Project Overview

Big Picture

Supplementing an investor's experience sparked the beginning of this project. Providing users with data based on the quality of their investments compared to relevant benchmarks allows them to make more informed investing decisions regarding their portfolios.

Goals

The largest requirement was creating an informative, yet simplistic, application on multiple platforms. For this reason, we used Xamarin Forms in order to develop the tool for use on both iOS and Android mobile devices.

Being an on-the-go style application, speed was a top priority. To alleviate loading speeds on the phone, majority of the calculation overhead is done externally within a separately developed .NET console application.

In order to make sound investment decisions, both detailed and individualistic as well as high level analysis of investment quality are needed.

Xamarin Forms

Xamarin Forms is a cross-platform UI toolkit that allows for the construction of fully native mobile applications for Android, iOS, and UWP. This was critical for development as using a single codebase was a mandatory requirement of our project specifications.
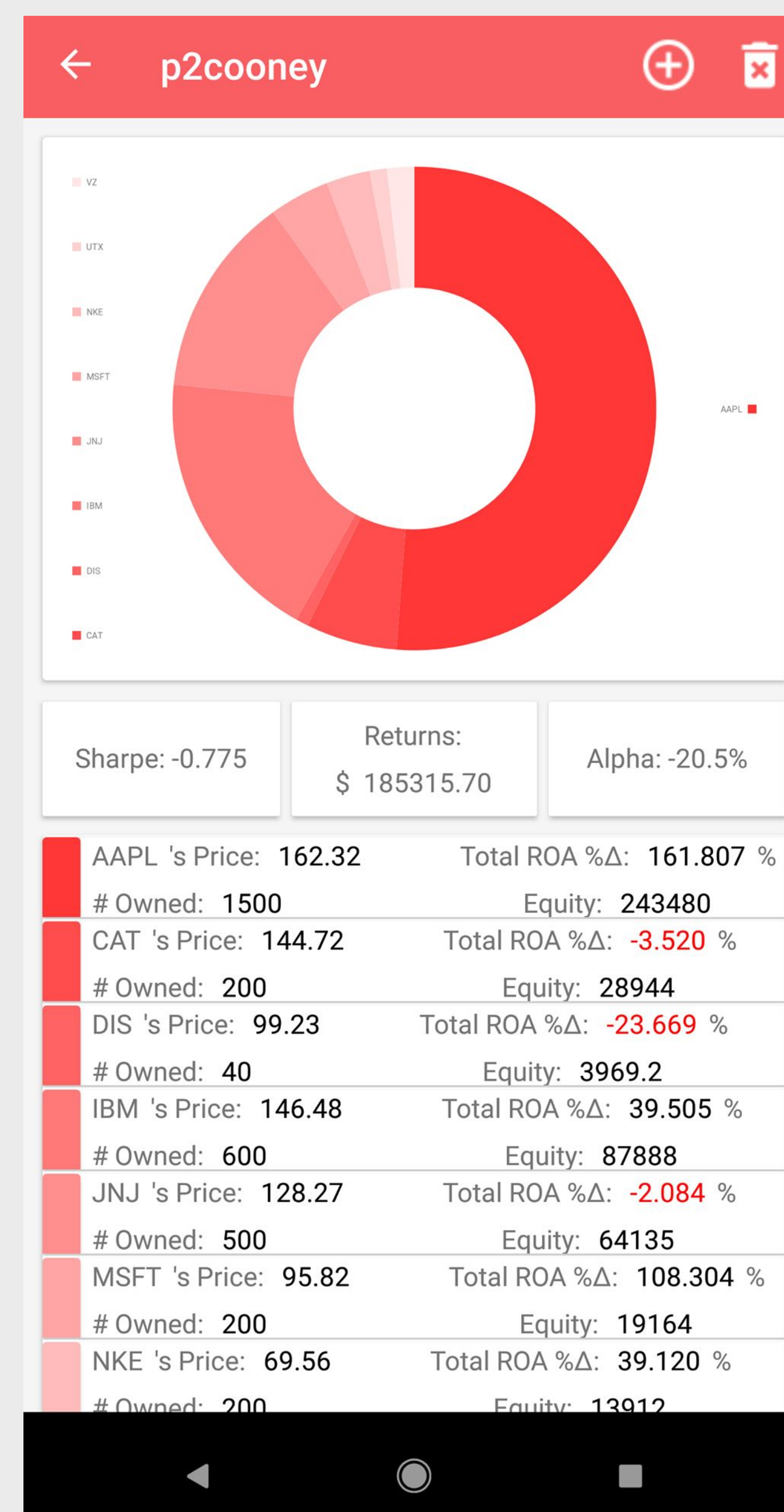
Team Motivations

We decided to undertake this project due to an interest in finances, the stock market, and learning how to develop a mobile application.

Oregon State University

Investment Performance Mobile Application

Track your investment portfolio on the go with complete ease!

