Lab 1 Documentation

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Database Design

When designing the database for this project, I decided to structure the facts in this style:

"To take this class, I would need to take this class"

Or in other words, if the fact is defined like this: prereq(X, Y). Then the X is considered the course being taken and the Y is considered the prerequisite to that course.

How I handled a class that had multiple prerequisites I put each prerequisite in their own fact and then when the fact is referenced, it prints out both prerequisites. For example, CISC 301 has 2 requirements, CISC 211 and CISC 233. This is expressed in the database as:

prereq('CISC301', 'CISC211').

prereq('CISC301', 'CISC233').

This allowed both prerequisites to be expressed without running into any errors. For courses that had an option of classes to take as prerequisites, I decided to do the same thing as mentioned before. For CISC 160 you can take either CISC 120 or CISC 140 and this is expressed as:

prereq('CISC160', 'CISC120').

prereq('CISC160', 'CISC140').

I decided to do this approach since I was having difficulties when trying to implement OR for specific courses, so I just decided to print both since it was easier to code and still portrayed the same message.

Database Query

To query the database to find the prerequisites for a certain class the query must follow this structure:

required('<Class>', X).

Class must also follow the structure of the letters in the course being uppercase and there being no spaces between the letters and the numbers of the course. Below is a valid and an invalid query:

Valid - required('CISC399', X).

Invalid - required('cisc399', X). required('CISC 399', X).

The following is the output of a successful query:

```
?- required('CISC399', X).
X = 'CISC120' ;
X = 'CISC120' ;
X = 'CISC120' ;
X = 'CISC120' ;
X = 'CISC140' ;
X = 'CISC160' ;
X = 'CISC211' ;
X = 'CISC233' ;
X = 'CISC225' ;
X = 'CISC301'.
```

When the query is called all the courses that are listed below the query are the prerequisites needed to take the defined course. If a course shows up multiple times in one query, that just means that it also is a prerequisite for courses that are prerequisites for the queried course and can be ignored.

What if a course doesn't have any prerequisites? Then when the query is called it will print out false. This means that there are no prerequisites for the course and the course can be taken at any time. Example:

```
?- required('CISC120', X).
false.
```