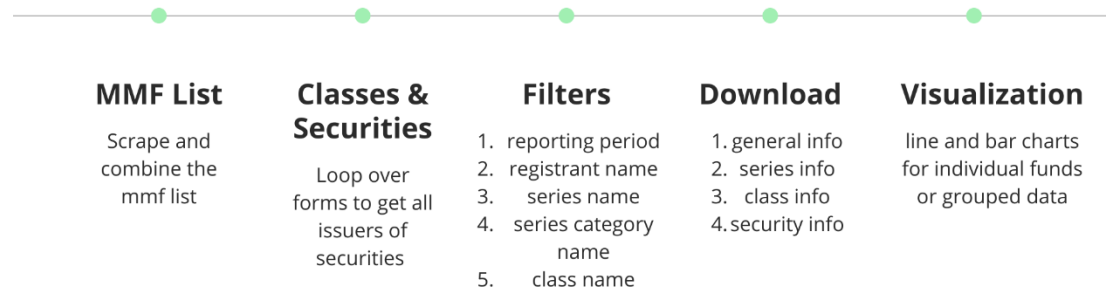


Documentation

Overall Structure

A brief **architecture** of the app



Key Functionality of the App

- Export MMF data since October 2016 with their monthly class and series information
- Filter search targets using five filter options
- Customize the f NMFP-2 export forms by specifying sections to include in the download file
- Customize class and security information to include in the download file
- Preview the export file prior to download
- Generate analysis graphs for individual funds or grouped data

Web Scraping and UI Functions

Page	Function name	Input	Output format	Output information	Upstream dependency	Downstream Dependency
Login	EnterPushed	1. Value of app.EmailEdit (the content typed in the email edit box)	1. Show warning 2. Go to the update page	1. If user doesn't enter a valid email address, a warning will occur. 2. Store valid user email as app.userEmail, show it on all later pages, and jump to the update page		All function in the update page
Update	BrowsePushed	-	1. Show the selected path in the directory box	1. Allow user to browse and select the project directory to store index and temporary files.		All function in the update and download page except the Browse_2Pushed() and PreviewPushed() functions

Update	DirEditValueChanges	1. Value of app.DirEdit	1. Input path in the directory box 2. If user enters an invalid path, a warning will show up.	1. Allow user to type the path 2. If the entered path is invalid, show warning, otherwise, store the path in the app.projectDir		All function in the update and download page except the Browse_2Pushed() and PreviewPushed() functions
Update	CheckUpdatesPushed	1. app.userEmail 2. app.projectDir	1. app.updatelinks. 2. app.links 3. Show warning	1. Check the number of monthly mmf list files to update and store in the app.updatelinks. When no further updates are needed, check for number of links to download and store in the app.links. 2. If no updates are needed, the next button will show up, otherwise, the download button and the progress bar will show up.	1. Updatemmf() 2. BrowsePushed()/DirEditValueChanges() 3. EnterPushed	DownloadValueChanged()
Update	DownloadValueChanged	1. app.updatelinks 2. app.links	1. mmf.csv 2. form.csv	1. Generate mmf.csv that combines all monthly mmf lists since October 2016. 2. Generate form.csv as an index that include submission type (NMFP-2 or NMFP-2/A amendment form), report date, cik, registrant, series id, class id, name of issuer	1. getmmf() 2. getIndex() 3. EnterPushed() 4. BrowsePushed()/DirEditValueChanges() 5. CheckUpdatesPushed()	NextPushed()
Update	NextPushed	-	1. app.mmf	Go to the filter page where the mmf list	1. getmmf()	-

				is used as the index table, app.mmf.	2. getIndex() 3. EnterPushed() 4. BrowsePushed()/DirEditValueChanges() 5. CheckUpdatesPushed() 6. DownloadValueChanged (if app.update links is not null)	
Filter	FiltersValue Changed	1. app.mmf	1. Dropdown list for filter options	5 filter options: reporting period, registrant name, series name, series category, and class name. When selecting a filter, the area below will place the corresponding list for the unique values on top.	All previous functions	
Filter	ReportingPeriodValueCh anged/ RegistrantNameValueC hanged/ SeriesName ValueChang ed/	1. app.mmf	1. app.filters	When select filter options, the items for the rest of the filters will be changed based on the current option. The mmf list table in the right will also be adjusted based on the filters. Support multi select with control key pressed and click. All filter options are combined in a matrix called app.filters.	All previous functions	

