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CSC 314
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Final Course Registration

About:

This project will be an ER diagram going over the course registration of a student at Cornell College. This Diagram will be for one student. We first started by looking at Cornell College Self Service and picking out main functions and attributes from the website that seemed essential. After this, we compiled all of these sets into an ER diagram. In the ER diagram, we have 7 entity sets and 7 relationships. Most of our schema was already translated into the second normal form, but we had to give type its own normal form taken out of course.

Entities-

1. Student: Will hold the describing attributes of the student, having three attributes. This is a main entity that has value in our database system because students will be supplying Cornell College with funding and other essential information for a business.

2. Department: This is the field of study of the college like; science, math, history and so on. This holds three attributes. We have this to eliminate a big chunk of values so the data is spread across.

3. Course: Attributes of a course given at the college. Holding seven attributes. We need this to give us information about the course such as fees.

4. Block: Time and date for the given course. Containing four attributes. This allows us to further filter the courses so we don’t have any duplicates.

5. Building: Attributes of the location for each course and offices of the professor. Having three attributes. This assigns the faculty and course to an assigned location.

6. Faculty: Attributes of the staff teaching the course. Holding three attributes. Needed to show all the faculty of the school.

7. Material: Attributes of any extra required purchases or utilities needed for the course. Four attributes for the entity. Needed to show all the materials of the courses.

Relationship- All relationships are many to many

1. Office @: Relationship between Faculty and Building. Professors can have multiple offices. We need this to show the location of the professor's office.

2. Teaches: Relationship between courses and faculty. There can be more than one faculty teaching a course. We need this to show the course of the professor's teaching.

3. Offers in: Relationship between block, courses, and building. This is needed to show the location of the course and the specifics of the course getting the start and end times of the course.

4. Needed: Relationship between courses and materials. We need this to get the materials needed for the specific course.

5. Prerequisite: Relationship between courses and courses. We need this to make sure the student has the credit requirements for the course they are enrolling for.

6. Takes: Relationship between courses and students. We need this to show the courses the student is taking.

7. Offers: Relationship between department and courses. This is needed to get all the courses offered by the department.

Original Schema:

E.Student(**SID**, name, classYear)

E.Department(**DID**, name, type)

E.Course(**CID**, name, type, credit, seat, fee, status)

E.Block(**Block**, **semester**, startDate, endDate)

E.Building(**BID**, name, room)

E.Faculty(**FID**, name, email)

E.Material(**MID**, name, cost, type)

R.Office@(**BID**, **FID**)

R.Teaches(**CID**, **FID**)

R.Offers in(**Block**, **BID**, **CID,** **FID**)

R.Needed(**CID**, **MID**)

R.Prerequisite(**CID,** preCourse)

R.Takes(**SID**, **CID**)

R.Offers(**DID, CID**)

This schema gives information about a smaller version of a course registration database. Now we can efficiently find all attributes for the given entity set or relationship. In order to properly identify attributes with similar names, such as IDs, we gave each entity their own ID that uniquely identifies a specific thing in the entity set.

