To complete the first step of our class project, I will discuss three potential project ideas. I will list the specific functionalities of the chosen projects, along with some preliminary investigation toward implementing each project. The project will include a data component and an interface component.

**Idea 1: GRE Prep Web App**

The end product would be a website where people studying for the GRE can use Direct Manipulation Animation (DMA) to create mental models of the material. Current GRE preparation courses like Magoosh use video lessons and practice questions. Once a user creates an account, they login to their dashboard which displays how many learning videos they’ve completed as well as how many questions they’ve answered correctly and incorrectly. My web app would be similar to Magoosh in some respects. For example, I will create a database that contains a table of registered students, a table of lessons, and a table of questions. However, the interface will be different: instead of a student logging in to see a metrics dashboard, the will login to see a map that consists of towns representing each lesson, and roads that show how the lessons are connected. For example, one of the towns could represent rate problems, and it would have a road connecting it to another town that represents algebra. When a user clicks on the town, they will receive a lesson on that topic and a set of questions that can be manipulated with a mouse (one of the problems with Magoosh is that paper is often required to answer the questions, and if a student is trying to study on the subway, for example, it is often not possible to use physical scratch paper. Thus a DMA solution would allow students to study in transit).

**Idea 2: Podcast Website**

My wife is creating a podcast titled “Thank You for Your Service” or TYFYS. She wants to have a website that her followers can access to listen to current and past episodes, as well as have access to an online store where followers can purchase TYFYS merchandise. I would create a database with tables for email distribution lists, previous podcasts, and merchandise. The user interface would have 2-3 pages. The homepage would have a list of the podcasts and a link to the online store. The online store page would implement the display of merchandise, a shopping cart, a payment module, and inventory control mechanism. An example would be Amazon.

**Idea 3: A Virtual Assistant**

This would consist of a Q&A bot using Azure cognitive services. A database would include user login information as well as what questions they’ve asked previously and what answers they found most helpful.