	SeriesCategoryNameValueChanged/ClassNameValueChanged					
Filter	SelectAllPushed	1. app.mmf 2. app.filters	1. app.filters	Select/unselect all rows from the mmf list table		
Filter	ClearFiltersPushed	1. app.mmf 2. app.filters	1. app.filters	Reset all filters		
Filter	GetDataPushed	1. app.data	1. Go to the download page	At least one row needs to be selected	All previous functions	
Download	Browse_2Pushed		1. show the selected path in the directory box	The path for download.csv is the projectDir by default. If not, users may browse and select		
Download	ShowClassIdValueChanged/ShowSecurityValueChanged	1. app.data	1. press to show the unique class id or name of security issuer	1. Not showing the list refers to select all 2. The list support multiselect 3. Press the button again can close the drop list and select all again		
Download	ClassIdEditValueChanged/SecurityEditValueChanged	1. app.data	1. Show the class id or name of security issuer that contains the input value	Users may type in value and press enter to filter for certain classes or securities		
Download	Download_2Pushed	1. app.data 2. app.SelectAllNode 3. app.RepurchaseAgreement	1. download.csv (and repurchaseAgreement.csv)	Generating download.csv that contains the sections selected from the checknodes, within the class id and name of issuer search results, and with/without the repurchase agreement info.	getform()	
Download	PreviewPushed	1. app.dlDir	1. Go to the preview	This function and the functions in the	Browse_2Push	

oad	hed		page to show the download.csv in the app.dlDir	preview and visualization pages can be used independently. Users may only need to choose the app.dlDir.	ed()	
Preview	VisualizationPushed	1. app.dlDir	1. Go to the visualization page	<p>The chart on the visualization page is based on the table that provides specific date data of items selected. The available numeric items are:</p> <ol style="list-style-type: none"> 1. series:averagePortfolioMaturity 2. series:averageLifeMaturity 3. series:totalValueDailyLiquidAssets 4. series:totalValueWeeklyLiquidAsset 5. series:percentageDailyLiquidAssets 6. series:percentageWeeklyLiquidAssets 7. series:cash 8. series:totalValuePortfolioSecurities 9. series:amortizedCostPortfolioSecurities 10. series:totalValueOtherAssets 11. series:totalValueLiabilities 12. series:netAssetOfSeries 13. series:numberOfSharesOutstanding 14. series:stablePricePerShare 15. series:sevenDayGrossYield 16. series:netAssetValue 17. class:minInitialInvestment 18. class:netAssetsOfClass 19. class:numberOfSharesOutstanding 20. class:netAssetPerShare 21. class:weeklyGrossSubscriptions 22. class:weeklyGrossRedemptions 23. class:totalForTheMonthReported_w 	<ol style="list-style-type: none"> 1. Browse_2Pushed() 2. PreviewPushed 3. fridayData() 4. preview() 	

				eeklyGrossSubscriptions 24. class:totalForTheMonthReported_w eeklyGrossRedemptions 25. class:sevenDayNetYield 26. security:yieldOfTheSecurityAsOfRe portingDate 27. security:includingValueOfAnySpons orSupport 28. security:excludingValueOfAnySpons orSupport 29. security:percentageOfMoneyMarket FundNetAssets'		
	preview	1. app.dlDir 2. app.colors 3. app.colorsu m	1. chart 2. data table	Users may select target in the colors list, right click to change the specific color.		
	fridayData	1. data 2. variableNam e 3. group 4. check	1. table	A table that transforms Friday1/2/3/4/5 columns of the variableName from the data table to specific report date and group by the group attribute. The check attribute is for adjusting the prefix.		
	getform	1. link 2. projectDir 3. userEmail 4. repurchase_ opt 5. system	1. getform Object. (getform.basicInfo is the general, signature, and series sections that will be repeated in each row with either class section or security section. getform.form is the output table.)	Get the content of a NMFP-2 form from the link to the projectDir with the userEmail. The repurchase_opt decide whether the repurchse agreement info of securities will be included. System refers to the backslash or forward slash used in the system's default path format.		

	getIndex	<ol style="list-style-type: none"> 1. link 2. projectDir 3. userEmail 4. system 	<ol style="list-style-type: none"> 1. table 	Get a table (submission type, report date, cik, registrant, series id, class id, name of issuer) from the link to the projectDir with the userEmail and the default slash mark format.		
	updatemmf	<ol style="list-style-type: none"> 1. projectDir 2. userEmail 3. system 	<ol style="list-style-type: none"> 1. Cell arrays 	Check if the mmf.csv requires new monthly updates (href) from https://www.sec.gov/open/datasets-mmf.html and return the links and month-year of the required updates. If no mmf.csv in the projectDir, updates since October 2016 are needed.		
	getmmf	<ol style="list-style-type: none"> 1. projectDir 2. userEmail 3. token 4. system 	<ol style="list-style-type: none"> 1. table 	From the token href link extract the monthly mmf list. The regular xml files have less than 5 namespaces. When detecting number of namespaces more than that, go back to the https://www.sec.gov/open/datasets-mmf.html , and use the csv file of the month-year instead. The function also does the data cleaning job to make sure monthly mmf lists are ready to concatenate vertically.		