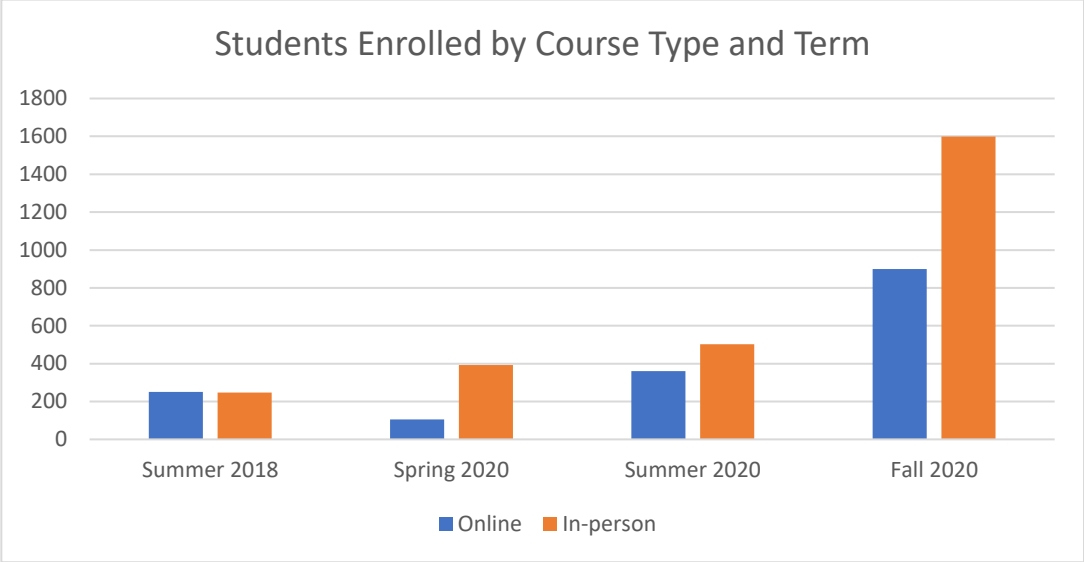
a. SQL Query

```
SELECT COUNT(e.EnrollmentID) as "Enrolled", ct.CourseTypeName, ca.Term
FROM FP_CourseType ct
        JOIN FP_Course c ON ct.CourseTypeID = c.CourseTypeID
        JOIN FP_Catalog ca ON c.CourseID = ca.CourseID
        JOIN FP_Enrollment e ON ca.CatalogID = e.CatalogID
GROUP BY CourseTypeName, Term;
```

b. SQL Result

Enrolled	CourseTypeName	Term
1599	In-person	Fall 2020
392	In-person	Spring2020
248	In-person	Summer2018
502	In-person	Summer2020
900	Online Enhanced	Fall 2020
106	Online Enhanced	Spring2020
250	Online Enhanced	Summer2018
360	Online Enhanced	Summer2020

c. Graph



5. What is the total amount of students in California by term?

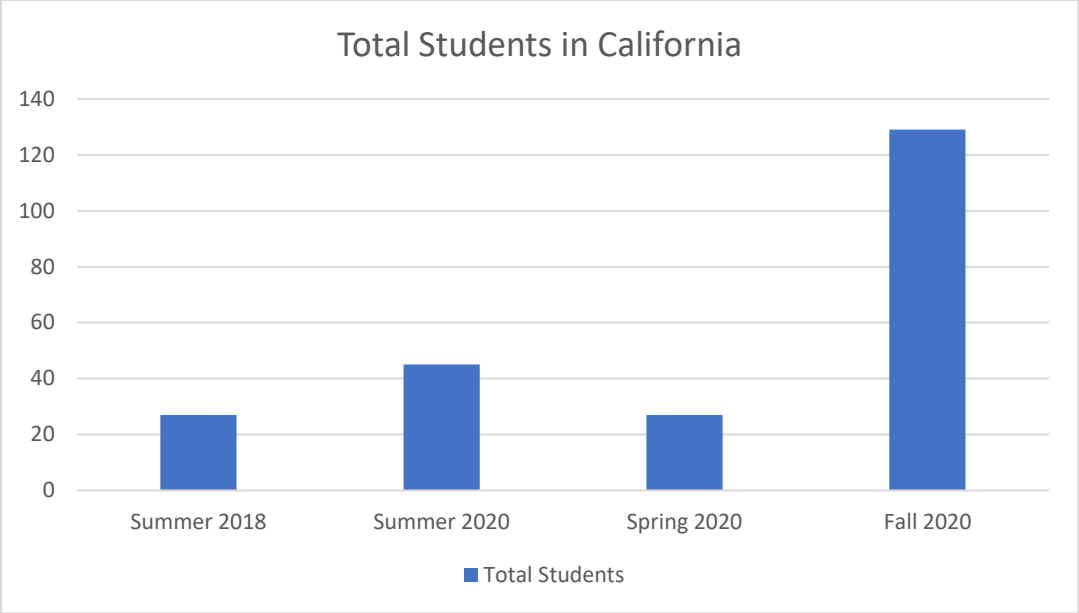
a. SQL Query

```
SELECT Term, COUNT(FP_StudentRegistration.StudentID) as
"Total Students in CA", State
FROM FP_StudentRegistration,
    FP_Enrollment,
    FP_Catalog
Where FP_StudentRegistration.StudentID = FP_Enrollment.StudentID
    AND FP_Catalog.CatalogID = FP_Enrollment.CatalogID
    AND FP_StudentRegistration.State like 'CA'
Group by State, Term;
```

