Conference Call Project Documentation (20211216)

Summary of Main Processing Pipeline (For First Time Runs)

	Task	Codes	Input	Output
1	**Download Raw Data**			
1.1	Download Thomson One's Conference Calls [L]	mouse_key_recorder.py automatic_download .py	-	O1: [yyyymmdd-yyyymmdd].pdf O2: [yyyymmdd-yyyymmdd].xls
2	**PDF Processing**			
2.1	Convert Conference Calls from .pdf to .txt [M]	pdftransfer.sh	O1	O3: [yyyymmdd-yyyymmdd].txt
2.2	Split Conference Call .txt files to separate out individual conference calls, and combine with report information from .xls files [M, L]	ParseCCpdf.jl	O3, O2	O4: [yyyymmdd-yyyymmdd].csv
3	**Keyword Identification**			
3.1	Download Compustat datasets [L]	-	-	O5: ciqcompany.sas7bdat O6: ciqcountrygeo. sas7bdat O7: wrds_gvkey.sas7bdat
3.2	Download Hassan dataset [L]	-	-	O8: Hassanfile_raw_ updated20219030.csv
3.3	Process Compustat and Hassan datasets into usable and truncated .csv files. [L]	convert_sas7bdattocsv.py join_compustatcsvfiles.py hassanfilecsv_viewable_ truncate.py	O5, O6, O7, O8	O9: ciqcompany.csv O10: ciqcountrygeo.csv O11: wrds_gvkey.csv O12: ciqcompany_merged withgvkeyandcountry.csv O13: Hassanfile_raw_ updated20219030 _truncated.csv
3.4	Make a folder structure with x groups and move .csv files into the folders (default: x = 50) [M, L]	mkdir.py dividefilesequallyinto folders.py	O4	O14: a set of folders {group[i]} where csv files are divided between the groups
3.5	Make a list of keywords and template entry file [L]	-	-	O15: keyterms.txt O16: Entry mask.xlsx
3.6	Identify keywords for the whole CC data.	CC_identify_keywords.py	O14, O15	O17: a set of folders Full_Identified_

				Keywords/group[i]/Full_Identified_[i].parquet.gzip
3.7	Concatenating all these files into a single dataset.	concatenateOutputs.py	O17	O18: Full_Master_Keywords.csv
3.8	Filter based on a more exact keyword identification algorithm (rather than just checking in, doing a holistic check by looking at the spaces around the keyword)	getCorrect.py	O18	O19: Amended_Correct_No_IR.csv
3.9	Filter based on the presence of a percentage (the words percent, per cent, percentage, %) and then order based on the sorting rule provided.	ordering_and_filtering.py	O19	O20: Filtered_Ordered_Amended_Correct_No_IR.csv
3.10	Convert current paragraphs and conference call information into entry files format	convertFilteredOrderedAmendedCorrectNoIR_to_TotalCircNew.py convertTotalCircNew_to_Cric1newtotal.py convertCric1newtotal_to_entryfilescombined.py	O20	O21: entryfilescombined_withoutgvkey.xlsx
4	**Firm Identification (Firm Name and Gvkey Matching)**			
4.1	Perform the fuzzy matching between the Hassan/Compustat and the CC datasets.	cc_fuzzy_match_part1.py cc_fuzzy_match_part2.py	O21, O13, O12	O22: updated_matched_conf_calls_match.xlsx O23: updated_unmatched_conf_calls_match.xlsx
4.2	Do manual matching for unconfirmed cases	-	O23	O24: Filled_Updated_CC_Compustat_FuzzyMatchCandidates.xlsx O25: Filled_Updated_CC_Hassan_FuzzyMatchCandidates.xlsx
4.3	Combine manually matched cases with	cc_fuzzy_match_part2.py	O22, O24, O25	O26: manual_full_updated_

	results from fuzzy matching			conf_calls.xlsx
4.4	Make a paragraph record file that splits the number of entries into groups of 500 [L]	make_paragraphrecord.py	O26	O27: paragraphrecord.xlsx
4.5	Bold the keywords and separate file into “entryfiles”, each containing 500 entries. [M, L]	makeentryfiles.py makeentryfiles.sh	O27, O26, O15, O16	O28: A set of entryfiles, [i].xlsx
4.6	Combine entry files [L]	combine_entryfilesjason.py combine_entryfilessixun.py combine_sixunand jasonentryfiles.py	O28	O29: entryfiles_ combined.xlsx
5	**Get Front Page Descriptions**			
5.1	Extract front page descriptions from conference calls [M, L]	extractdescriptioninfront page.py extractdescriptioninfront page.sh copyfiles.py copyfiles.sh	O29, O3, O2	O30: [yyyymmdd-yyyymmdd]_withfront pagedesc.xlsx
5.2	Manually check through error cases and correct accordingly [L]	-	O30	O31: [yyyymmdd-yyyymmdd]_withfront pagedesc.xlsx
5.3	Combine xls files [L]	combine_xlsfiles_with description.py	O31	O32: xlscombined_with frontpagedescription .xlsx
5.4	Match and add front page descriptions to combined entry files [L]	-	O32, O29	O33: entryfiles_combined _withfrontpagedesc.xlsx (updated)

* M = Mercury, L = Local. [M] / [L] means this stage can be run on Mercury / locally (on your Booth Windows laptop) respectively. [M, L] means this stage can be run on both Mercury and your local laptop, where Mercury is preferred for large datasets and local is preferred for initial testing, debugging and small datasets.

1. Download Raw Data

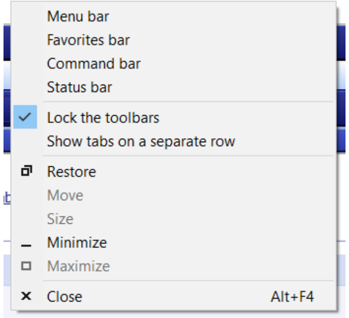
1.1 Download Thomson One's Conference Calls [L]

The goal is to download conference calls from Thomson One. This includes both the pdf files containing the actual calls, and xls files containing identifiers.

The main obstacles are that: (1) each page will only show 50 conference calls, (2) a maximum of 2,000 conference calls will be presented for every search, (3) web drivers are prohibited / web scraping doesn't work. The current solution is thus to write a python file that does auto-clicking, and this is automatic_download.py.

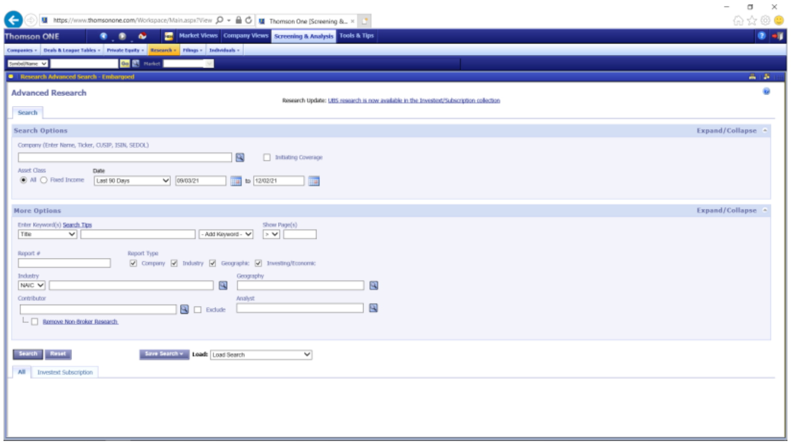
Before running the code:

- Open Internet Explorer (no other browers are allowed) to access Thomson One (proxy.uchicago.edu/login/thomsonone).
- Ensure that your browser settings are configured to enable the code to work. The goal is to hide away extraneous elements on the screen, so that no scrolling is needed to be able to click on all co-ordinates.
- The current code works for the Booth laptop, Lenono Thinkpad X1 Extreme (Windows 10) that is not connected to a HDMI screen. If it is connected to another screen, the current saved co-ordinates will likely be off. The screen resolution details (https://whatsmyscreensize.com/):
    - Screen Resolution
    - Width: 1920
    - Height: 1080
    - Device Pixel Ratio: 1.25
    - Display Dimensions (width x height): 16.0" x 9.0"
    - Screen Diagonal: 18.4" Screen
- The settings that worked for this set-up are:
    - Windows Taskbar: "Automatically hide the taskbar in desktop mode" is turned on
    - Internet Explorer settings: 125% zoom + the following



Menu bar
Favorites bar
Command bar
Status bar
✓ Lock the toolbars
Show tabs on a separate row
Restore
Move
Size
Minimize
Maximize
Close Alt+F4

    - So that the screen looks like this:



Advanced Research

Research Update: UBS research is now available in the Investext/Subscription collection

Search Options

Company (Enter Name, Ticker, CUSIP, ISIN, SEDOL)

□ Initiating Coverage

Asset Class: ● All ○ Fixed Income

Date: Last 90 Days 09/03/21 to 12/02/21

More Options

Enter Keyword(s): Title - Add Keyword -

Show Page(s): >

Report #

Report Type: ☑ Company ☑ Industry ☑ Geographic ☑ Investing/Economic

Industry: NAIC

Geography

Contributor: □ Exclude

Analyst

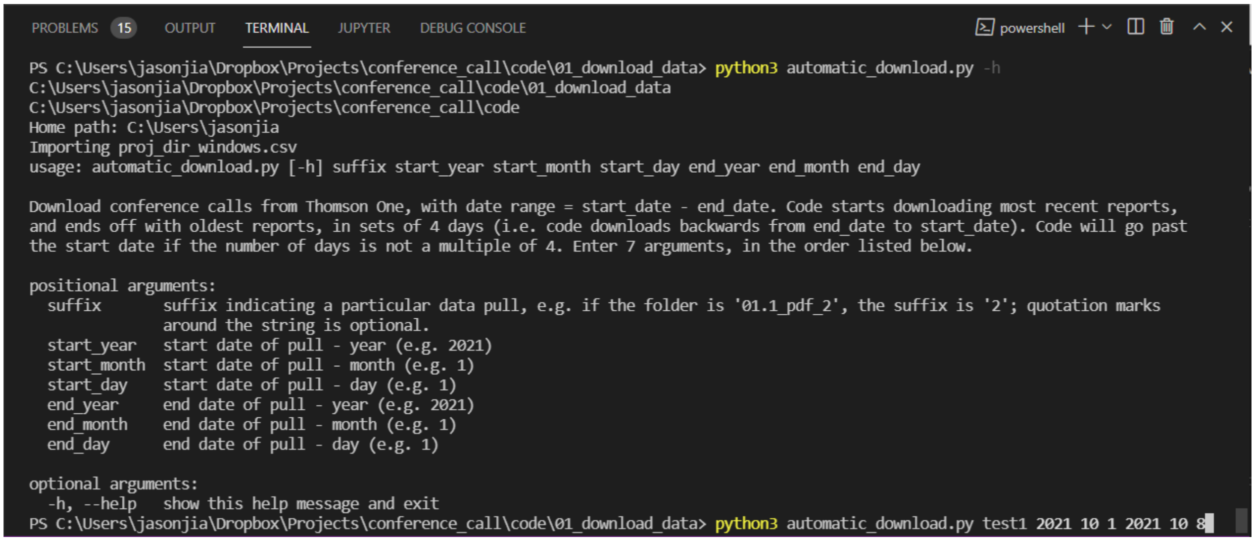
□ Remove Non-Broker Research

Load: Load Search

- Create the necessary folders to store your output
  - Store the folders in: conference_call\output\01_download_cc
  - The root names are 01.1_pdf and 01.1_xls.
  - The suffix is used to separate different data pulls. Decide on a suffix.
  - Then create the two folders: “01.1_pdf_[suffix]” and “01.1_xls_[suffix]”.

