ICSI 518Y – Project Milestone 3

Data Flow Diagram, Entity-Relationship Diagram, and UI Mockup

Objective: Each team is required to meet this milestone by submitting data flow diagrams, entity-relationship diagrams, and UI mockups for the 5 most critical functional requirements.

Requirements:

The milestone document should include the following items:

- Data Flow Diagrams
- Entity-Relationship Diagrams
- UI mockups

Data Flow Diagrams/Process Model

A process model can be infinitely deep. For this assignment, let's put a cap of level 2. The context diagram shows the entire product. Level 0 is a very big picture about some portion of the product. Level 1 drills down "one layer" and level 2 is our "bottom". At level 2, we should be close to a level of detail of what one method in Java might hold.

For example, in the slides (Process Modeling), we have a context diagram of a student taking a class and getting a grade. Level 0 breaks the "take a class" process down. Level 1 shows assignment processing. A level 2 might show grade assignment as something like:
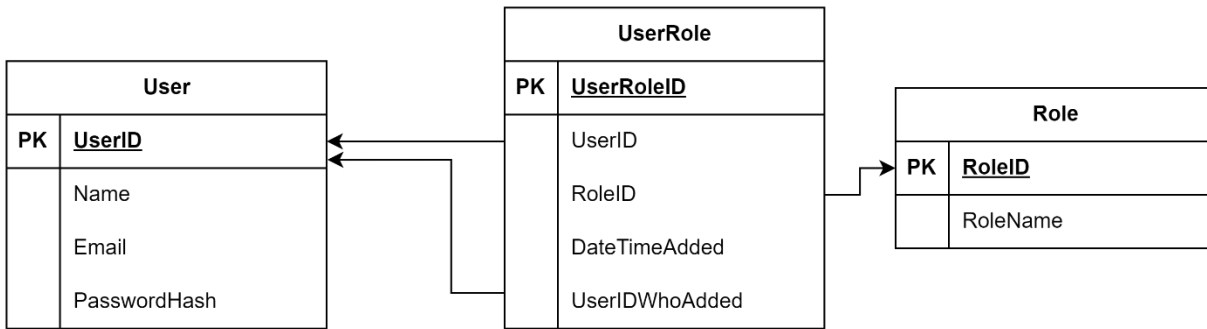
- The TA splits the assignments up and distributes them to the graders proportional to their assigned availability.
- The graders compare the assignment to the rubric and "output" a completed rubric sheet and a numeric grade.
- The TA puts the grade into BrightSpace.
- When that is complete, it goes to the Professor for final signoff.
- When that is complete, the grades are made visible to students.

Of course, this would be done graphically.

Entity-Relationship Diagrams

The ERD is a description of the data storage that you will be using for persistence in your product. Much like the UI mockup, this is a technology-independent view of what is stored and how the various "storage buckets" are related.

The slides presented one way to create ERDs. That style is very helpful when you need to communicate with non-developers. It is very time-consuming and tedious to build, so we will be using a different model for our ERD for this project.

UserRole

PK	UserRoleID
	UserID
	RoleID
	DateTimeAdded
	UserIDWhoAdded

User

PK	UserID
	Name
	Email
	PasswordHash

Role

PK	RoleID
	RoleName

I used Draw.io for this – it is free and easy to use. There are other tools out there – you can feel free to use any tool that you like. Some people like to put data types in their ERDs. I think that 99% of the time this is not necessary – a reasonable developer would be able to understand what the data type should be based on the name of the column. If you think that some data item has an unclear type in your ERD, feel free to add a note to indicate what the data type should be. Draw.io supports adding a column if you like, or you can just make a note off to the side of the data item.

Some of the key rules:

- Every entity (table) should have a surrogate primary key named TableNameID. Foreign keys should have the same name as the primary key that they link to unless there is a good reason not to. If it is not clear what the connection to the foreign table is, make the name better.
- Make sure that your tables are normalized. Not repeating yourself and not adding additional dependencies makes your design objectively better.
- Don't abbreviate.
- Don't store data that you will never need, but store everything else (this is a hard decision).

UI Mockups

The UI Mockup is the plan or blueprint for the user interface work. It serves a few important purposes:

1) To allow the entire team (businesspeople, management, developers, etc.) to imagine the product and how it would be used.
2) To give the user interface designers something to work with.
3) To check that the ERD and the user stories/use cases are complete.

One thing that is very important to understand is that the UI mockup is **not** about "pretty". It is about how the application functions. The focus is on interaction – no colors, basic fonts, and little-no graphics (like logos, or "pretty pictures"). The purpose of the mockup is to show how the application is used, what visual controls are on-screen, how the user can interact with the screen, and how the application interacts with the user.

Picking functional requirements:

The 5 functional requirements you pick to draw these diagrams/mockups for should be the most critical ones. Ideally, they should "summarize" the goal of your project. If you have any questions about which 5 functional requirements you should pick, please contact me.

Submission Instructions:

Each team will prepare a report containing all the items listed above. The report file name must follow this naming convention:

- TeamXX- Milestone 3- Report

For this milestone, one of the team members will submit their report (in PDF form) on Brightspace.

Late Submission Policy:

No Late submissions will be accepted.