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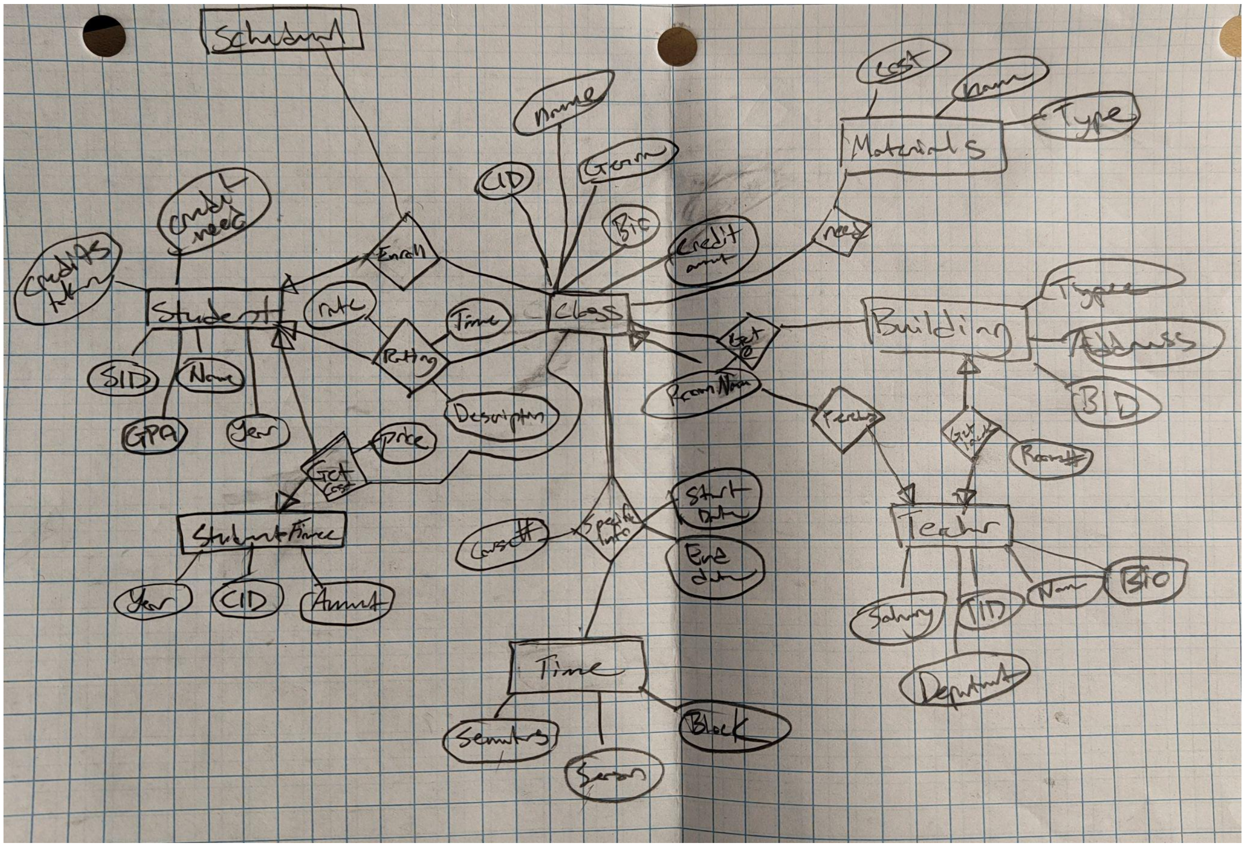
ER Diagrams:



(1st Draft)

