The Ameritrade API allows for trades to be placed by calling a specific URL and providing an API key, along with an access token to authenticate the session. The authentication function to obtain a refresh token works in the following manner:

An URL is accessed where the API key is provided along with an access code, and the output is a refresh token that is good for 30 minutes. After these 30 minutes are up a new refresh token needs to be requested. Ameritrade claims that they do track over usage of these, so a program that is constantly refreshing for new tokens every 30 minutes can quickly turn into 48 requests in a day. Update: as of 6.4.21 an authentication script was able to automate the authentication portion of our code. Our program ideally will track in real time when our target stocks are found to meet our conditions, and then call the authentication function when this live streaming data triggers the conditions as they are met. For example, if a stock reaches a top rank in a list in highest volume, along with a TI based value and price range, then it can qualify as a candidate for the target stock list. This target stock list as it is populated can trigger the next phase of this program, which would be to authenticate and request a refresh token if needed and then execute the trade.

As we can see the trade execution function is a complex beast, but one that can be tamed if we approach it in parts. The trade execution part will invoke our target stock list and pull their information to place a trade. The only variable we would need would be the stock symbol, and from this we can instruct our program to proceed with the trade execution. Other future adjustments that can be made are determining the overall portfolio allocation and setting limits like a minimum balance in cash to be kept or setting the allowed proportion of the portfolio to be left exposed in open positions. Once these components are built then an additional conditional function can be created that contains all these portfolio parameter values and regulates the program trading based on them.