University of Maryland

•••

BUDT_703_0506_09

Team Members - Sahil Pathan
Oluwadamilola Yusuf
Yan Liu

Background of the Project

With the advent of new technologies, it is now possible to assess and store data in a more automated manner,thereby reducing the manual workload of maintaining paper files.

University of maryland is a flagship institution in the state of maryland offering courses in a plethora of fields with various courses and departments. Equipped with world class facilities under the supervision of highly qualified faculty, the university aims to provide world class education to its students representing more than 50 nationalities.

Faculties or instructors are assigned to different departments and they have different courses allotted to them.

Mission Statement and Mission Objectives

Mission statement

● To create a database for the University of Maryland in order to fully utilize course assignments, enhance degree completion rate, and meet demand for courses and instructors.

Mission objectives

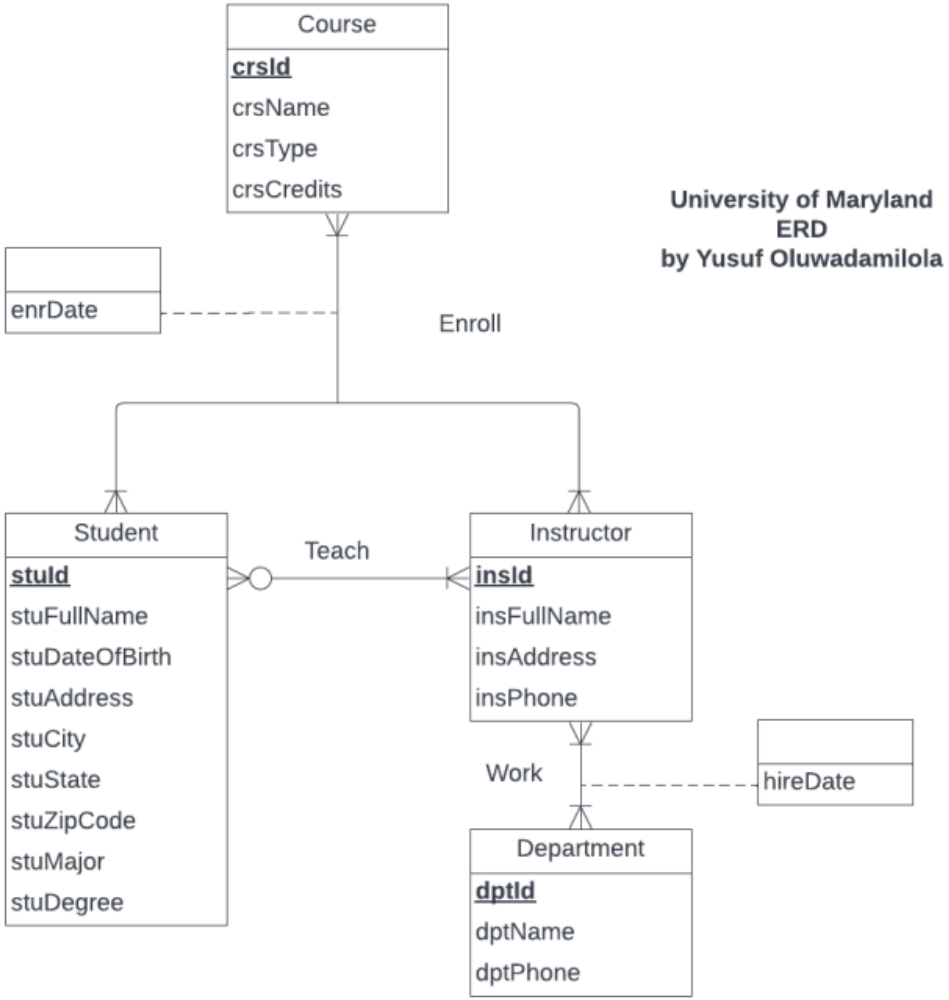
● Determine the major/program with the highest student enrollment in order to meet enrollment demand.

