Abstract:
The goal of this project is to build a web app over the Fall 2019 semester that will allow individuals to 1) search and explore past, current and future municipal bond offerings. If time and legal connections permit, I would also like to add functionality for 2) buying municipal bonds on the primary market.

Project Background:
Municipal bonds are debt obligations issued by government entities such as the city, state, local counties, etc. The tax-exempt form of municipal bonds are popular because they allow buyers to generate tax-free income and to be considered low-risk. Currently, municipal bonds can be purchased on the primary market—at the time of issue—or on the secondary markets, a market for trading bonds after the bond has already been issued on the primary market.

In an initial municipal bond offering, municipal bonds are issued under an exclusive agreement with the underwriter or underwriting syndicate, which is selected by the issuer through a proposal process.

When the issue is ready to be priced, the underwriter or underwriting syndicate discusses with the issuer and its financial advisor the proposed interest rates and spread (which is the fee paid to the underwriters to sell the bonds). Once the issuer gives its approval, the underwriter will release the pricing to its investor clients and allow them a certain time frame within which they can enter orders.

During this order period, which can run from a minimum of one hour to five days, the underwriter closely monitors the incoming flow of orders. A well received pricing can become over-subscribed quickly, meaning there are more orders for bonds than the amount of bonds being issued. In this situation, the underwriter may recommend lowering the interest rates to the issuer. If interest in the issue is slow, meaning very few orders, the underwriter will usually advise raising interest rates (to generate more orders) and possibly running a new order period. In a negotiated sale, the underwriter may recommend a combination of changes in interest rates and structure in order to achieve the best pricing and the maximum amount of investor interest in the issue. After the underwriter and issuer agree on a final price and structure, the issuer awards the bonds to the underwriter who in turn will allocate the bonds to those customers who subscribed for bonds during the order period. Any unsold bonds will be offered for sale on a first-come, first-served basis.
This is the primary market. When you purchase a bond on the primary market, there are no fees or markups. However, it tends to be difficult for a **retail investor** to buy new issue municipal bonds. Generally, retail investors are individual investors who buy and sell securities for their personal account, and not on behalf of another company or organization. (as opposed to institutional investors). Non high-net worth individuals tend to be unable to easily purchase a bond during this process.

The goal of this app would be to increase access to the municipal bond primary market for all individuals.

**Related Existing Products**
Currently, investors find information about ongoing municipal bond offerings through munios.com and EMMA.

MuniOS is the preferred distribution platform for municipal bond issuers when introducing new issues to the marketplace. This website lists all recent offerings.

The EMMA website is the SEC-designated official repository for municipal securities disclosures. EMMA provides investors, state and local governments and other market participants with key information about individual municipal bonds as well as tools to assess bond prices and market trends.

EMMA is a service of the Municipal Securities Rulemaking Board (MSRB), a self-regulatory organization whose mission is to protect investors, state and local governments and other municipal entities, and the public interest by promoting a fair and efficient municipal securities market. The MSRB fulfills this mission by regulating the municipal securities firms, banks and municipal advisors that engage in municipal securities and advisory activities.

However all of these websites serve as repositories for municipal bond information. The ultimate goal of this app would be to create a market platform for the sellers (bond issuers and underwriters) and individual buyers.

**Deliverables:**
- **Goal Deliverables by end of semester:**
  - A web app where individuals can easily search and explore existing municipal bond offerings
  - Replicating bond database from MuniOS on the app
  - Replicating past bonds information from EMMA website onto the app
  - Building a search index on these combined municipal bond databases
• Offer filtering options, search history options, and other current web-standard search features
  ■ User-personalized display of initial bond offerings depending on bond price, user’s geographic location (county, state, etc)
  ■ Users can create an account
    • App requires identity verification for bond purchases
  ■ Build functionality to support user payments for potential bond purchases
    • Users can connect bank accounts for purchasing bonds
  ■ Build roles for underwriting institutions and government institutions
    • Allow institutions to create accounts with a verification flow
    • Allow underwriters to upload new municipal bond offering information directly to app

• **Reach deliverables:** Actual buying and selling functionality of bonds on the initial primary market would require building and leveraging connections with financial institutions. I have a few connections who are in this space, but I would like to leave this as a reach goal for now because this is less dependent on technical effort and less under my control.