b. SQL Result

Term	Total Students in CA	State
Fall 2020	129	CA
Spring2020	27	CA
Summer2018	27	CA
Summer2020	45	CA

c. Graph



6. What is the average GPA for each program (by term)?

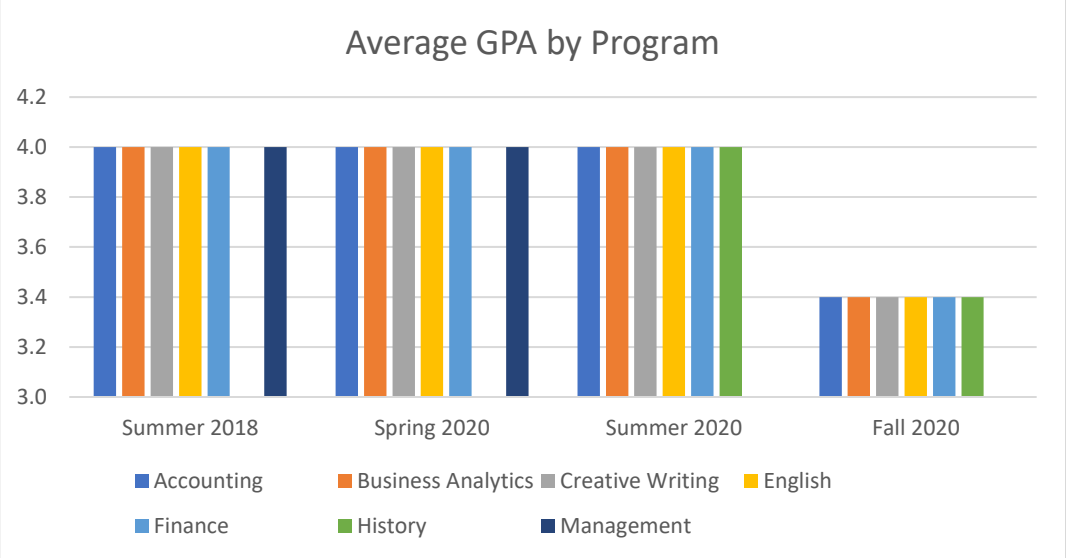
a. SQL Query

```
SELECT
        AVG(e.Grades) as "GPA", p.ProgramName, c.Term
FROM  FP_Program p
        JOIN FP_Instructor i ON p.DepartmentID = i.DepartmentID
        JOIN FP_Catalog c ON i.InstructorID = c.InstructorID
        JOIN FP_Enrollment e ON c.CatalogID = e.CatalogID
GROUP BY ProgramName, Term;
```

b. SQL Result

GPA	ProgramName	Term
3.3771	Accounting	Fall 2020
4.0000	Accounting	Spring2020
4.0000	Accounting	Summer2018
4.0000	Accounting	Summer2020
3.3771	Business Analytics	Fall 2020
4.0000	Business Analytics	Spring2020
4.0000	Business Analytics	Summer2018
4.0000	Business Analytics	Summer2020
3.3859	Creative Writing	Fall 2020
4.0000	Creative Writing	Spring2020
4.0000	Creative Writing	Summer2018
4.0000	Creative Writing	Summer2020
3.3859	English	Fall 2020
4.0000	English	Spring2020
4.0000	English	Summer2018
4.0000	English	Summer2020
3.3771	Finance	Fall 2020
4.0000	Finance	Spring2020
4.0000	Finance	Summer2018
4.0000	Finance	Summer2020
3.3623	History	Fall 2020
4.0000	History	Summer2020
3.3771	Management	Fall 2020
4.0000	Management	Spring2020
4.0000	Management	Summer2018