To run the code:

- Open a terminal.
- Cd to “conference_call\code\01_download_data”.
- Run automatic_download.py, specifying the suffix, the start date (year, month, day) and the end date year, month, day):
  - E.g. python3 automatic_download.py test1 2021 10 1 2021 10 8



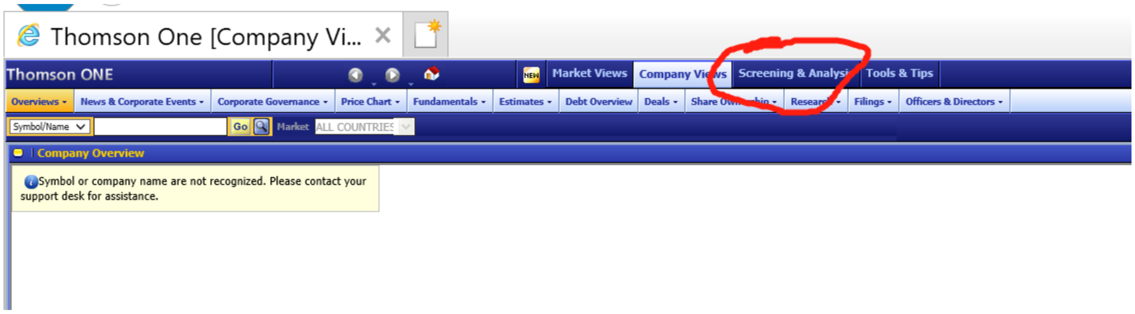
```
PS C:\Users\jasonjia\Dropbox\Projects\conference_call\code\01_download_data> python3 automatic_download.py -h
C:\Users\jasonjia\Dropbox\Projects\conference_call\code\01_download_data
C:\Users\jasonjia\Dropbox\Projects\conference_call\code
Home path: C:\Users\jasonjia
Importing proj_dir_windows.csv
usage: automatic_download.py [-h] suffix start_year start_month start_day end_year end_month end_day

Download conference calls from Thomson One, with date range = start_date - end_date. Code starts downloading most recent reports,
and ends off with oldest reports, in sets of 4 days (i.e. code downloads backwards from end_date to start_date). Code will go past
the start date if the number of days is not a multiple of 4. Enter 7 arguments, in the order listed below.

positional arguments:
  suffix       suffix indicating a particular data pull, e.g. if the folder is '01.1_pdf_2', the suffix is '2'; quotation marks
               around the string is optional.
  start_year   start date of pull - year (e.g. 2021)
  start_month  start date of pull - month (e.g. 1)
  start_day    start date of pull - day (e.g. 1)
  end_year     end date of pull - year (e.g. 2021)
  end_month    end date of pull - month (e.g. 1)
  end_day      end date of pull - day (e.g. 1)

optional arguments:
  -h, --help   show this help message and exit
PS C:\Users\jasonjia\Dropbox\Projects\conference_call\code\01_download_data> python3 automatic_download.py test1 2021 10 1 2021 10 8
```

When running the code:

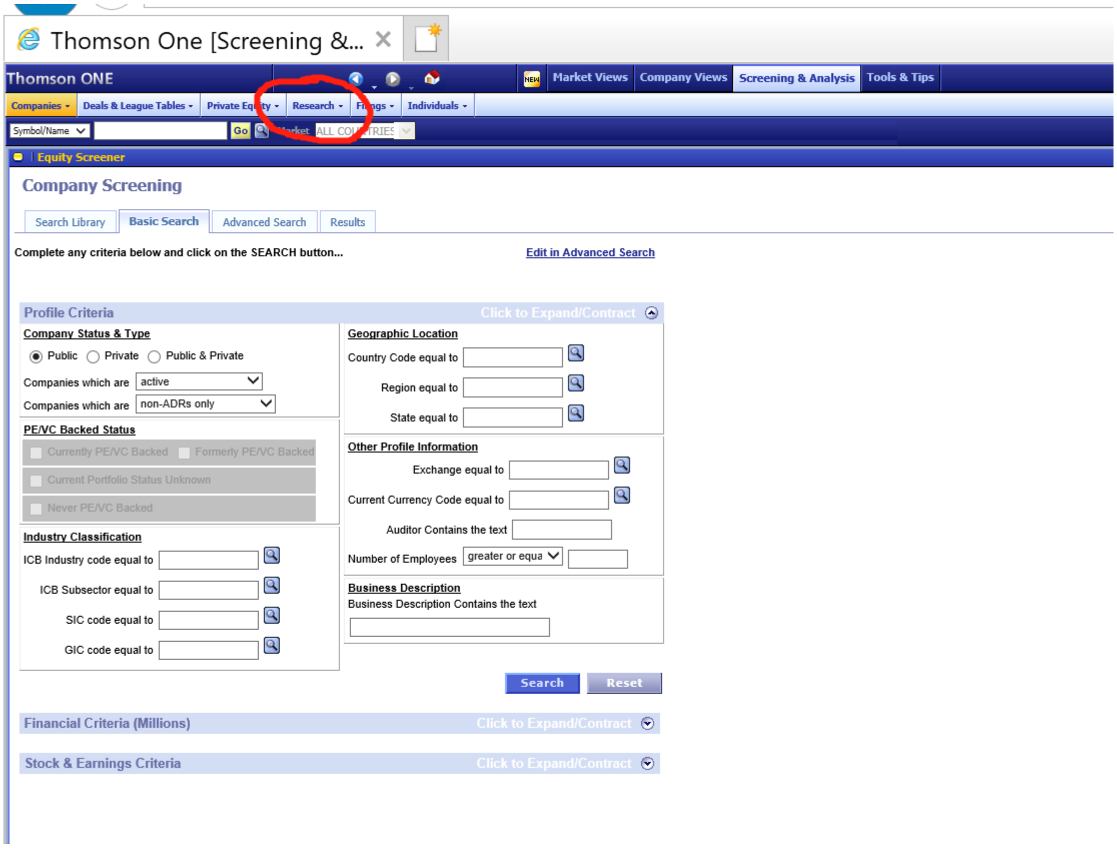
The main loop of the code tries to do the following:

(a) Enter search details

- Click on Screening & Analysis -> Research



Symbol or company name are not recognized. Please contact your support desk for assistance.



Complete any criteria below and click on the SEARCH button...

Company Status & Type

● Public ○ Private ○ Public & Private

Companies which are: active

Companies which are: non-ADRs only

PE/VC Backed Status

□ Currently PE/VC Backed □ Formerly PE/VC Backed

□ Current Portfolio Status Unknown

□ Never PE/VC Backed

Industry Classification

ICB Industry code equal to

ICB Subsector equal to

SIC code equal to

GIC code equal to

Geographic Location

Country Code equal to

Region equal to

State equal to

Other Profile Information

Exchange equal to

Current Currency Code equal to

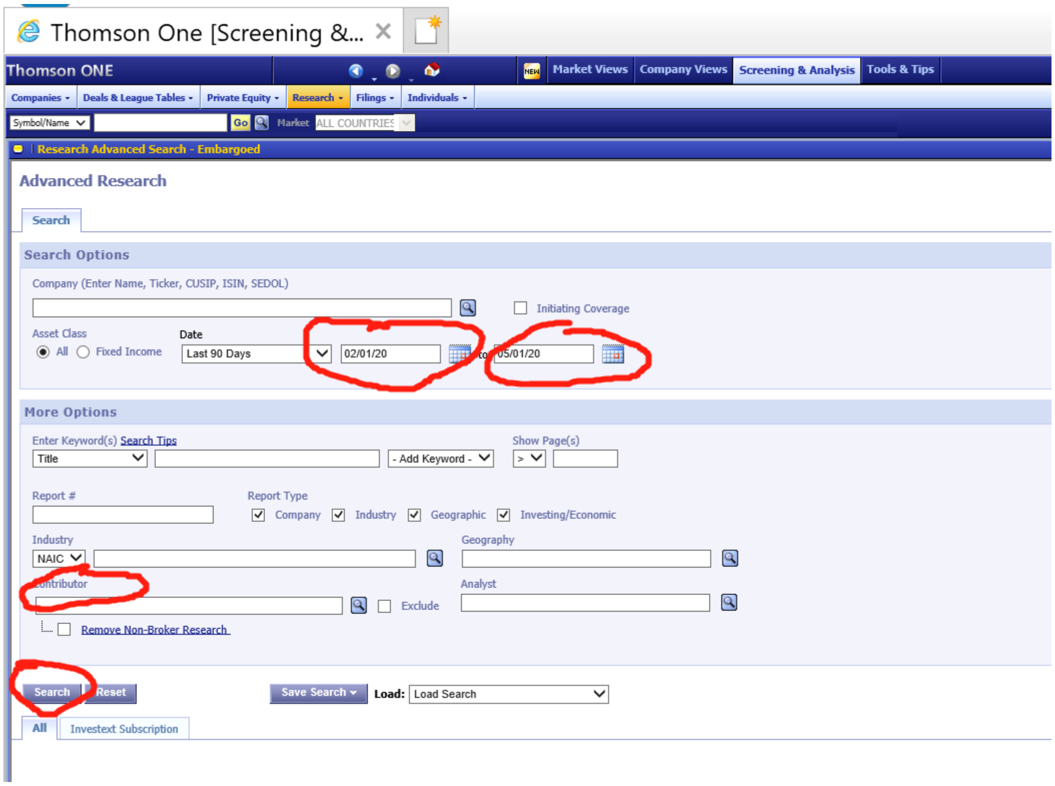
Auditor Contains the text

Number of Employees: greater or equa

Business Description

Business Description Contains the text

- Click on the Contributor field
- Type Streetevents in the Contributor field
- Click “Refinitiv Streetevents” in the drop-down list
    - Used to be “Thomson Reuter Streetevents” and may be something else in the future. More importantly, there should only be one option containing Streetevents, and it should be the correct option.
- Click on the start date field
- Type the start date
- Click on the end date field
- Type the end date
    - A 4-day time interval is used to ensure that each search gives no more than 2,000 calls.
- Press enter, which is equivalent to clicking the search button.



Symbol/Name

Market: ALL COUNTRIES

Company (Enter Name, Ticker, CUSIP, ISIN, SEDOL)

□ Initiating Coverage

Asset Class: ● All ○ Fixed Income

Date: Last 90 Days 02/01/20 to 05/01/20

Enter Keyword(s): Title; - Add Keyword -

Show Page(s): >

Report #

Report Type: ☑ Company ☑ Industry ☑ Geographic ☑ Investing/Economic

Industry: NAIC

Geography

Contributor

□ Exclude

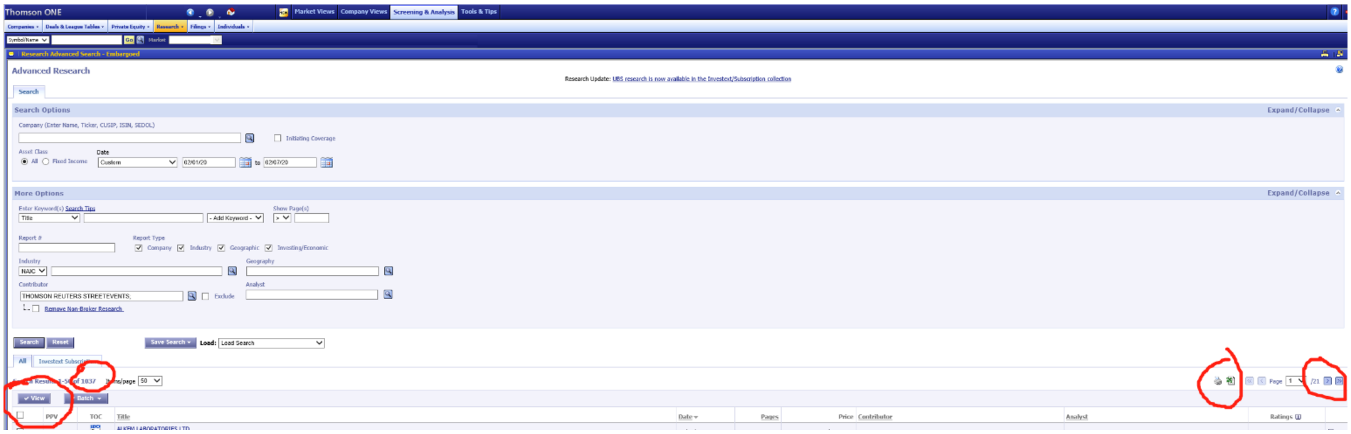
Analyst

□ Remove Non-Broker Research

Load: Load Search

(b) Download the pdfs and xls files

- Copy the number of calls given by the search, save the number into a separate data set, and calculate the number of pages.
- Select all calls in one page
- Download the pdf file with all calls in that page into 01.1/pdf_[suffix]
- Download the xls file which contains information of each call into 01.1/xls_[suffix].
- To ensure that pdf and xls files are in pairs, check the existence of files in the folders.
- If there are some errors, the code will restart the process (by typing in the login websites, and automatically finishing the access steps.
- Uncheck all calls, click next page, repeat (b). If this is the last page of the date period, go back to (a) with date moving backwards.