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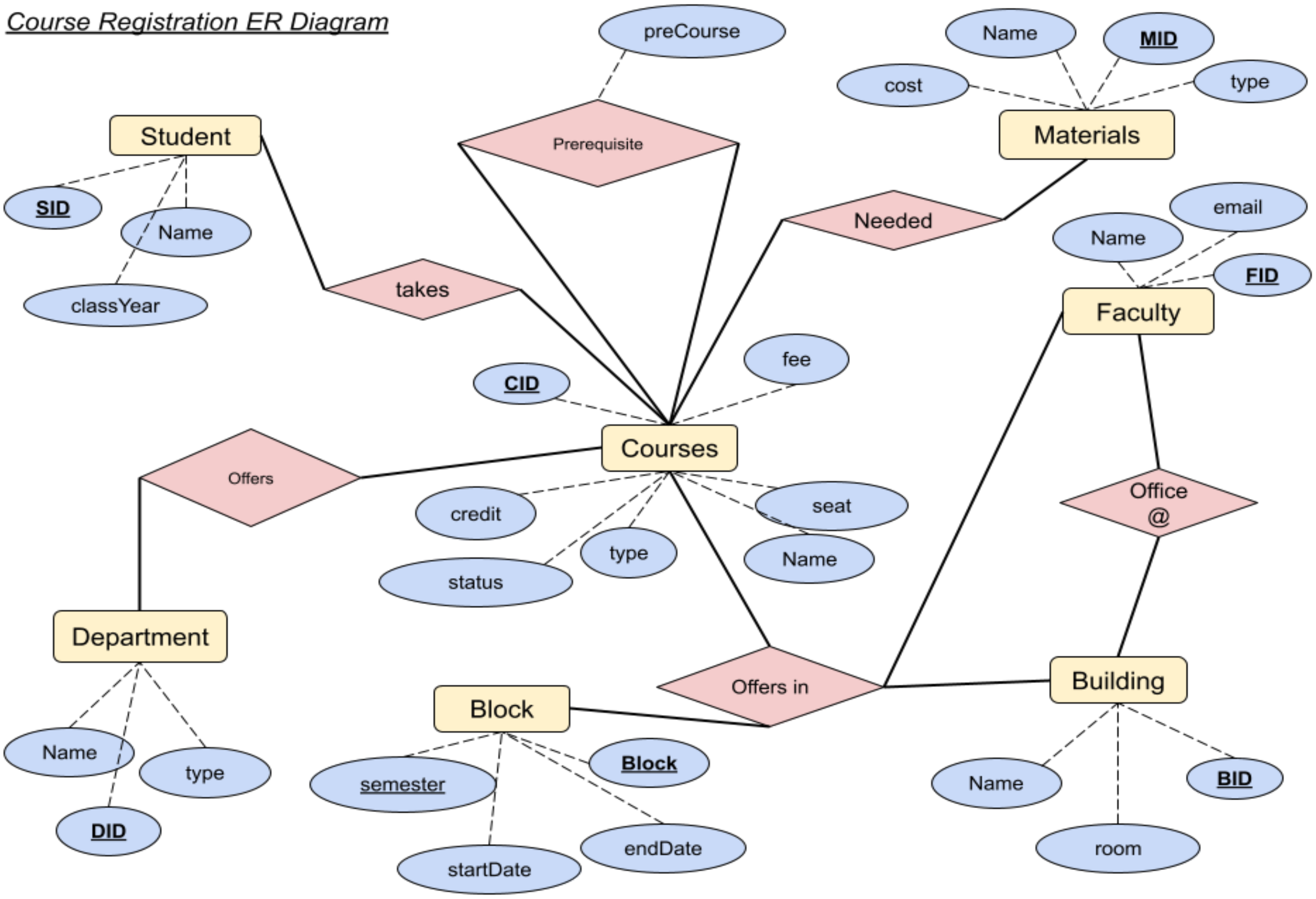
Course Registration ER Diagram