c. Graph



7. **How many instructors are in each department? (by term)**

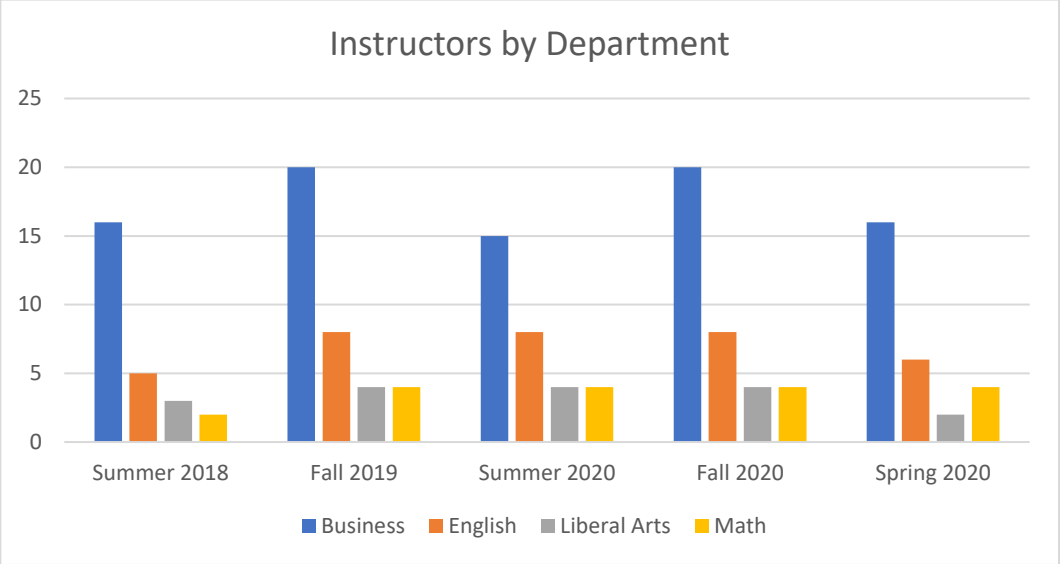
   a. **SQL Query**

```
SELECT
        COUNT(ca.InstructorID) as "Total Instructors",
        d.DepartmentName, ca.Term
FROM FP_Department d
        JOIN FP_Instructor i ON d.DepartmentID = i.DepartmentID
        JOIN FP_Catalog ca ON i.InstructorID = ca.InstructorID
        JOIN FP_Course c ON c.CourseID = ca.CourseID
GROUP BY DepartmentName, Term;
```

   b. **SQL Result**

Total Instructors	DepartmentName	Term
20	Business	Fall 2020
20	Business	Fall2019
16	Business	Spring2020
16	Business	Summer2018
15	Business	Summer2020
8	English	Fall 2020
8	English	Fall2019
6	English	Spring2020
5	English	Summer2018
8	English	Summer2020
4	Liberal Arts	Fall 2020
4	Liberal Arts	Fall2019
2	Liberal Arts	Spring2020
3	Liberal Arts	Summer2018
4	Liberal Arts	Summer2020
4	Math	Fall 2020
4	Math	Fall2019
4	Math	Spring2020
2	Math	Summer2018
4	Math	Summer2020

c. Graph



8. What is the total amount of students from CA, NY, and FL per term?

a. SQL Query

```
SELECT COUNT(SR.StudentID) as "Total Enrolled Students",
        SR.State, C.Term
FROM FP_StudentRegistration SR
        JOIN FP_Enrollment E on SR.StudentID = E.StudentID
        JOIN FP_Catalog C on C.CatalogID = E.CatalogID
Where SR.State like 'CA' OR SR.State like 'FL' OR SR.State like 'NY'
GROUP BY State, Term;
```

b. SQL Result

Total Enrolled Students	State	Term
129	CA	Fall 2020
27	CA	Spring2020
27	CA	Summer2018
45	CA	Summer2020
172	FL	Fall 2020
31	FL	Spring2020
31	FL	Summer2018
61	FL	Summer2020
241	NY	Fall 2020
42	NY	Spring2020
42	NY	Summer2018
74	NY	Summer2020

c. Graph