Research Update: UBS research is now available in the Investext/Subscription collection

Company (Enter Name, Ticker, CUSIP, ISIN, SEDOL)

□ Initiating Coverage

Asset Class: ● All ○ Fixed Income

Date: Custom 02/01/20 to 02/07/20

Enter Keyword(s): Title; - Add Keyword -

Show Page(s): >

Report #

Report Type: ☑ Company ☑ Industry ☑ Geographic ☑ Investing/Economic

Industry: NAIC

Geography

Contributor: THOMSON REUTERS STREETEVENTS;

□ Exclude

Analyst

□ Remove Non-Broker Research

Load: Load Search

Search Results 1-50 of 1037 Items/page 50

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Errors Handling

Errors can happen for many reasons, e.g. (1) automatic log off, (2) sudden network error, (3) system authentication error (log in failure), (4) change of file orders in the subsequent login, and (5) broken or corrupted files, and (6) unsuccessful download of files. The point is that some "manual coaxing" is necessary to help the code run smoothly from start to end.

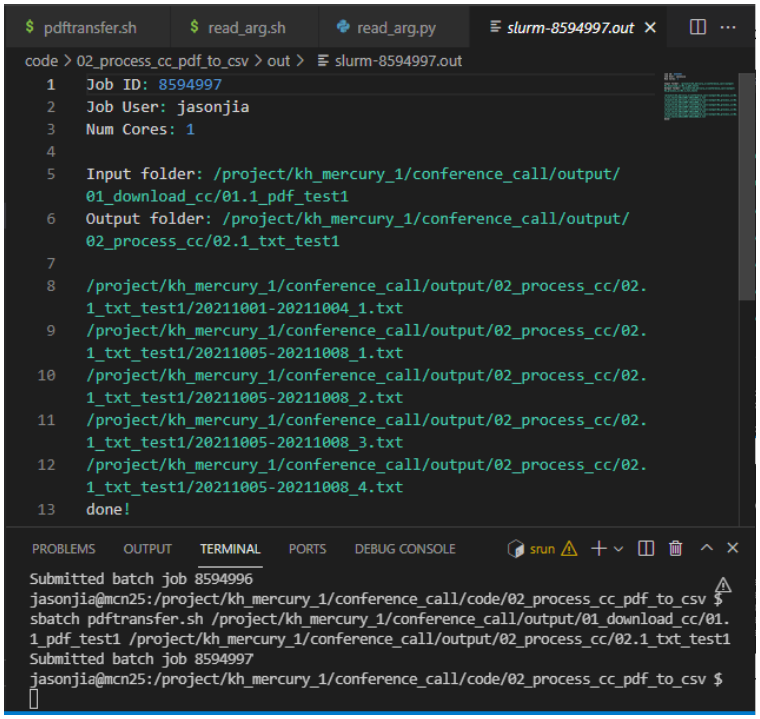
It is possible to try to account for all the errors, but from practical experience, the benefit of fewer errors, relative to the cost of more complex and harder-to-maintain code, diminishes quickly. We thus choose the following approach:

- If files fail to download, there is a time interval where the code will pause, for you to manually click to the correct state. Then, the code will try to save the file again.
- For all other errors, stop the code, get back into a workable state, and then rerun the code with a now truncated time frame.

2. PDF Processing

2.1 Convert Conference Calls from .pdf to .txt [M]

- Copy over the pdf and xls files to Mercury
- Run pdftransfer.sh on Mercury, specifying the full location of the input folder and the output folder
    - cd "conference_call/code/02_process_cc_pdf_to_csv"
    - sbatch pdftransfer.sh [input folder] [output folder]
- The important command is pdftotext, a Linux command that converts pdf to txt files. It also adds page and paragraph delimiters, which helps split the txt files by conference call later on.



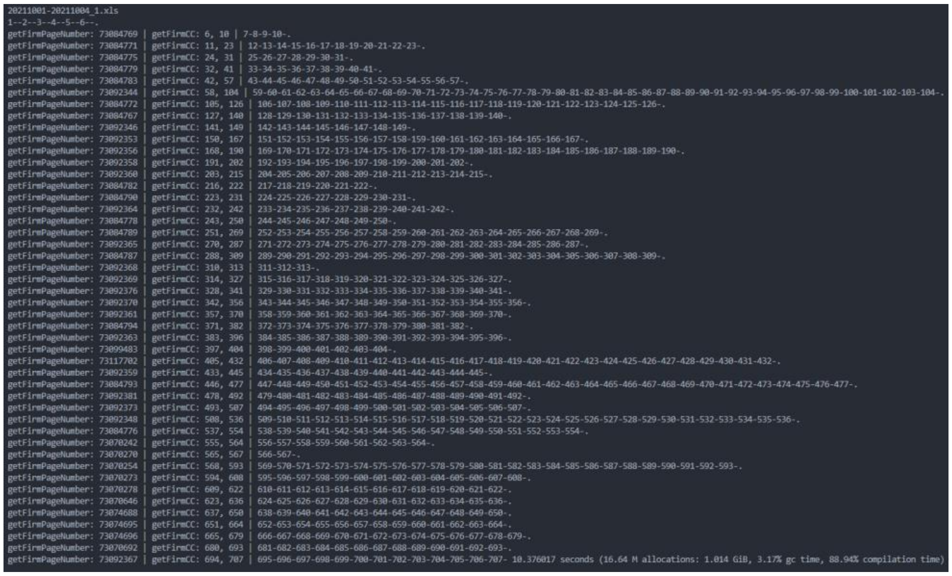
```
Job ID: 8594997
Job User: jasonjia
Num Cores: 1

Input folder: /project/kh_mercury_1/conference_call/output/
01_download_cc/01.1_pdf_test1
Output folder: /project/kh_mercury_1/conference_call/output/
02_process_cc/02.1_txt_test1

/project/kh_mercury_1/conference_call/output/02_process_cc/02.
1_txt_test1/20211001-20211004_1.txt
/project/kh_mercury_1/conference_call/output/02_process_cc/02.
1_txt_test1/20211005-20211008_1.txt
/project/kh_mercury_1/conference_call/output/02_process_cc/02.
1_txt_test1/20211005-20211008_2.txt
/project/kh_mercury_1/conference_call/output/02_process_cc/02.
1_txt_test1/20211005-20211008_3.txt
/project/kh_mercury_1/conference_call/output/02_process_cc/02.
1_txt_test1/20211005-20211008_4.txt
done!
```

```
Submitted batch job 8594996
jasonjia@mcn25:/project/kh_mercury_1/conference_call/code/02_process_cc_pdf_to_csv $
sbatch pdftransfer.sh /project/kh_mercury_1/conference_call/output/01_download_cc/01.
1_pdf_test1 /project/kh_mercury_1/conference_call/output/02_process_cc/02.1_txt_test1
Submitted batch job 8594997
jasonjia@mcn25:/project/kh_mercury_1/conference_call/code/02_process_cc_pdf_to_csv $
```

- The txt files will be in the output folder

2.2 Split Conference Call .txt files to separate out individual conference calls, and combine with report information from .xls files [M, L]

- Copy over the txt files to Dropbox
- Run ParseCCpdf.jl
- Print messages have been added so you can see how the pdf files are processed. An example is given below:



```
20211001-20211004_1.xls
1--2--3--4--5--6--.
getFirmPageNumber: 73084769 | getFirmCC: 6, 10 | 7-8-9-10-.
getFirmPageNumber: 73084771 | getFirmCC: 11, 23 | 12-13-14-15-16-17-18-19-20-21-22-23-.
getFirmPageNumber: 73084775 | getFirmCC: 24, 31 | 25-26-27-28-29-30-31-.
getFirmPageNumber: 73084779 | getFirmCC: 32, 41 | 33-34-35-36-37-38-39-40-41-.
getFirmPageNumber: 73084783 | getFirmCC: 42, 57 | 43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-.
getFirmPageNumber: 73092344 | getFirmCC: 58, 104 | 59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-.
getFirmPageNumber: 73084772 | getFirmCC: 105, 126 | 106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-.
getFirmPageNumber: 73084767 | getFirmCC: 127, 140 | 128-129-130-131-132-133-134-135-136-137-138-139-140-.
getFirmPageNumber: 73092346 | getFirmCC: 141, 149 | 142-143-144-145-146-147-148-149-.
getFirmPageNumber: 73092353 | getFirmCC: 150, 167 | 151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-.
getFirmPageNumber: 73092356 | getFirmCC: 168, 190 | 169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-.
getFirmPageNumber: 73092358 | getFirmCC: 191, 202 | 192-193-194-195-196-197-198-199-200-201-202-.
getFirmPageNumber: 73092360 | getFirmCC: 203, 215 | 204-205-206-207-208-209-210-211-212-213-214-215-.
getFirmPageNumber: 73084782 | getFirmCC: 216, 222 | 217-218-219-220-221-222-.
getFirmPageNumber: 73084790 | getFirmCC: 223, 231 | 224-225-226-227-228-229-230-231-.
getFirmPageNumber: 73092364 | getFirmCC: 232, 242 | 233-234-235-236-237-238-239-240-241-242-.
getFirmPageNumber: 73084778 | getFirmCC: 243, 250 | 244-245-246-247-248-249-250-.
getFirmPageNumber: 73084789 | getFirmCC: 251, 269 | 252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-.
getFirmPageNumber: 73092365 | getFirmCC: 270, 287 | 271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-.
getFirmPageNumber: 73084787 | getFirmCC: 288, 309 | 289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-.
getFirmPageNumber: 73092368 | getFirmCC: 310, 313 | 311-312-313-.
getFirmPageNumber: 73092369 | getFirmCC: 314, 327 | 315-316-317-318-319-320-321-322-323-324-325-326-327-.
getFirmPageNumber: 73092376 | getFirmCC: 328, 341 | 329-330-331-332-333-334-335-336-337-338-339-340-341-.
getFirmPageNumber: 73092370 | getFirmCC: 342, 356 | 343-344-345-346-347-348-349-350-351-352-353-354-355-356-.
getFirmPageNumber: 73092361 | getFirmCC: 357, 370 | 358-359-360-361-362-363-364-365-366-367-368-369-370-.
getFirmPageNumber: 73084794 | getFirmCC: 371, 382 | 372-373-374-375-376-377-378-379-380-381-382-.
getFirmPageNumber: 73092363 | getFirmCC: 383, 396 | 384-385-386-387-388-389-390-391-392-393-394-395-396-.
getFirmPageNumber: 73099483 | getFirmCC: 397, 404 | 398-399-400-401-402-403-404-.
getFirmPageNumber: 73117702 | getFirmCC: 405, 432 | 406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-.
getFirmPageNumber: 73092359 | getFirmCC: 433, 445 | 434-435-436-437-438-439-440-441-442-443-444-445-.
getFirmPageNumber: 73084793 | getFirmCC: 446, 477 | 447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-.
getFirmPageNumber: 73092381 | getFirmCC: 478, 492 | 479-480-481-482-483-484-485-486-487-488-489-490-491-492-.
getFirmPageNumber: 73092373 | getFirmCC: 493, 507 | 494-495-496-497-498-499-500-501-502-503-504-505-506-507-.
getFirmPageNumber: 73092348 | getFirmCC: 508, 536 | 509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-.
getFirmPageNumber: 73084776 | getFirmCC: 537, 554 | 538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-.
getFirmPageNumber: 73070242 | getFirmCC: 555, 564 | 556-557-558-559-560-561-562-563-564-.
getFirmPageNumber: 73070270 | getFirmCC: 565, 567 | 566-567-.
getFirmPageNumber: 73070254 | getFirmCC: 568, 593 | 569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-.
getFirmPageNumber: 73070273 | getFirmCC: 594, 608 | 595-596-597-598-599-600-601-602-603-604-605-606-607-608-.
getFirmPageNumber: 73070278 | getFirmCC: 609, 622 | 610-611-612-613-614-615-616-617-618-619-620-621-622-.
getFirmPageNumber: 73070646 | getFirmCC: 623, 636 | 624-625-626-627-628-629-630-631-632-633-634-635-636-.
getFirmPageNumber: 73074688 | getFirmCC: 637, 650 | 638-639-640-641-642-643-644-645-646-647-648-649-650-.
getFirmPageNumber: 73074695 | getFirmCC: 651, 664 | 652-653-654-655-656-657-658-659-660-661-662-663-664-.
getFirmPageNumber: 73074696 | getFirmCC: 665, 679 | 666-667-668-669-670-671-672-673-674-675-676-677-678-679-.
getFirmPageNumber: 73070692 | getFirmCC: 680, 693 | 681-682-683-684-685-686-687-688-689-690-691-692-693-.
getFirmPageNumber: 73092367 | getFirmCC: 694, 707 | 695-696-697-698-699-700-701-702-703-704-705-706-707- 10.376017 seconds (16.64 M allocations: 1.014 GiB, 3.17% gc time, 88.94% compilation time)
```

