Project 1 Task:

You are asked to create a database design that will store information for the business problem described below.

The business problem lists and describes the data in a way that made sense to me. *In no way is it intended to suggest any design choices.* It is up to you to create a valid design.

Requirements:

Your design should be normalized to 3rd normal form.

Your design should include the following:

- tables and columns
- primary and foreign keys
- relationships between tables
- nullability (whether the column is required or not)

Your design needs to be able to store all of the data points listed in the business problem.

You may also submit a short explanation of non-obvious design choices or data assumptions you made[1].

Important Considerations:

Getting to a working final product is only a part of the battle. Doing so correctly is crucial. Please make sure you *follow the naming standards*, and that your design is as neat as possible[2].

I strongly urge you to use either Visio 2010 or Vertabello to create your design.

If you chose to use a different tool, I expect that the resulting schema will communicate (in an obvious way) all of the required design elements. Furthermore the template also needs to be VERY similar to the tools listed above (in how everything looks). *If you chose to use a different tool, and it causes you to break with the above statements, you will lose points.*

I am not requiring your design to show the data types. If it does, I will not check these.[3]

Try to place as few constraints on the business problem, as possible. If you aren't sure about something, ask.

*Finally, I **very** strongly encourage you to follow the outlined schedule. If you try to start this project 24 hours before its due (or even later), you will very likely do VERY poorly. You have been warned.*

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[1] *This is optional* – best designs do not need this. *No more than 1/3 of a page.* Non obvious means I cannot figure it out from your design.

[2] Well organized, easy to follow, few crossing lines

[3] You will not lose any points, but it also means that I am not verifying their correctness for project 2

Deliverable:

Your deliverable will be a ***single PDF*** *document* containing the optional explanation and your DB design. While I'm not requiring you to make your design fit a single page, it should be gradable as an electronic document (I will not print out and put together a 3x4 page puzzle). As long as the quality of the document is good enough for me to be able to zoom in and see all of the details, then that is absolutely acceptable. You will submit this document via blackboard.

If you upload a file that does not follow these specifications[4], your grade will be lowered, as I see fit - I may chose not grade parts of the project (and you will receive 0s for those), or, I may refuse to grade the entire project, and you will receive a 0 for it.

Grading Outline[5]:

1. *Design explanation (3 pts)*
    a. not too long
    b. not stating the obvious
2. *Design cleanliness (2 pts)*
    a. general organization
    b. # of crossing/overlapping lines
3. *Naming standards (10 pts)*
    a. table/column names follow the standards
4. *Data (10 pts)*
    a. all of the data points from the business problem are included in the design
    b. data is appropriately broken down
5. *Design includes all of the required elements (30 pts)*
    a. primary keys
    b. foreign keys
    c. relationships
    d. nullability
6. *Normalization (45 pts)*
    a. the database is normalized to 3rd normal form
    b. look up tables are broken out
    c. correctly identified and handled one-to-one, one-to-many and many-to-many relationships

[4] Uploading multiple documents or images, or using other file formats makes it difficult for me to efficiently grade your project; if you complicate my life enough, I will take points off or give you a 0.

[5] ***I follow this very strictly, it is in your best interest to pay close attention to it..***

Business Problem:

Your job is to create a DB for a university. The following is the information that the customer needs to store.

Students:

- name
- NTID
- student id
- password
- major(s) and minor(s) that the student is working on
    - college that the majors/minors belongs to
- date of birth
- SSN
- home address
- local address
- status (possible options - undergraduate, graduate, non-matriculated, graduated)

Employees

- name
- NTID
- employee id
- status (possible options – active, inactive)
- SSN
- address
- yearly pay
- health benefits – cost, selection (selection – possible options – single, family, op-out)
- vision benefits – cost, selection (selection – possible options – single, family, op-out)
- dental benefits – cost, selection (selection – possible options – single, family, op-out)
- job information
    - job title
    - job description
    - job requirements
    - min pay
    - max pay
    - union job (Yes/No)

Courses

- course information
    - course code
    - course number
    - course title
    - course description

    - course prerequisites (pointing to other course(s) – could be 0 – unlimited number of prerequirements)
- course schedule
    - semester (semester, year, date of first and last classes in that semester)
    - faculty teaching the course
    - time of the course – start, end (hours and minutes) and which days of the week
    - classroom in which the course is being taught
    - how many seats
    - a list of enrolled students
        - their ID
        - their status (possible options - regular, audit, Pass/Fail)
        - their grade

Classroom

- building name
- room number
- maximum seating
- projector (possible options Yes – Basic/Yes – SmartBoard/No)
- number of white boards
- other A/V equipment (text)