

# Semester Project Overview

CS 3200 (Fontenot's Sections) | Spring 2023

## 50,000 ft. Overview

In a team of 3 or 4, you will conceptualize, design, and implement a database-driven application. Your team will:

- identify a general product idea for your application
- outline 4-5 major features of three different user personas of the product
- develop a localized data model and ER diagram for each user persona
- incorporate the three localized ER diagrams into a global data model in the form of a global ER diagram
- convert the global ER diagram into a relational model
- implement the relational model in MySQL
- bootstrap the database with realistic auto-generated data
- develop robust queries to support each feature of each user persona
- design and implement a REST API as a data access layer using Python & the Flask framework
- implement a model user interface for your application composed of a set of cohesively designed and organized pages/screens

## Teaming

Each team should consist of **no fewer** than 3 students and **no more** than 4 students. Team members can be enrolled in either section of Dr. Fontenot's CS 3200 Spring 2023 sections.

## High Level Project Architecture

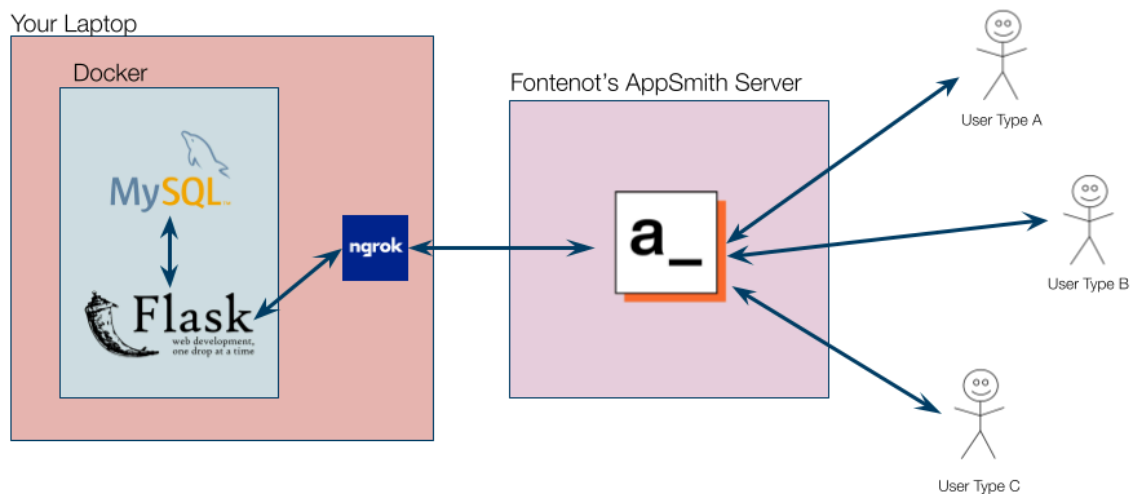


Figure 1 - General Project Architecture

On your local machine/laptop, you'll run two Docker containers: MySQL Server and the Flask API service.

- The AWS Docker documentation describes it as follows: "Docker is a software platform that allows you to build, test, and deploy applications quickly. Docker packages software into standardized units called containers that have

everything the software needs to run including libraries, system tools, code, and runtime.” We won’t be deploying on AWS, but this description was on-point in my opinion. Once you have a system set up to run in Dockerized containers on your development platform, they can be deployed to production fairly easily to a system like AWS, Azure, etc.

- MySQL .... you know what this is 😊
- [Flask](#) is a light-weight framework written in Python in which you can build web apps, REST APIs, etc. It is very lean by design, but extensions provide tons of additional functionality.
- Typically, services like MySQL, containers, etc running on your laptop cannot be accessed from the public internet very easily. Think firewalls, no domain name, and other useful impediments to the security of your system from being breached. However, sometimes you want to specifically allow certain access from the public internet. [ngrok](#) allows you to run a small service on your laptop (not in a container by the way) that create a private tunnel to the ngrok system. This will allow you to link up the AppSmith server running in the cloud to your REST API running on your laptop.
- AppSmith (also check out [this YT Video](#)) (and similar platforms such as BudiBase or ReTool) is a low-code tool for building and maintaining internal software tools such as dash boards, admin panels, and simple CRUD applications. While fairly straight forward and “low-code”, it will provide sufficient functionality to build a UI for this project. You can create access to data sources (such as your REST API), create queries, and use a drag-and-drop designer to build out the UI linking various components to the queries you create. You’ll develop your UI on an AppSmith server I am hosting in the cloud which will then connect to your REST API via ngrok running on your local machine.

**Important note:** While your MVP UIs will be built for different user types/personas, you don’t need to worry about implementing user login/authentication systems.

## Project Phase 1

Your team will need to submit the following:

1. Team Name
2. Contact information for each team members
3. Product Name
4. Brief synopsis of your product and what problems it aims to solve. This should be no more than 1 professionally-written paragraph.
5. A minimum of 3 user personas - See > [this](#) < link for more information on what a user persona is and how to develop one.
6. For each user persona, develop 4 - 5 major features and state them as User Stories for the associated persona. See > [this](#) < link for more information on User Stories and how to compose them.

Phase 1 will be due March 28 @ 11:59pm. The submission method ~~will be forthcoming~~ has been posted on the course webpage.

*(Project Phase 2, Project Phase 3, and Final Submission requirements will be forthcoming.)*