- The output will be csv files that can be thought of as .xls files combined with the conference call text. This serves as the “primary database” containing the following variables: Title (firm name), Subtitle (firm name, date, and whether final/primary transcripts), Date, Pages (the number of pages of the call), Analyst (analysts who collect these transcripts, different analysts have slightly different forms of transcripts.), Report (Unique report number), Call (Raw call transcripts).
- The code:
  - Start from the delimiters contained in the .txt file to identify pages
  - Use title and pages in the information file to locate the beginning and end of each conference call.
  - Generate a new variable in the information file to store the raw call scripts.

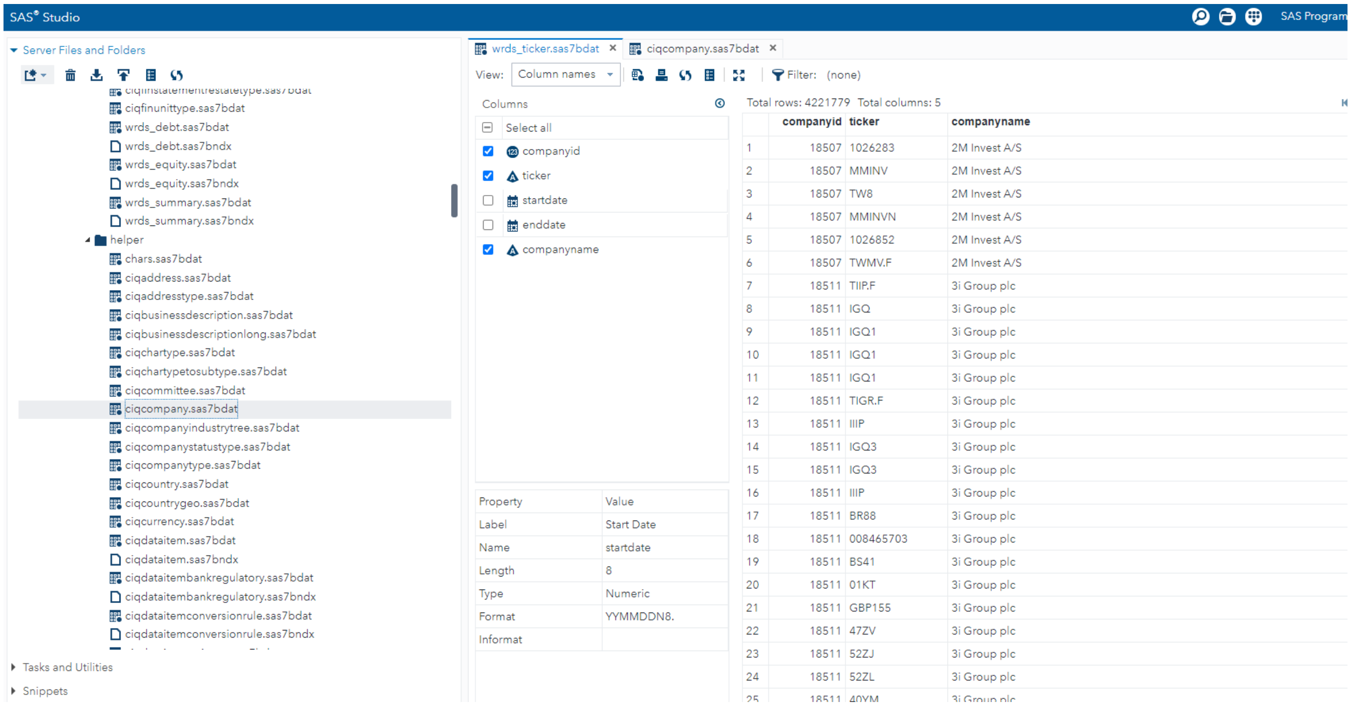
3 Firm Identification (Firm Name and Gvkey Matching)

3.1 Download Compustat datasets [L]

- This step aims to match firms in conference calls to gvkeys, a unique firm identifier, as well as country information. In the xls (and csv) files, the 'title' variable gives the firm name associated with a particular conference call.
- Gvkeys are found in the Compustat – Capital IQ datasets. Access the database using Wharton Research Data Services (WRDS).

Steps:

- Register for an account and wait for approval by the IT team: https://wrds-www.wharton.upenn.edu/register/
- Sign into the SAS-studio web application: https://wrds-www.wharton.upenn.edu/pages/data/sasstudio-wrds/
- On the left, there is a folder directory, titled "Server Files and Folder".
- Capital-IQ auxiliary files are located at Files -> wrds/capitaliq/sasdata/helper.



ciqfinstatementrestatetype.sas7bdat
ciqfinunittype.sas7bdat
wrds_debt.sas7bdat
wrds_debt.sas7bndx
wrds_equity.sas7bdat
wrds_equity.sas7bndx
wrds_summary.sas7bdat
wrds_summary.sas7bndx
helper
chars.sas7bdat
ciqaddress.sas7bdat
ciqaddresstype.sas7bdat
ciqbusinessdescription.sas7bdat
ciqbusinessdescriptionlong.sas7bdat
ciqchartype.sas7bdat
ciqchartypetosubtype.sas7bdat
ciqcommittee.sas7bdat
ciqcompany.sas7bdat
ciqcompanyindustrytree.sas7bdat
ciqcompanystatustype.sas7bdat
ciqcompanytype.sas7bdat
ciqcountry.sas7bdat
ciqcountrygeo.sas7bdat
ciqcurrency.sas7bdat
ciqdataitem.sas7bdat
ciqdataitem.sas7bndx
ciqdataitembankregulatory.sas7bdat
ciqdataitembankregulatory.sas7bndx
ciqdataitemconversionrule.sas7bdat
ciqdataitemconversionrule.sas7bndx

Columns

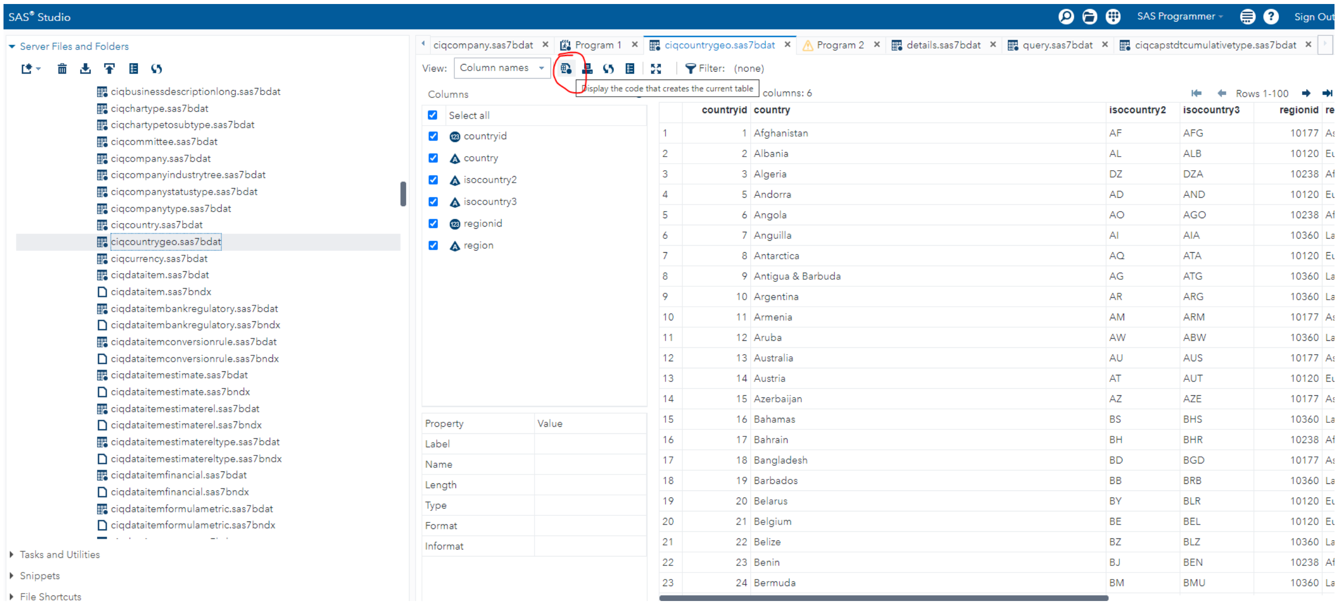
□ Select all
☑ companyid
☑ ticker
□ startdate
□ enddate
☑ companyname

Property	Value
Label	Start Date
Name	startdate
Length	8
Type	Numeric
Format	YYMMDDN8.
Informat	