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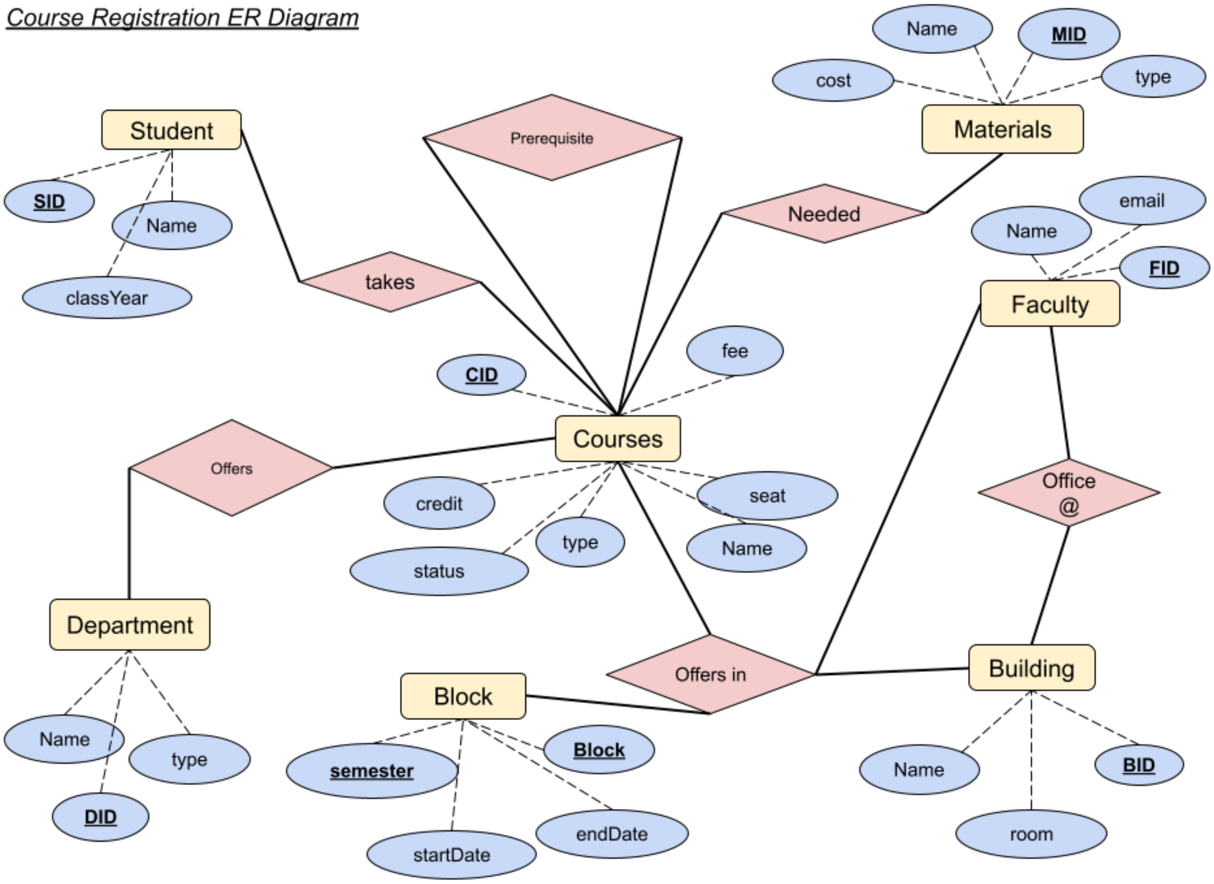
Course Registration ER Diagram



(Final)

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Normal Forms:

-NF1: It passes the first normal form by each attribute only has one value (atomic)

E.Student(**SID**, name, classYear)
E.Department(**DID**, name, type)
E.Course(**CID**, name, credit, seat, fee, status)
CourseType(CID, designation)
E.Block(**Block**, semester, startDate, endDate)
E.Building(**BID**, name, room)
E.Faculty(**FID**, name, email)
E.Material(**MID**, name, cost, type)

R.Office@(**BID**, **FID**)
R.Teaches(**CID**, **FID**)
R.Offers in(**Block**, **BID**, **CID, FID**)
R.Needed(**CID**, **MID**)
R.Prerequisite(**CID,**preCourse)
R.Takes(**SID**, **CID**)
R.Offers(**DID,CID**)

E.Course is not in the first normal form since type can have more than 1 variable. To solve the problem, we made another relation CourseType and put CID and designation there.

-NF2:

E.Student(**SID**, name, classYear)
E.Department(**DID**, name, type)
E.Course(**CID**, name, credit, seat, fee, status)
CourseType(CID, designation)
E.Block(**Block**, **semester**, startDate, endDate)
E.Building(**BID**, name, room)
E.Faculty(**FID**, name, email)
E.Material(**MID**, name, cost, type)

R.Office@(**BID**, **FID**)
R.Teaches(**CID**, **FID**)
R.Offers in(**Block**, **BID**, **CID, FID**)
R.Needed(**CID**, **MID**)
R.Prerequisite(**CID,**preCourse)
R.Takes(**SID**, **CID**)
R.Offers(**DID,CID**)

-NF3:

E.Student(**SID**, name, classYear)
E.Department(**DID**, name, type)
E.Course(**CID**, name, credit, seat, fee, status)
CourseType(CID, designation)
E.Block(**Block**, **semester**, startDate, endDate)
E.Building(**BID**, name, room)
E.Faculty(**FID**, name, email)
E.Material(**MID**, name, cost, type)

R.Office@(**BID**, **FID**)
R.Teaches(**CID**, **FID**)
R.Offers in(**Block**, **BID**, **CID, FID**)
R.Needed(**CID**, **MID**)
R.Prerequisite(**CID,**preCourse)
R.Takes(**SID**, **CID**)
R.Offers(**DID,CID**)