Android Portfolio View

Project Description

- An iOS and Android mobile application that seeks to analyze investment portfolios at both portfolio and individual asset levels.
- A database that stores application information including user credentials, portfolio information, and asset data. A Web API is used to integrate database information into the mobile application.
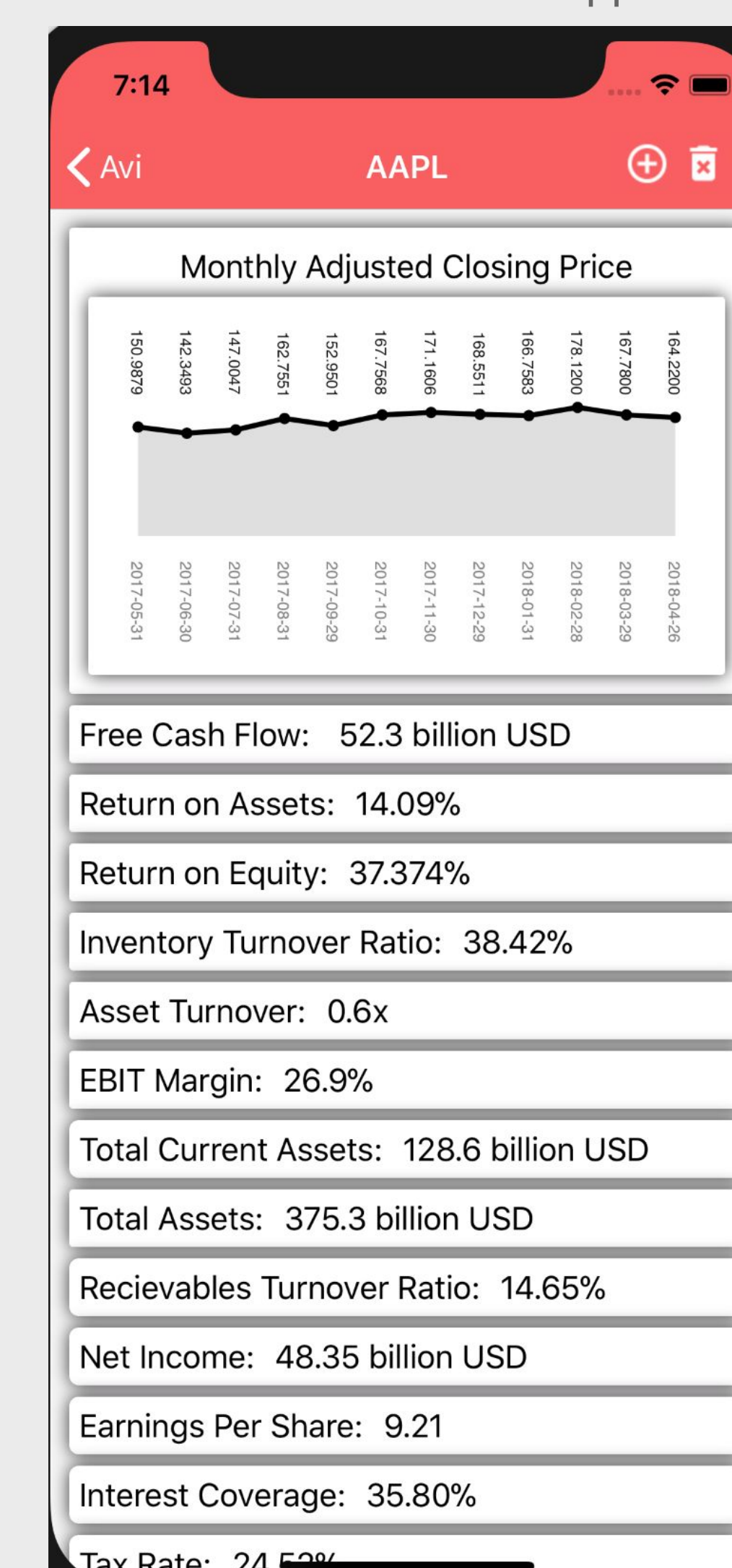- A console application that connects Last10K.com and Alpha Vantage financial data to the database.

The project is centered around a mobile application that presents various pieces of financial information to the user. Xamarin Forms is the key toolkit required in developing the cross-platform application and allows for a single codebase for both Android and iOS. The database is used to store critical sets of data for users, their portfolios, and intermediate data from Last10k and Alpha Vantage for use in the mobile application.

Since there are numerous pieces of information that investors look towards when making decisions, a condensed subset of financial ratios and data points were chosen by the team and the client to be used for the assets and portfolio.

Android Asset View For Apple

iOS Asset View For Apple

Cross Platform UI Development

Creating a single codebase UI for both platforms proved to be a large challenge. Elements and entities such as Toolbars and Frames are displayed with slight differences, as seen in the figures on the right. Having Visual Studio to emulate both devices proved to be critical aligning UI's to one similar design.

Visual Studio, an IDE owned by Microsoft, integrates key technologies including Git, Xamarin, as well as iOS and Android emulators into one singular environment. This centralized and sped up the development process by allowing all C# and XAML files to be worked on side by side.

The Team

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Features

- Stock prices updated using the DOW JONES Index
- View the Alpha, Sharpe Ratio, and Returns since Purchase of the portfolio
- Individual asset information includes: Return on Assets and Equity, Turnover Ratios, Tax Rates, Net Income, Revenue, and more. All individual asset information obtained is from quarterly releases of public accounting information
- MySQL database for storage of user information
- Secure user login using hashing
- Compatibility with both iOS and Android
- Various charts displaying pricing data and portfolio equity in a simplistic format
- Unique accounts holding individual portfolios as well as sharing portfolios between any number of users
- Ability to create and delete any number of portfolios
- Ability to add and delete individual assets

Tools

- Languages: C#, XAML, PHP, SQL, Python
- Visual Studio Community - Xamarin Integration
- Xamarin.Forms and Micro Charts Libraries
- MySQL Database hosted by Oregon State University
- Last10k and Alpha Vantage public API's