Total rows: 4221779 Total columns: 5

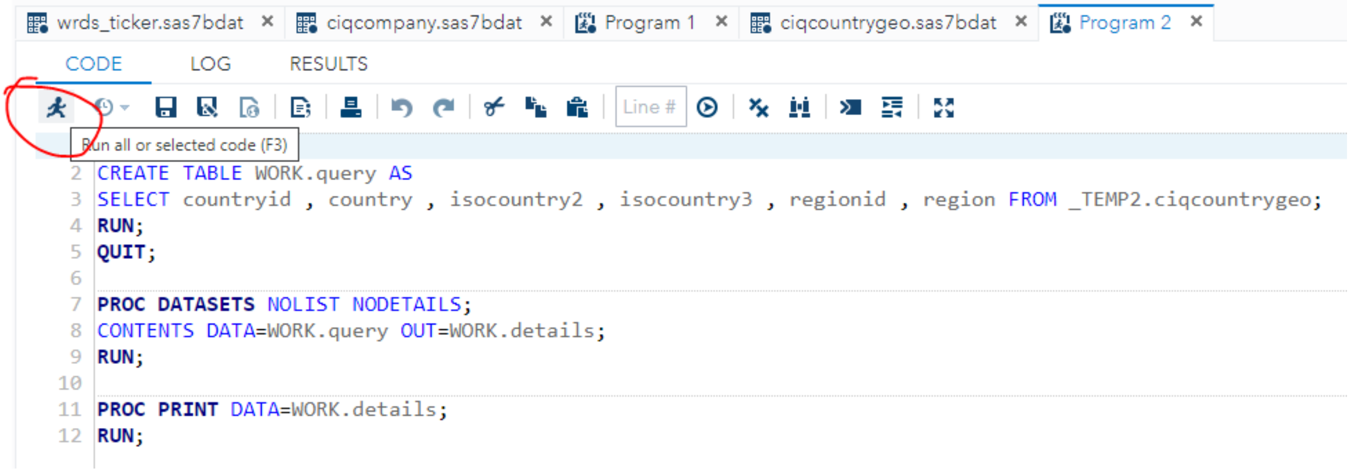
	companyid	ticker	companyname
1	18507	1026283	2M Invest A/S
2	18507	MMINV	2M Invest A/S
3	18507	TW8	2M Invest A/S
4	18507	MMINVN	2M Invest A/S
5	18507	1026852	2M Invest A/S
6	18507	TWMV.F	2M Invest A/S
7	18511	TIIP.F	3i Group plc
8	18511	IGQ	3i Group plc
9	18511	IGQ1	3i Group plc
10	18511	IGQ1	3i Group plc
11	18511	IGQ1	3i Group plc
12	18511	TIGR.F	3i Group plc
13	18511	IIIP	3i Group plc
14	18511	IGQ3	3i Group plc
15	18511	IGQ3	3i Group plc
16	18511	IIIP	3i Group plc
17	18511	BR88	3i Group plc
18	18511	008465703	3i Group plc
19	18511	BS41	3i Group plc
20	18511	01KT	3i Group plc
21	18511	GBP155	3i Group plc
22	18511	47ZV	3i Group plc
23	18511	52ZJ	3i Group plc
24	18511	52ZL	3i Group plc
25	18511	40YM	3i Group plc

- Open the desired table.
- Select the desired columns.
- The best way to download data is to create Query (right mouse button on a table ⇒ new ⇒ Query).
- Downloading Query's result is a little bit tricky, since you can only print the result. The result is located in user's temporary folder.
- Click the button to "display the code that creates the current table".


SAS® Studio
SAS Programmer
Sign Out
Server Files and Folders
ciqbusinessdescriptionlong.sas7bdat
ciqchartype.sas7bdat
ciqchartypetosubtype.sas7bdat
ciqcommittee.sas7bdat
ciqcompany.sas7bdat
ciqcompanyindustrytree.sas7bdat
ciqcompanystatustype.sas7bdat
ciqcompanytype.sas7bdat
ciqcountry.sas7bdat
ciqcountrygeo.sas7bdat
ciqcurrency.sas7bdat
ciqdataitem.sas7bdat
ciqdataitem.sas7bndx
ciqdataitembankregulatory.sas7bdat
ciqdataitembankregulatory.sas7bndx
ciqdataitemconversionrule.sas7bdat
ciqdataitemconversionrule.sas7bndx
ciqdataitemestimate.sas7bdat
ciqdataitemestimate.sas7bndx
ciqdataitemestimaterel.sas7bdat
ciqdataitemestimaterel.sas7bndx
ciqdataitemestimatereltype.sas7bdat
ciqdataitemestimatereltype.sas7bndx
ciqdataitemfinancial.sas7bdat
ciqdataitemfinancial.sas7bndx
ciqdataitemformulametric.sas7bdat
ciqdataitemformulametric.sas7bndx
Tasks and Utilities
Snippets
File Shortcuts
ciqcompany.sas7bdat
Program 1
ciqcountrygeo.sas7bdat
Program 2
details.sas7bdat
query.sas7bdat
ciqcapstdtcumulativetype.sas7bdat
View: Column names
Display the code that creates the current table
Filter: (none)
Columns
Select all
countryid
country
isocountry2
isocountry3
regionid
region
Property
Value
Label
Name
Length
Type
Format
Informat
columns: 6
Rows 1-100

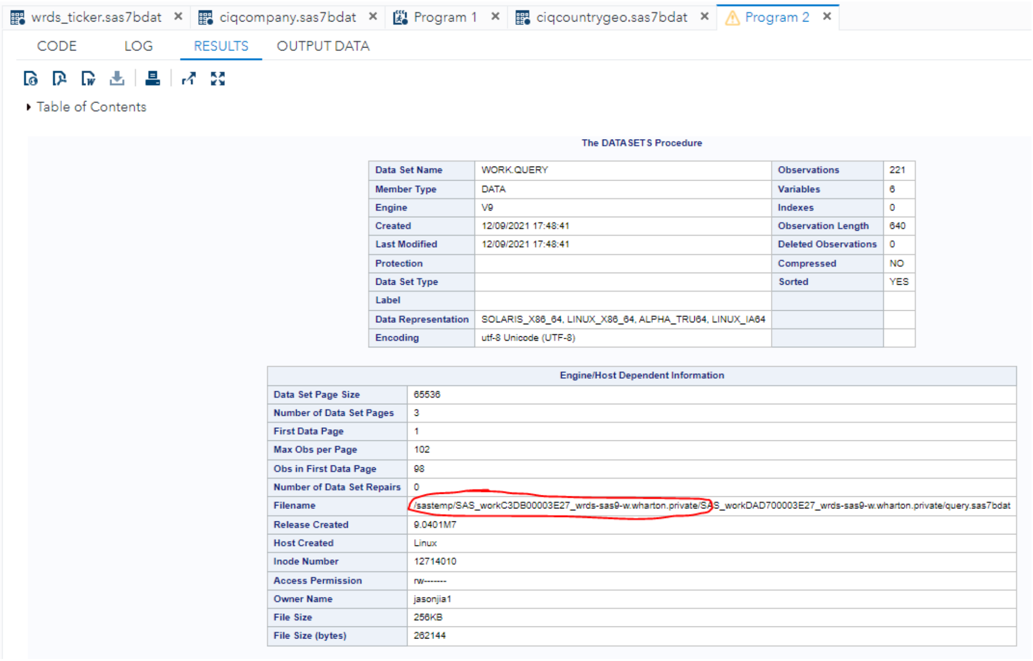
	countryid	country	isocountry2	isocountry3	regionid	re
1	1	Afghanistan	AF	AFG	10177	As
2	2	Albania	AL	ALB	10120	Eu
3	3	Algeria	DZ	DZA	10238	Af
4	5	Andorra	AD	AND	10120	Eu
5	6	Angola	AO	AGO	10238	Af
6	7	Anguilla	AI	AIA	10360	La
7	8	Antarctica	AQ	ATA	10120	Eu
8	9	Antigua & Barbuda	AG	ATG	10360	La
9	10	Argentina	AR	ARG	10360	La
10	11	Armenia	AM	ARM	10177	As
11	12	Aruba	AW	ABW	10360	La
12	13	Australia	AU	AUS	10177	As
13	14	Austria	AT	AUT	10120	Eu
14	15	Azerbaijan	AZ	AZE	10177	As
15	16	Bahamas	BS	BHS	10360	La
16	17	Bahrain	BH	BHR	10238	Af
17	18	Bangladesh	BD	BGD	10177	As
18	19	Barbados	BB	BRB	10360	La
19	20	Belarus	BY	BLR	10120	Eu
20	21	Belgium	BE	BEL	10120	Eu
21	22	Belize	BZ	BLZ	10360	La
22	23	Benin	BJ	BEN	10238	Af
23	24	Bermuda	BM	BMU	10360	La

- 3) run the code



```
CREATE TABLE WORK.query AS
SELECT countryid , country , isocountry2 , isocountry3 , regionid , region FROM _TEMP2.ciqcountrygeo;
RUN;
QUIT;

PROC DATASETS NOLIST NODETAILS;
CONTENTS DATA=WORK.query OUT=WORK.details;
RUN;

PROC PRINT DATA=WORK.details;
RUN;
```

- 4) Result window → Engine/Host Dependent Information → filename shows your temporary folder.

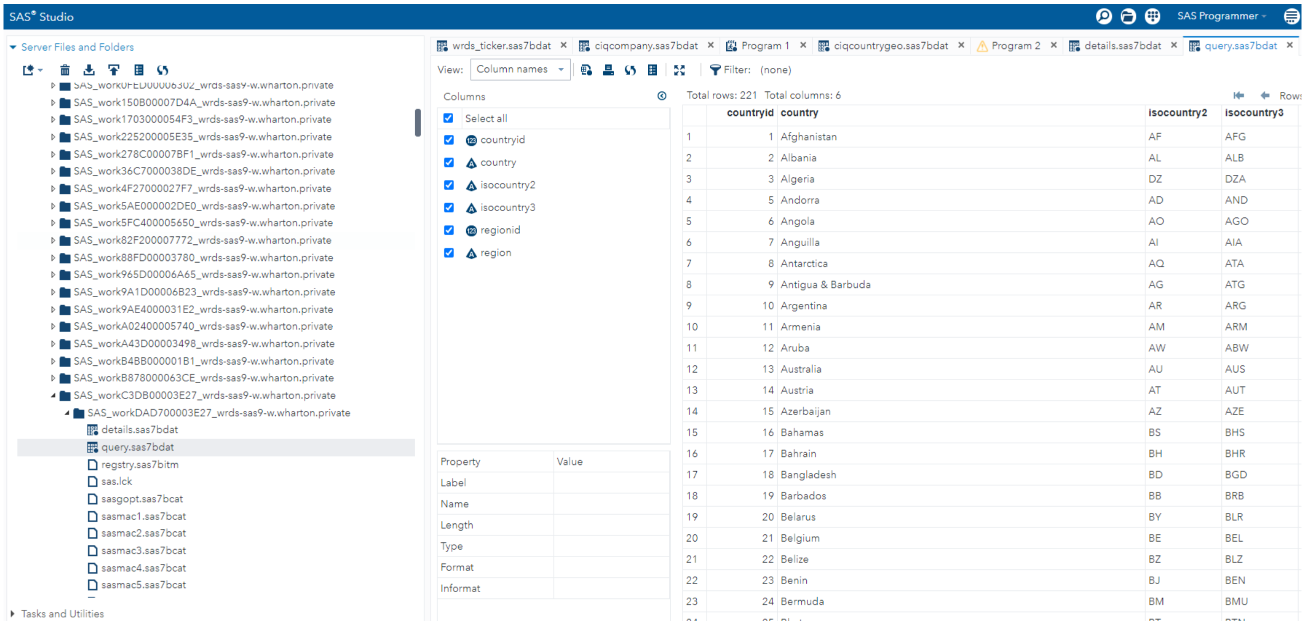


The DATASETS Procedure

Data Set Name	WORK.QUERY	Observations	221
Member Type	DATA	Variables	6
Engine	V9	Indexes	0
Created	12/09/2021 17:48:41	Observation Length	640
Last Modified	12/09/2021 17:48:41	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	YES
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information	
Data Set Page Size	65536
Number of Data Set Pages	3
First Data Page	1
Max Obs per Page	102
Obs in First Data Page	98
Number of Data Set Repairs	0
Filename	/sastemp/SAS_workC3DB00003E27_wrds-sas9-w.wharton.private/SAS_workDAD700003E27_wrds-sas9-w.wharton.private/query.sas7bdat
Release Created	9.0401M7
Host Created	Linux
Inode Number	12714010
Access Permission	rw-------
Owner Name	jasonjia1
File Size	256KB
File Size (bytes)	262144

- Go to the temporary folder and open query.sas7bdat to confirm this is the dataset you want to download.



