Assignment 01

CS 364 | Fall 2017

This assignment requires you to develop an ER diagram for the below scenario. Your deliverable is a computer-drawn ER diagram in a **PDF format**[1]. Your assignment is due **September 19** at 11 PM and is worth **20 points**.

Problem Statement

You have been contacted about developing a financial tracking database. The database should store the following information:

- The database stores a number of users. Users have a first and last name (the combination of which need not be unique), a unique username, and a password.
- Users have zero or more accounts. Accounts have a name (e.g., "My Savings"), a financial institution they are affiliated with (e.g., "UW Credit Union"), type (a single selection from a set of values, e.g., "checking," "IRA"), and a dollar amount they contain (e.g., "My Savings" might have $523.98).
- Some accounts (anything involving the stock market, such as IRAs or money market accounts) have a history associated with them. The history tracks the amount in the account anytime the user makes a transaction (e.g., buys or sells stock), noting the range of dates for the price (e.g., from March 1, 2017 until August 10, 2017, a user's IRA was valued at $1,294; on August 10, 2017, they made a purchase, and so the database would note that from August 10, 2017 through the present, the same IRA account is now valued at $1,957). Note that this assignment ignores tracking the natural variations that occur in the stock market every day.
- Users have the option to link an account to a goal they are saving for. Goals have a name (e.g., "New Car"), a single account they are associated with (e.g., "My Savings" is linked with "New Car"), a target amount, and a deadline they want to complete the goal by.
- The database stores deals (i.e., ads) to present to users. Ads are comprised of a company (companies can have more than one ad), a product name they are offering (e.g., "Online Savings with 1.05% APR"), and the textual description of that offer; note that more than one company can offer the same product. The database tracks which ads have been presented to which users and on what day the user saw the ad. Note that the same ad could be presented to the same user more than once, but never more than once on the same day.

In constructing your ER diagram, be sure to include the following components beyond the entity types/attributes/relationships:

- The primary key for each entity type, as well as any foreign keys for both entities and relationships (all relationships should have foreign keys!).
- Any composite, set-valued, or derived attributes.
- Cardinality for all relationships, labels for self-referential relationships.
- Any weak entity types.

Full credit will only be given for diagrams that incorporate these elements as appropriate. If you have any questions or need clarifications on any part of these requirements, please be sure to ask rather

[1] Other formats, including images, Word documents, or Power Point files, will *not* be graded.

than making an assumption. If you feel the need to clarify any part of your thought process on the diagram, please include it in an optional PDF document (named `cs364-notes01-<lastname>.pdf`). While this will ensure that you do not lose points due to miscommunication if we had discussed a requirement previously, it will *not* serve as a substitution for making an assumption because you did not have time to ask for clarification.

Tools for Drawing ER Diagrams

To ensure accurate grading of your ER diagram, it must be drawn on a computer and submitted as a PDF. However, you are not required to use any specific tool. Several options you might already have access to include Power Point/Keynote, Word, Visio, and OmniGraffle. Other options available specifically for ER diagrams, either in free or trial versions, include draw.io, Lucidchart, ERDPlus, and Visual Paradigm (see "Content" → "Resources" → "Tools" on D2L for links)—you are not limited to these options. Please note that I have not used many of these ER diagram tools, and thus cannot answer specific questions on them. Note that some of these tools use a different notation than what we learned in class or is covered in the book. If you use a notation different than what we used in class, please document it clearly as a note in your diagram, or as a separate PDF document (named `cs364-notes01-<lastname>.pdf` from above). This will ensure that you do not lose points due to miscommunication.

Submission

Be sure to consult the following checklist of requirements before submission:

- ☐ Your ER diagram file must be named `cs364-assign01-<lastname>.pdf`, where `<lastname>` should be replaced with your last name in camelcase, first letter lowercase. For example, if your last name is "Von Neumann," your submission will be named `cs364-assign01-vonNeumann.pdf`.
- ☐ Your file (or files, if you have an associated notes file) should be placed in a folder called `cs364-assign01-<lastname>`, then zipped up and named `cs364-assign01-<lastname>.zip`[2], then submitted to the Assignment 01 dropbox on D2L.
- ☐ If you were to unzip your zipper folder, you should get a folder directory that looks as follows:

  `cs364-assign01-<lastname>` (folder)
  `cs364-assign01-<lastname>.pdf` (ER diagram)
  `cs364-notes01-<lastname>.pdf` (optional notes file)

- ☐ Your ER diagram correctly represents the requirements outlined above.

Grading:

Your assignment will be graded on:

- **Design of the database**: Does it satisfy all the requirements outlined above? Is special notation used where appropriate?
- **Formatting of the ER diagram**: Does it properly utilize the stylistic conventions discussed in class, either in the diagram itself or in a separate document?
- **Professionalism**: Has the diagram been developed in a way that clearly articulates the database design to others without ambiguity? Is it of high enough quality that it could be presented to a client? Are **all** submitted files in PDF format and submitted in the manner specified?

[2] No `.rar` files!