● Maximize course enrollment and graduation rates

●Track students progress towards degree completion

● Keep track of the total number of students and their required information

ER Diagram


Course
crsId
crsName
crsType
crsCredits
University of Maryland
ERD
by Yusuf Oluwadamilola
enrDate
Enroll
Student
stuId
stuFullName
stuDateOfBirth
stuAddress
stuCity
stuState
stuZipCode
stuMajor
stuDegree
Teach
Instructor
insId
insFullName
insAddress
insPhone
Work
hireDate
Department
dptId
dptName
dptPhone

Relational Schema

Relations:

Student(stuId, stuFullName, stuDateOfBirth, stuAddress, stuCity, stuState, stuZipCode, stuMajor, stuDegree)

Instructor (insId, insFullName, insAddress, insPhone)

Teach (*stuId*, *insId*)

Course (crsId, crsName, crsType, crsCredits)

Department (dptId, dptName, dptPhone)

Enroll (*stuId*, *crsId*, *insId*, enrGrade,enrDate)

Work(*insId*, *dptId*, hireDate)

SQL Query

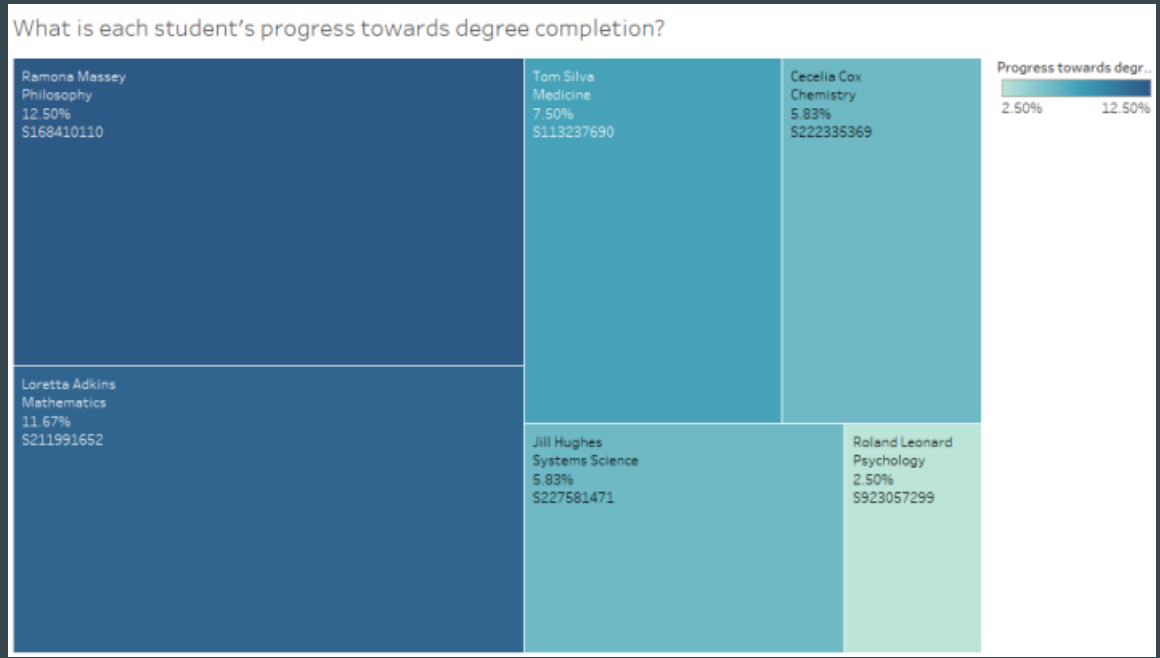
```
CREATE TABLE [UMD.Enroll] (
        stuID CHAR(10) NOT NULL,
        insID CHAR(7) NOT NULL,
        crsID CHAR(7) NOT NULL,
        enrGrade DECIMAL(3,2),
        enrDate DATE,
        CONSTRAINT pk_Enroll_stuID_insID_crsID PRIMARY KEY (stuID, insID, crsID),
        CONSTRAINT fk_Enroll_stuID FOREIGN KEY (stuID)
                REFERENCES [UMD.Student] (stuID)
                ON DELETE CASCADE ON UPDATE CASCADE,
        CONSTRAINT fk_Enroll_insID FOREIGN KEY (insID)
                REFERENCES [UMD.Instructor] (insID)
                ON DELETE CASCADE ON UPDATE CASCADE,
        CONSTRAINT fk_Enroll_crsID FOREIGN KEY (crsID)
                REFERENCES [UMD.Course] (crsID)
                ON DELETE CASCADE ON UPDATE CASCADE)
```