SAS_work0FED00006302_wrds-sas9-w.wharton.private
SAS_work150B00007D4A_wrds-sas9-w.wharton.private
SAS_work1703000054F3_wrds-sas9-w.wharton.private
SAS_work225200005E35_wrds-sas9-w.wharton.private
SAS_work278C00007BF1_wrds-sas9-w.wharton.private
SAS_work36C7000038DE_wrds-sas9-w.wharton.private
SAS_work4F27000027F7_wrds-sas9-w.wharton.private
SAS_work5AE000002DE0_wrds-sas9-w.wharton.private
SAS_work5FC400005650_wrds-sas9-w.wharton.private
SAS_work82F200007772_wrds-sas9-w.wharton.private
SAS_work88FD00003780_wrds-sas9-w.wharton.private
SAS_work965D00006A65_wrds-sas9-w.wharton.private
SAS_work9A1D00006B23_wrds-sas9-w.wharton.private
SAS_work9AE4000031E2_wrds-sas9-w.wharton.private
SAS_workA02400005740_wrds-sas9-w.wharton.private
SAS_workA43D00003498_wrds-sas9-w.wharton.private
SAS_workB4BB000001B1_wrds-sas9-w.wharton.private
SAS_workB878000063CE_wrds-sas9-w.wharton.private
SAS_workC3DB00003E27_wrds-sas9-w.wharton.private
SAS_workDAD700003E27_wrds-sas9-w.wharton.private
details.sas7bdat
query.sas7bdat
regstry.sas7bitm
sas.lck
sasgopt.sas7bcat
sasmac1.sas7bcat
sasmac2.sas7bcat
sasmac3.sas7bcat
sasmac4.sas7bcat
sasmac5.sas7bcat

Columns

☑ Select all
☑ countryid
☑ country
☑ isocountry2
☑ isocountry3
☑ regionid
☑ region

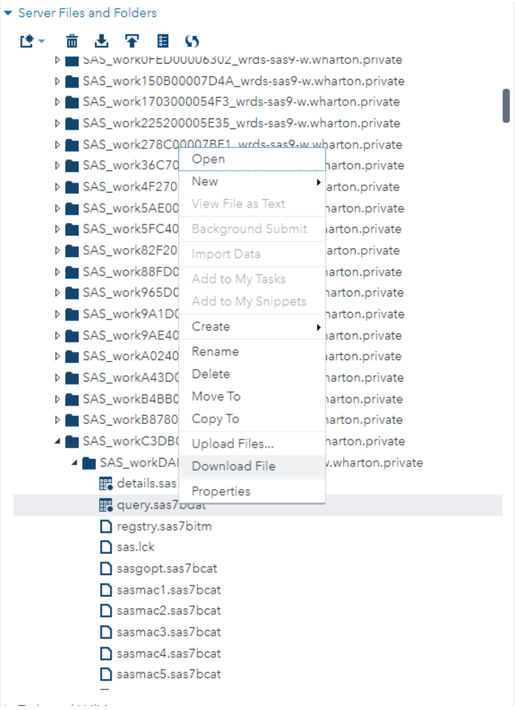
Property	Value
Label	
Name	
Length	
Type	
Format	
Informat	

Filter: (none)

Total rows: 221 Total columns: 6

	countryid	country	isocountry2	isocountry3
1	1	Afghanistan	AF	AFG
2	2	Albania	AL	ALB
3	3	Algeria	DZ	DZA
4	5	Andorra	AD	AND
5	6	Angola	AO	AGO
6	7	Anguilla	AI	AIA
7	8	Antarctica	AQ	ATA
8	9	Antigua & Barbuda	AG	ATG
9	10	Argentina	AR	ARG
10	11	Armenia	AM	ARM
11	12	Aruba	AW	ABW
12	13	Australia	AU	AUS
13	14	Austria	AT	AUT
14	15	Azerbaijan	AZ	AZE
15	16	Bahamas	BS	BHS
16	17	Bahrain	BH	BHR
17	18	Bangladesh	BD	BGD
18	19	Barbados	BB	BRB
19	20	Belarus	BY	BLR
20	21	Belgium	BE	BEL
21	22	Belize	BZ	BLZ
22	23	Benin	BJ	BEN
23	24	Bermuda	BM	BMU

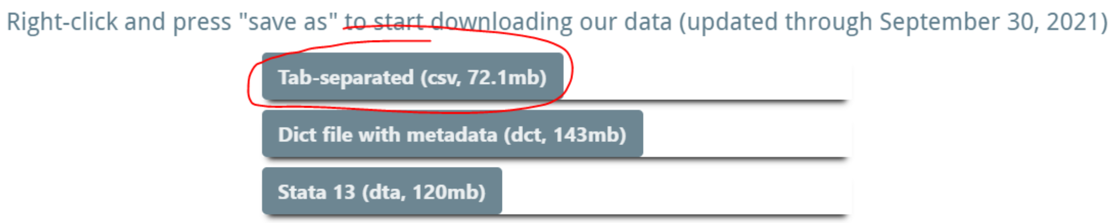
- Right click on query.sas7bdat and click download file.



- We used the following tables with specific columns from Compustat *[to update]*:
  - 1. CIQCOMPANY: companyid, companyname, tickersymbol, countryid and other columns.
  - Total: 24,511,757 obs. Public Companies: 66,256. Private Companies: 16,544,322. Public Investment Firms: 1,987 and Private Investment Firms: 203,407
  - 2. WRDS GVKEY: companyid, gvkey (115,357 observations).
  - 3. CIQCOUNTRY: countryid, countryname: countryid, countryname (221 countries).

3.2 Download Hassan dataset [L]

- Gvkeys are also found in Hassan's Firm-Level Political Risk dataset.
- Go to https://www.firmlevelrisk.com/download and download the tab-separated file in csv.
- This data set was also used because it also uses conference calls, but have already matched firm names to gvkeys, which would help in our firm name matching. Note that the dataset is updated over time.
- This data set is updated every so often – the most recent version as of writing is 2021-09-30.



Right-click and press "save as" to start downloading our data (updated through September 30, 2021)

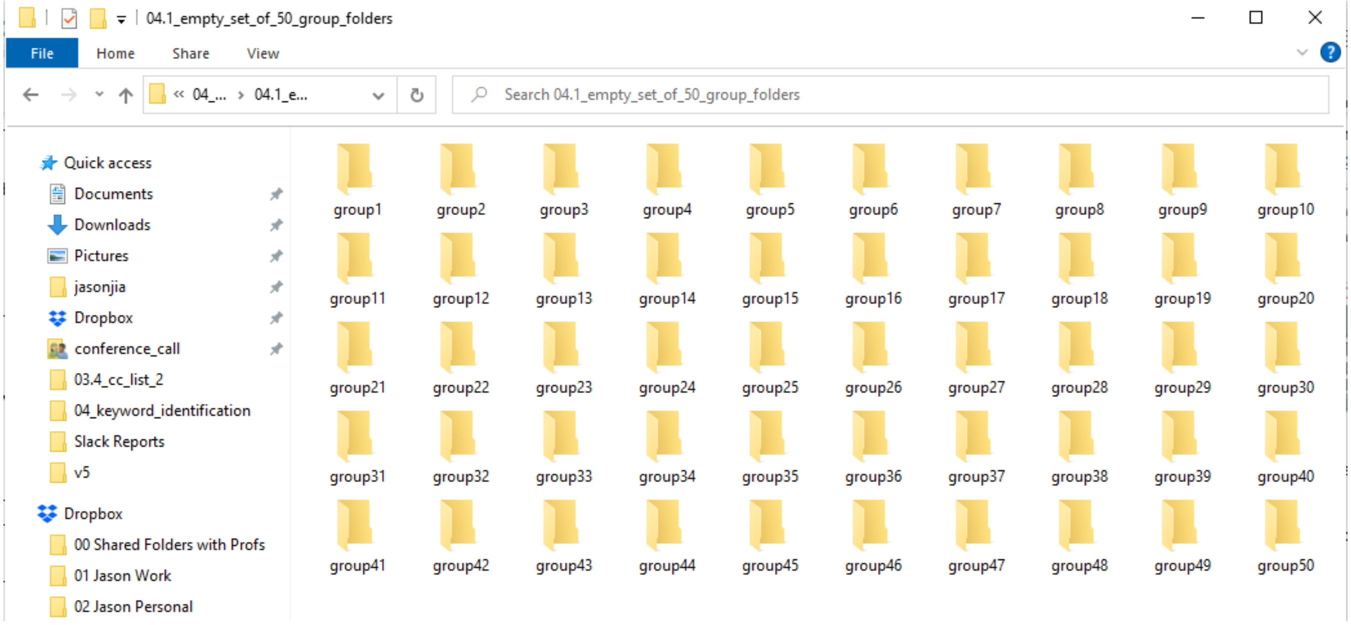
Tab-separated (csv, 72.1mb)
Dict file with metadata (dct, 143mb)
Stata 13 (dta, 120mb)

3.3 Process Compustat and Hassan datasets into usable and truncated .csv files. [L]

- Go to conference_call\code\03_firm_identification
- Run the codes convert_compustat.py on terminal and process_hassan.py on terminal.

3.4 Make a folder structure with x groups and move .csv files into the folders (default: x = 50)

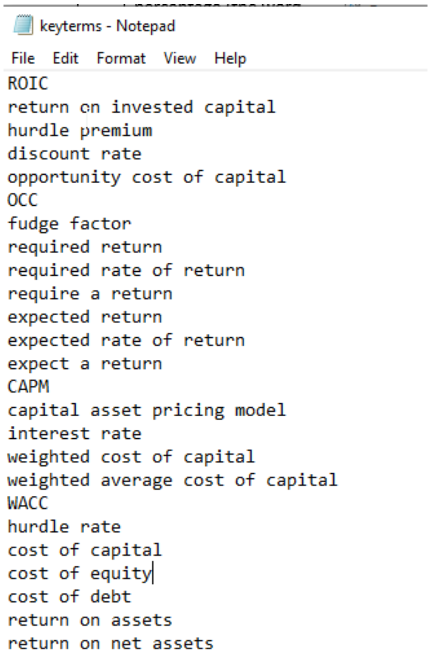
- Run mkdir.py
- Output will be a folder containing 50 empty sub-folders, named group[i]:



- Run dividefilesequallyinto folders.py
- This will copy the csv files from your previous folder containing csv files, divide it equally between the 50 sub-folders, and paste them into the allocated sub-folder.

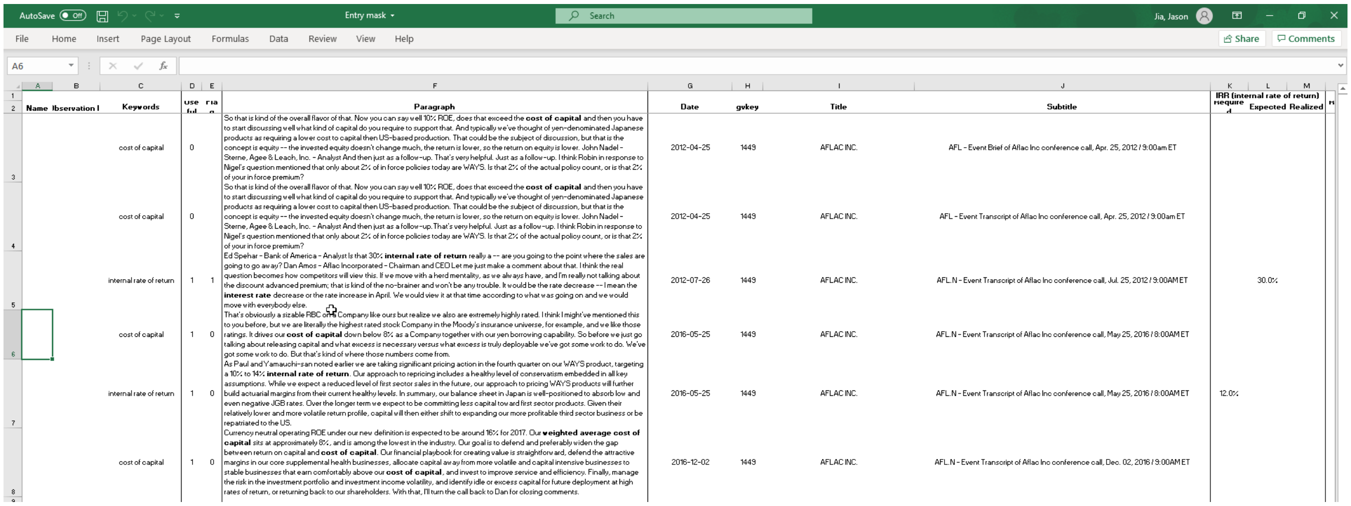
3.5 Make a list of keywords and template entry file [L]

