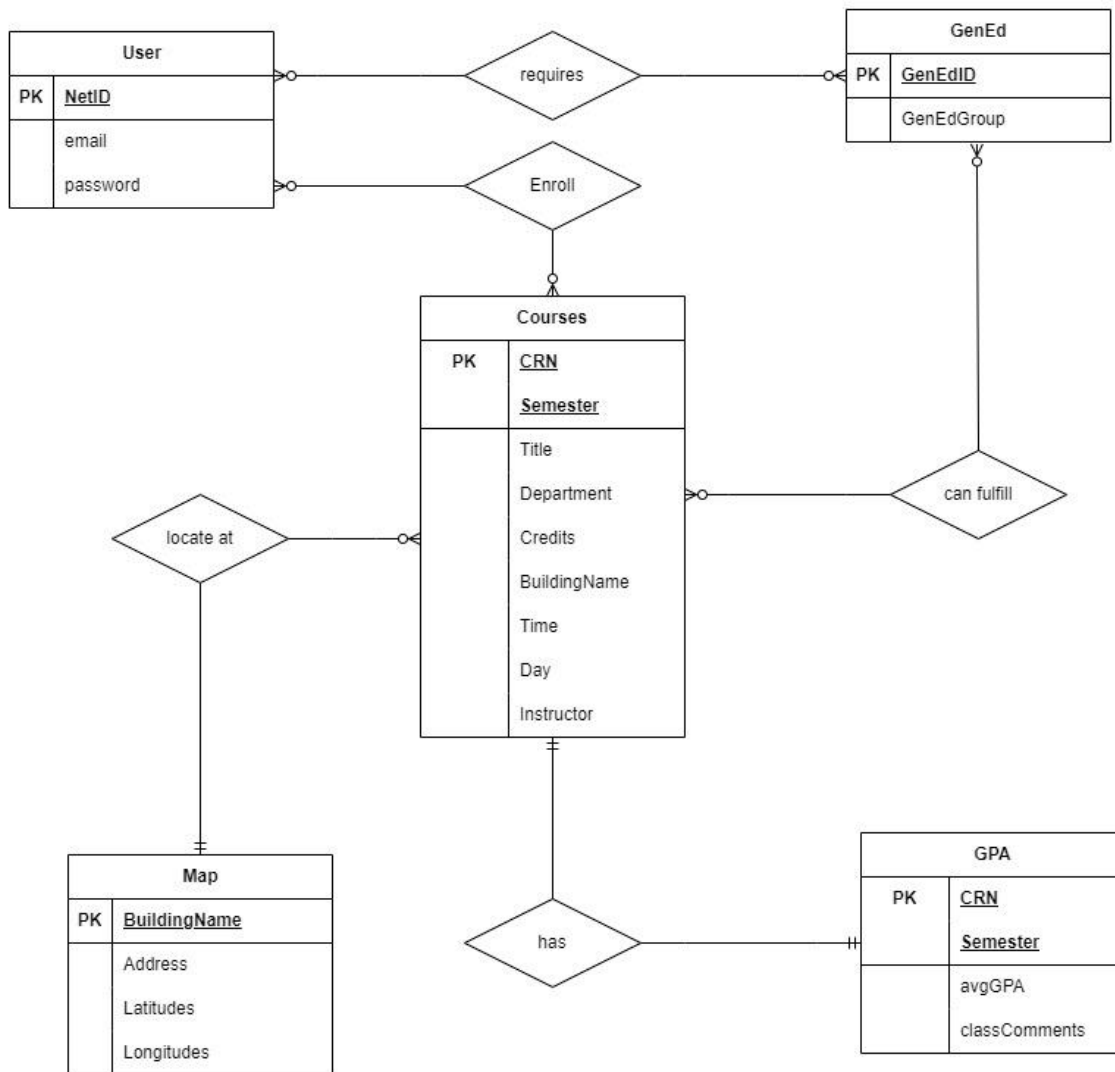CS411 Advanced Course Explorer
Stage2: Database design

UML Diagram:

Descrtiption :

There are 5 entity tables in our database design. We think that for each student(user) there are 0 to many courses they can enroll in. For each course there can be 0 to many students, so the relationship is many to many. We think that for each course the class location has to be exactly 1 (online classes can have the building name 'online') , and each building can have many courses. We think each class can fulfill 0 to many(3 or 4) genEd requirements(as each requirement group is assigned with a GenEdID), and each student can enroll in 0 to many genEd courses. Each course should have exactly 1 avgGPA.

Relational Schema:

Entity Tables:

User_Login_Table(NetId: VARCHAR(10) [PK], email:VARCHAR(255), password: VARCHAR(255))

Courses_Table(CRN: INT [PK], Semester: VARCHAR(4) [PK], Title: VARCHAR(255), Department: VARCHAR(255), Credits: INT, BuildingName: VARCHAR(255) [FK to Map_Table.BuildingName], Time: VARCHAR(255), Day: VARCHAR(255), Instructor: VARCHAR(255), GenEdID: INT [FK to GenEd_Table.GenEdID])

GenEd_Table(GenEdID: INT [PK], GenEdGroup: VARCHAR(255))
GPA_Table(GPA_ID: INT [PK]; CRN: INT [FK to Courses_Table.CRN], Semester: VARCHAR(4) [FK to Courses_Table.Semester], avgGPA: REAL, Rate: INT)

Map_table(BuildingName: VARCHAR(255)[PK], Address VARCHAR(255), Latitudes: Decimal(9,6), Longitudes: Decimal(9,6))

Relational Tables:

Enrollments_Table(EnrollmentID: int [PK], NetID: VARCHAR(10) [FK to User_Login_Table.NetId], CRN: INT [FK to Courses_Table.CRN], Semester: VARCHAR(4) [FK to Courses_Table.Semester])

StudentGenED_Table(StudentGenEDID: INT,NetID: VARCHAR(10) [FK to User_Login_Table.NetId], EnrollmentID: INT [FK to Enrollments_Table.EnrollmentID], GenEdID : INT [FK to GenEd_Table.GenEdID])
Course_GenED_Table(Course_GenEDID: INT [PK], CRN: INT [FK to Courses_Table.CRN], Semester: VARCHAR(4) [FK to Courses_Table.Semester],
GenEdID: INT [FK to GenEd_Table.GenEdID])

Entity Tables:

User Login Table

NetID	VARCHAR(10)
email	VARCHAR(255)
password	VARCHAR(255)

Courses Table

CRN	INT
Semester	VARCHAR(4)
Title	VARCHAR(255)
Department	VARCHAR(255)
Credits	INT
Building name	VARCHAR(255)
Time	VARCHAR(255)
Day	VARCHAR(255)
Instructor	VARCHAR(255)

GenEd table

GenEdID	INT
GenEdGroup	VARCHAR(255)

GPA Table

GPA_ID	INT
CRN	INT
Semester	VARCHAR(4)
avgGPA	REAL
Rate	INT

Map table

BuildingName	VARCHAR(255)
Address	VARCHAR(255)
Latitudes	Decimal(9,6)
Longitudes	Decimal(9,6)

Relational tables:

Enrollments

EnrollmentID	int
NetID	VARCHAR(10)
CRN	INT
Semester	VARCHAR(4)

StudentGenED

StudentGenEDID	INT
NetID	VARCHAR(10)
EnrollmentID	INT
GenEdID	INT

Course_GenED_Table:

Course_GenEDID	INT
CRN	INT
Semester	VARCHAR(4)
GenEdID	INT