What is each student's progress towards degree completion?


```
SELECT e.stuID, s.stuFullName ,s.stuMajor,
        CONCAT(CONVERT(DECIMAL(5,2),(CAST((SUM(c.crsCredits * 100)) as float) / 120)), '%' )
        AS 'Progress towards degree completion'
FROM [UMD.Enroll] e, [UMD.Course]c, [UMD.Student]s
WHERE e.stuID = s.stuID AND c.crsID = e.crsID
GROUP BY e.stuID, s.stuFullName, s.stuMajor
```

What is each student's progress towards degree completion?

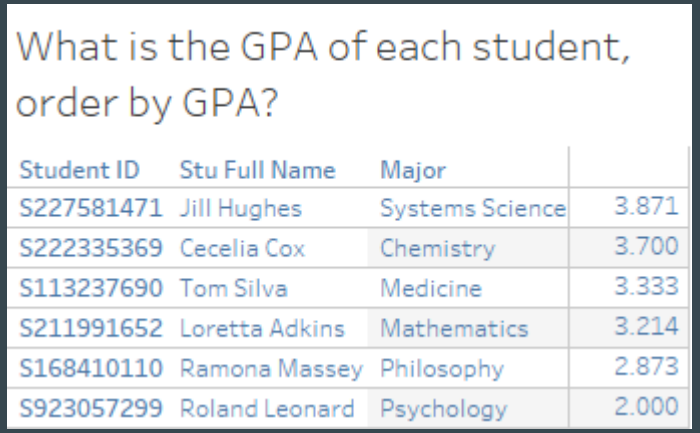
stuID	stuFullName	stuMajor	Progress towards degree completion
S113237690	Tom Silva	Medicine	7.50%
S168410110	Ramona Massey	Philosophy	12.50%
S211991652	Loretta Adkins	Mathematics	11.67%
S222335369	Cecelia Cox	Chemistry	5.83%
S227581471	Jill Hughes	Systems Science	5.83%
S923057299	Roland Leonard	Psychology	2.50%



What is the GPA of each student?


```
SELECT s.stuID, s.stuFullName, s.stuMajor,
        CONVERT(DECIMAL(5,3),(SUM(e.enrGrade * c.crsCredits) /SUM(c.crsCredits))) AS 'GPA'
FROM [UMD.Enroll] e, [UMD.Student]s, [UMD.Course]c
WHERE s.stuID = e.stuID  AND c.crsID = e.crsID
GROUP BY s.stuID, s.stuFullName, s.stuMajor
ORDER BY GPA DESC
```

What is the GPA of each student, order by GPA?



What is the GPA of each student, order by GPA?

Student ID	Stu Full Name	Major	
S227581471	Jill Hughes	Systems Science	3.871
S222335369	Cecelia Cox	Chemistry	3.700
S113237690	Tom Silva	Medicine	3.333
S211991652	Loretta Adkins	Mathematics	3.214
S168410110	Ramona Massey	Philosophy	2.873
S923057299	Roland Leonard	Psychology	2.000