- Create keyterms.txt, a txt file containing all keywords you want to search for in conference calls.



```
ROIC
return on invested capital
hurdle premium
discount rate
opportunity cost of capital
OCC
fudge factor
required return
required rate of return
require a return
expected return
expected rate of return
expect a return
CAPM
capital asset pricing model
interest rate
weighted cost of capital
weighted average cost of capital
WACC
hurdle rate
cost of capital
cost of equity
cost of debt
return on assets
return on net assets
```

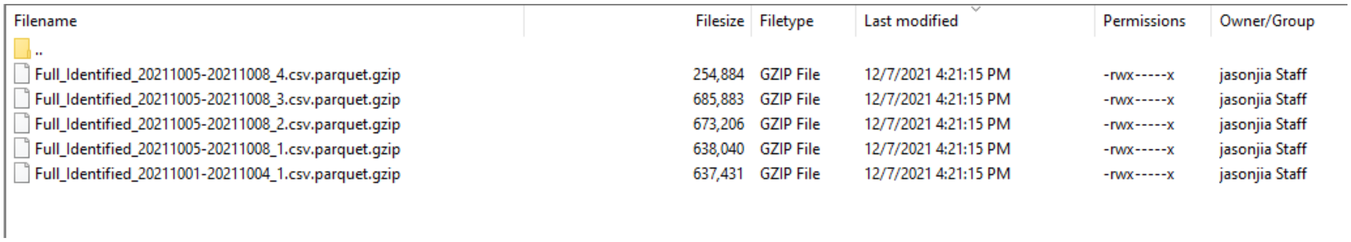
- Create Entry mask.xlsx, a template for entry files



Name	Ibservation I	Keywords	use ful	ria g	Paragraph	Date	gvkey	Title	Subtitle	IRR (internal rate of return)			R
										Require d	Expected	Realized	
		cost of capital	0		So that is kind of the overall flavor of that. Now you can say well 10% ROE, does that exceed the **cost of capital** and then you have to start discussing well what kind of capital do you require to support that. And typically we've thought of yen-denominated Japanese products as requiring a lower cost to capital then US-based production. That could be the subject of discussion, but that is the concept is equity -- the invested equity doesn't change much, the return is lower, so the return on equity is lower. John Nadel - Sterne, Agee & Leach, Inc. - Analyst And then just as a follow-up. That's very helpful. Just as a follow-up. I think Robin in response to Nigel's question mentioned that only about 2% of in force policies today are WAYS. Is that 2% of the actual policy count, or is that 2% of your in force premium?	2012-04-25	1449	AFLAC INC.	AFL - Event Brief of Aflac Inc conference call, Apr. 25, 2012 / 9:00am ET				
		cost of capital	0		So that is kind of the overall flavor of that. Now you can say well 10% ROE, does that exceed the **cost of capital** and then you have to start discussing well what kind of capital do you require to support that. And typically we've thought of yen-denominated Japanese products as requiring a lower cost to capital then US-based production. That could be the subject of discussion, but that is the concept is equity -- the invested equity doesn't change much, the return is lower, so the return on equity is lower. John Nadel - Sterne, Agee & Leach, Inc. - Analyst And then just as a follow-up.That's very helpful. Just as a follow-up. I think Robin in response to Nigel's question mentioned that only about 2% of in force policies today are WAYS. Is that 2% of the actual policy count, or is that 2% of your in force premium?	2012-04-25	1449	AFLAC INC.	AFL - Event Transcript of Aflac Inc conference call, Apr. 25, 2012 / 9:00am ET				
		internal rate of return	1	1	Ed Spehar - Bank of America - Analyst Is that 30% **internal rate of return** really a -- are you going to the point where the sales are going to go away? Dan Amos - Aflac Incorporated - Chairman and CEO Let me just make a comment about that. I think the real question becomes how competitors will view this. If we move with a herd mentality, as we always have, and I'm really not talking about the discount advanced premium; that is kind of the no-brainer and won't be any trouble. It would be the rate decrease -- I mean the **interest rate** decrease or the rate increase in April. We would view it at that time according to what was going on and we would move with everybody else.	2012-07-26	1449	AFLAC INC.	AFL.N - Event Transcript of Aflac Inc conference call, Jul. 25, 2012 / 9:00AM ET		30.0%		
		cost of capital	1	0	That's obviously a sizable RBC on a Company like ours but realize we also are extremely highly rated. I think I might've mentioned this to you before, but we are literally the highest rated stock Company in the Moody's insurance universe, for example, and we like those ratings. It drives our **cost of capital** down below 8% as a Company together with our yen borrowing capability. So before we just go talking about releasing capital and what excess is necessary versus what excess is truly deployable we've got some work to do. We've got some work to do. But that's kind of where those numbers come from.	2016-05-25	1449	AFLAC INC.	AFL.N - Event Transcript of Aflac Inc conference call, May 25, 2016 / 8:00AM ET				
		internal rate of return	1	0	As Paul and Yamauchi-san noted earlier we are taking significant pricing action in the fourth quarter on our WAYS product, targeting a 10% to 14% **internal rate of return**. Our approach to repricing includes a healthy level of conservatism embedded in all key assumptions. While we expect a reduced level of first sector sales in the future, our approach to pricing WAYS products will further build actuarial margins from their current healthy levels. In summary, our balance sheet in Japan is well-positioned to absorb low and even negative JGB rates. Over the longer term we expect to be committing less capital toward first sector products. Given their relatively lower and more volatile return profile, capital will then either shift to expanding our more profitable third sector business or be repatriated to the US.	2016-05-25	1449	AFLAC INC.	AFL.N - Event Transcript of Aflac Inc conference call, May 25, 2016 / 8:00AM ET	12.0%			
		cost of capital	1	0	Currency neutral operating ROE under our new definition is expected to be around 16% for 2017. Our **weighted average cost of capital** sits at approximately 8%, and is among the lowest in the industry. Our goal is to defend and preferably widen the gap between return on capital and **cost of capital**. Our financial playbook for creating value is straightforward, defend the attractive margins in our core supplemental health businesses, allocate capital away from more volatile and capital intensive businesses to stable businesses that earn comfortably above our **cost of capital**, and invest to improve service and efficiency. Finally, manage the risk in the investment portfolio and investment income volatility, and identify idle or excess capital for future deployment at high rates of return, or returning back to our shareholders. With that, I'll turn the call back to Dan for closing comments.	2016-12-02	1449	AFLAC INC.	AFL.N - Event Transcript of Aflac Inc conference call, Dec. 02, 2016 / 9:00AM ET				

3.6 Identify keywords for the whole CC data.

- Run CC_identify_keywords.py
- The output will be a set of folders Full_Identified_Keywords/group[i]/ Full_Identified_[i].parquet.gzip



Filename	Filesize	Filetype	Last modified	Permissions	Owner/Group
..					
Full_Identified_20211005-20211008_4.csv.parquet.gzip	254,884	GZIP File	12/7/2021 4:21:15 PM	-rwx-----x	jasonjia Staff
Full_Identified_20211005-20211008_3.csv.parquet.gzip	685,883	GZIP File	12/7/2021 4:21:15 PM	-rwx-----x	jasonjia Staff
Full_Identified_20211005-20211008_2.csv.parquet.gzip	673,206	GZIP File	12/7/2021 4:21:15 PM	-rwx-----x	jasonjia Staff
Full_Identified_20211005-20211008_1.csv.parquet.gzip	638,040	GZIP File	12/7/2021 4:21:15 PM	-rwx-----x	jasonjia Staff
Full_Identified_20211001-20211004_1.csv.parquet.gzip	637,431	GZIP File	12/7/2021 4:21:15 PM	-rwx-----x	jasonjia Staff

3.7 Concatenating all these files into a single dataset.

- Run concatenateOutputs.py
- Output of focus is Full_Master_Keywords.csv

3.8 Filter based on a more exact keyword identification algorithm (rather than just checking in, doing a holistic check by looking at the spaces around the keyword)

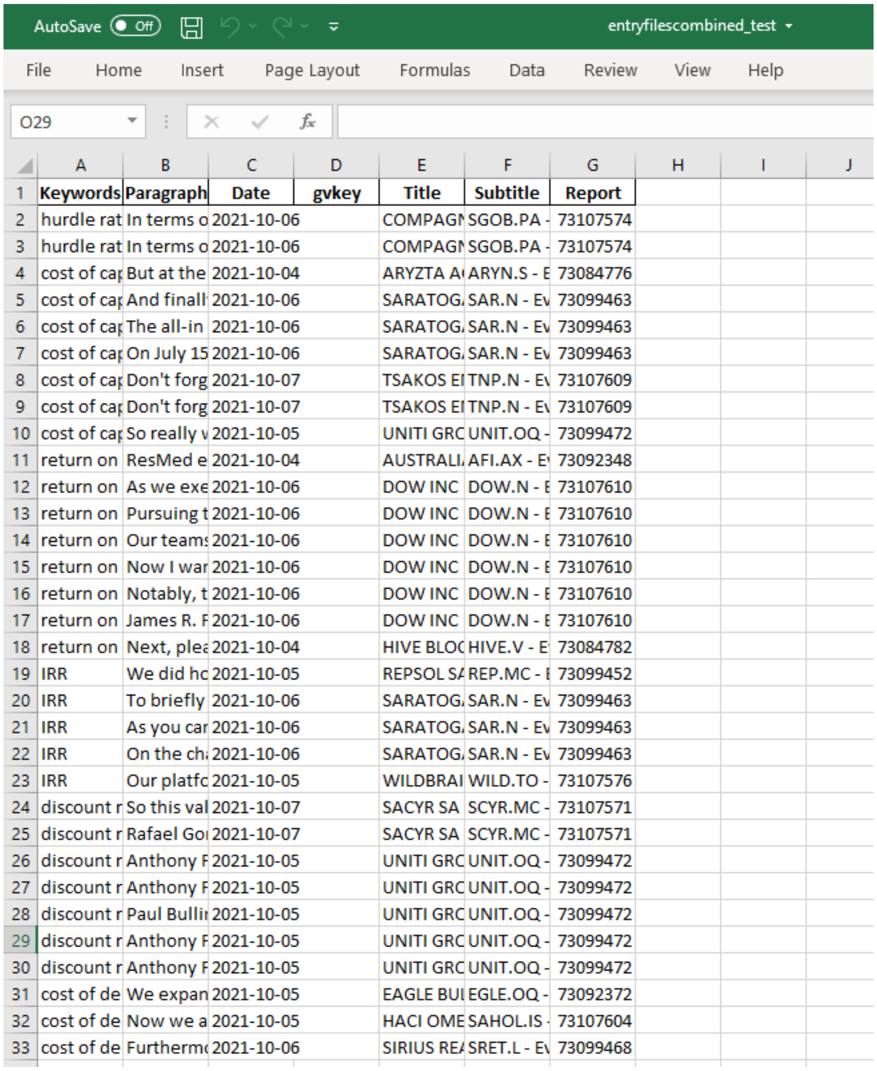
- Run getCorrect.py
- Output is Amended_Correct_No_IR.csv

3.9 Filter based on the presence of a percentage (the words percent, per cent, percentage, %) and then order based on the sorting rule.