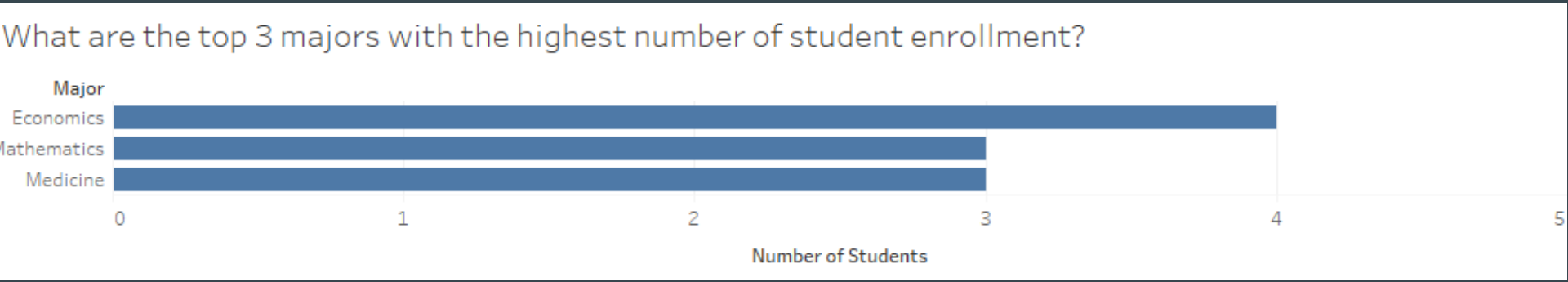
stuID	stuFullName	stuMajor	GPA
S227581471	Jill Hughes	Systems Science	3.871
S222335369	Cecelia Cox	Chemistry	3.700
S113237690	Tom Silva	Medicine	3.333
S211991652	Loretta Adkins	Mathematics	3.214
S168410110	Ramona Massey	Philosophy	2.873
S923057299	Roland Leonard	Psychology	2.000

What the top 3 majors with the highest student enrollment?

```
SELECT TOP 3 COUNT(s.stuID) AS 'Number of Students', s.stuMajor

FROM [UMD.Student]s

GROUP BY s.stuMajor

ORDER BY [Number of Students] DESC
```

What the top 3 majors with the highest student enrollment?

Number of Students	stuMajor
4	Economics
3	Mathematics
3	Medicine

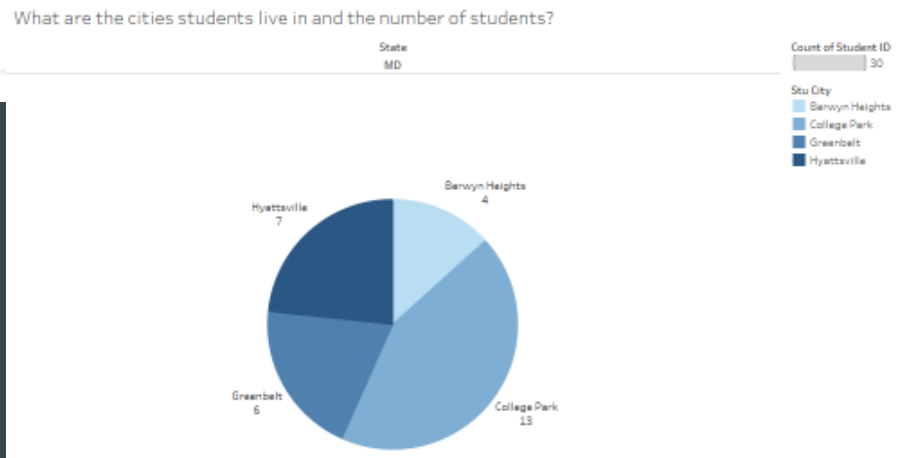


What are the cities students live in and the number of students?

```
SELECT  TOP 10 COUNT(c.stuID) AS 'Number of Students' , s.stuCity,s.stuState

FROM [UMD.Student] s, [UMD.Student]c

WHERE c.stuID = s.stuID

GROUP BY s.stuCity, s.stuState

ORDER BY [Number of Students] DESC
```

What are the cities students live in and the number of students?

Number of Students	stuCity	stuState
13	College Park	MD
7	Hyattsville	MD
6	Greenbelt	MD
4	Berwyn Heights	MD



Any Questions?