- Run ordering_and_filtering.py
- Output is Filtered_Ordered_Amended_Correct_No_IR.csv

3.10 Convert current paragraphs and conference call information into entry files format

- Run the following codes, in order:
  - convertFilteredOrderedAmendedCorrectNoIR_to_TotalCircNew.py
  - convertTotalCircNew_to_Cric1newtotal.py
  - convertCric1newtotal_to_entryfilescombined.py
- Output: entryfilescombined_withoutgvkey.xlsx

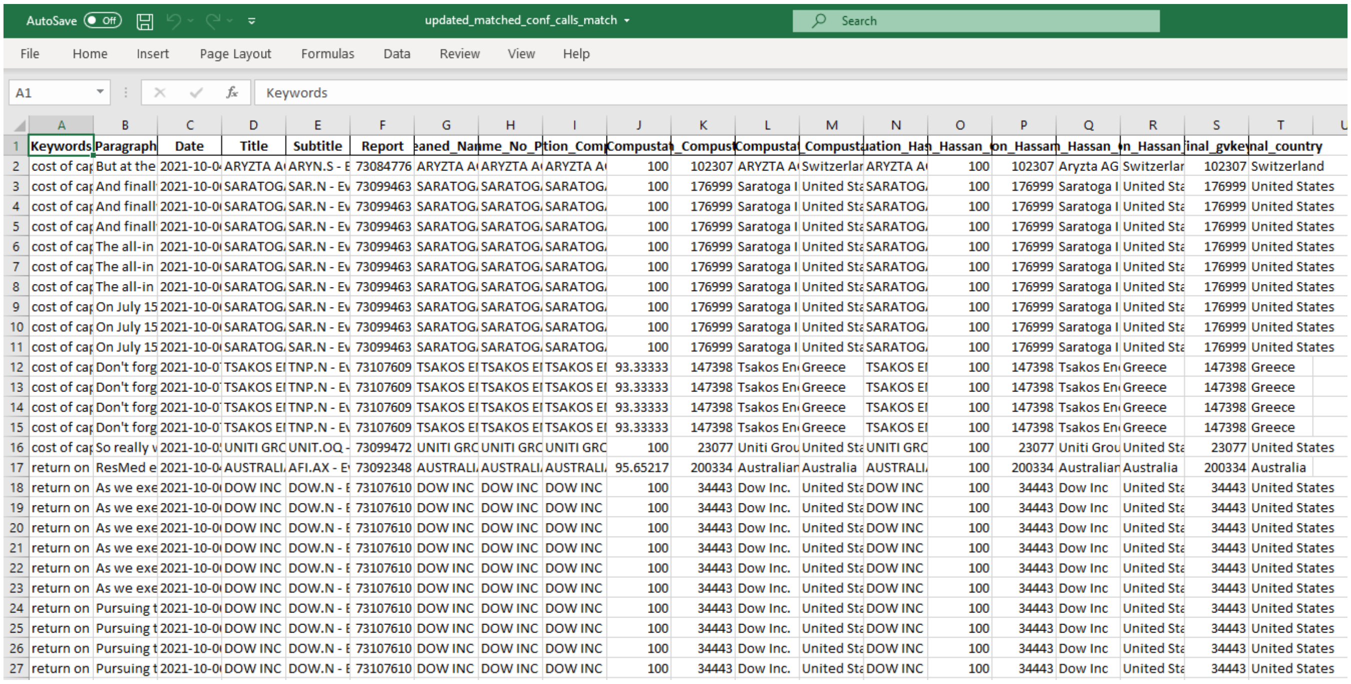


	Keywords	Paragraph	Date	gvkey	Title	Subtitle	Report
2	hurdle rat	In terms o	2021-10-06		COMPAGN	SGOB.PA -	73107574
3	hurdle rat	In terms o	2021-10-06		COMPAGN	SGOB.PA -	73107574
4	cost of cap	But at the	2021-10-04		ARYZTA A	ARYN.S - E	73084776
5	cost of cap	And finall	2021-10-06		SARATOG	SAR.N - Ev	73099463
6	cost of cap	The all-in	2021-10-06		SARATOG	SAR.N - Ev	73099463
7	cost of cap	On July 15	2021-10-06		SARATOG	SAR.N - Ev	73099463
8	cost of cap	Don't forg	2021-10-07		TSAKOS E	TNP.N - Ev	73107609
9	cost of cap	Don't forg	2021-10-07		TSAKOS E	TNP.N - Ev	73107609
10	cost of cap	So really v	2021-10-05		UNITI GRO	UNIT.OQ -	73099472
11	return on	ResMed e	2021-10-04		AUSTRALI	AFI.AX - E	73092348
12	return on	As we exe	2021-10-06		DOW INC	DOW.N - E	73107610
13	return on	Pursuing t	2021-10-06		DOW INC	DOW.N - E	73107610
14	return on	Our teams	2021-10-06		DOW INC	DOW.N - E	73107610
15	return on	Now I war	2021-10-06		DOW INC	DOW.N - E	73107610
16	return on	Notably, t	2021-10-06		DOW INC	DOW.N - E	73107610
17	return on	James R. F	2021-10-06		DOW INC	DOW.N - E	73107610
18	return on	Next, plea	2021-10-04		HIVE BLOC	HIVE.V - E	73084782
19	IRR	We did hc	2021-10-05		REPSOL SA	REP.MC - E	73099452
20	IRR	To briefly	2021-10-06		SARATOG	SAR.N - Ev	73099463
21	IRR	As you car	2021-10-06		SARATOG	SAR.N - Ev	73099463
22	IRR	On the cha	2021-10-06		SARATOG	SAR.N - Ev	73099463
23	IRR	Our platfc	2021-10-05		WILDBRAI	WILD.TO -	73107576
24	discount r	So this val	2021-10-07		SACYR SA	SCYR.MC -	73107571
25	discount r	Rafael Go	2021-10-07		SACYR SA	SCYR.MC -	73107571
26	discount r	Anthony F	2021-10-05		UNITI GRO	UNIT.OQ -	73099472
27	discount r	Anthony F	2021-10-05		UNITI GRO	UNIT.OQ -	73099472
28	discount r	Paul Bullir	2021-10-05		UNITI GRO	UNIT.OQ -	73099472
29	discount r	Anthony F	2021-10-05		UNITI GRO	UNIT.OQ -	73099472
30	discount r	Anthony F	2021-10-05		UNITI GRO	UNIT.OQ -	73099472
31	cost of de	We expan	2021-10-05		EAGLE BUI	EGLE.OQ -	73092372
32	cost of de	Now we a	2021-10-05		HACI OME	SAHOL.IS -	73107604
33	cost of de	Furtherm	2021-10-06		SIRIUS REA	SRET.L - Ev	73099468

4 Firm Identification (Firm Name and Gvkey Matching)

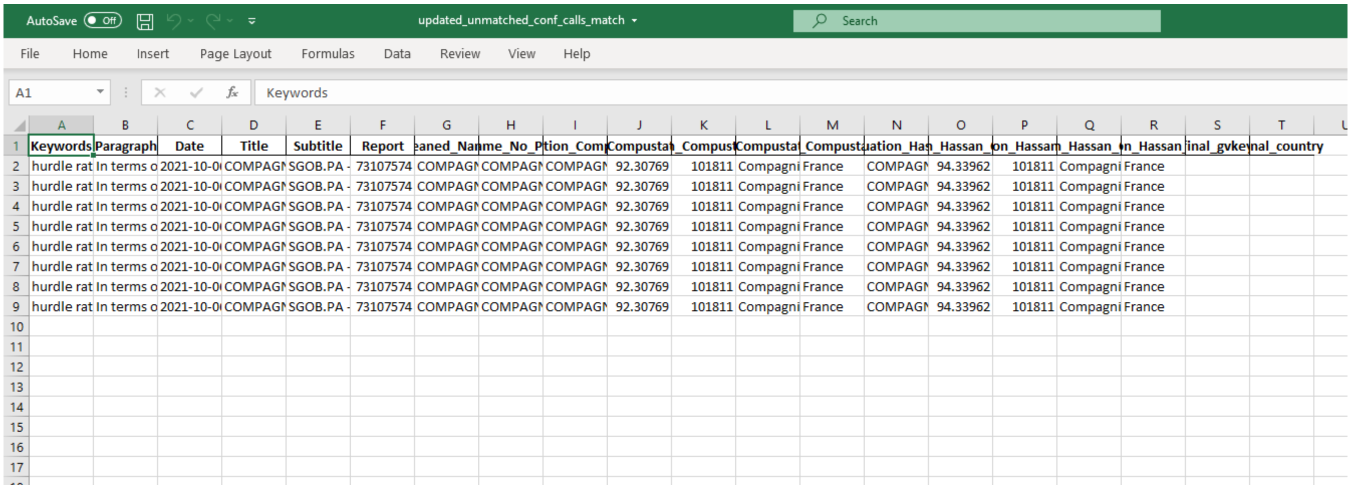
4.1 Perform the fuzzy matching between the Hassan/Compustat and the CC datasets.

- Run the following codes, in order:
  - cc_fuzzy_match_part1.py
  - cc_fuzzy_match_part2.py
  - Use highmem on Mercury for this, as the files are extremely large.
- Output:
  - updated_matched_conf_calls_match.xlsx



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Keywords	Paragraph	Date	Title	Subtitle	Report	eaned_Nan	me_No_P	tion_Com	Compustan	_Compust	Compustat	_Compusta	uation_Has	_Hassan_	on_Hassan	_Hassan_	n_Hassan	inal_gvkey	nal_country
2	cost of cap	But at the	2021-10-0	ARYZTA A	ARYN.S - E	73084776	ARYZTA A	ARYZTA A	ARYZTA A	100	102307	ARYZTA A	Switzerlar	ARYZTA A	100	102307	Aryzta AG	Switzerlar	102307	Switzerland
3	cost of cap	And finall	2021-10-0	SARATOG.	SAR.N - Ev	73099463	SARATOG.	SARATOG.	SARATOG.	100	176999	Saratoga I	United Sta	SARATOG.	100	176999	Saratoga I	United Sta	176999	United States
4	cost of cap	And finall	2021-10-0	SARATOG.	SAR.N - Ev	73099463	SARATOG.	SARATOG.	SARATOG.	100	176999	Saratoga I	United Sta	SARATOG.	100	176999	Saratoga I	United Sta	176999	United States
5	cost of cap	And finall	2021-10-0	SARATOG.	SAR.N - Ev	73099463	SARATOG.	SARATOG.	SARATOG.	100	176999	Saratoga I	United Sta	SARATOG.	100	176999	Saratoga I	United Sta	176999	United States
6	cost of cap	The all-in	2021-10-0	SARATOG.	SAR.N - Ev	73099463	SARATOG.	SARATOG.	SARATOG.	100	176999	Saratoga I	United Sta	SARATOG.	100	176999	Saratoga I	United Sta	176999	United States
7	cost of cap	The all-in	2021-10-0	SARATOG.	SAR.N - Ev	73099463	SARATOG.	SARATOG.	SARATOG.	100	176999	Saratoga I	United Sta	SARATOG.	100	176999	Saratoga I	United Sta	176999	United States
8	cost of cap	The all-in	2021-10-0	SARATOG.	SAR.N - Ev	73099463	SARATOG.	SARATOG.	SARATOG.	100	176999	Saratoga I	United Sta	SARATOG.	100	176999	Saratoga I	United Sta	176999	United States
9	cost of cap	On July 15	2021-10-0	SARATOG.	SAR.N - Ev	73099463	SARATOG.	SARATOG.	SARATOG.	100	176999	Saratoga I	United Sta	SARATOG.	100	176999	Saratoga I	United Sta	176999	United States
10	cost of cap	On July 15	2021-10-0	SARATOG.	SAR.N - Ev	73099463	SARATOG.	SARATOG.	SARATOG.	100	176999	Saratoga I	United Sta	SARATOG.	100	176999	Saratoga I	United Sta	176999	United States
11	cost of cap	On July 15	2021-10-0	SARATOG.	SAR.N - Ev	73099463	SARATOG.	SARATOG.	SARATOG.	100	176999	Saratoga I	United Sta	SARATOG.	100	176999	Saratoga I	United Sta	176999	United States
12	cost of cap	Don't forg	2021-10-0	TSAKOS EI	TNP.N - Ev	73107609	TSAKOS EI	TSAKOS EI	TSAKOS EI	93.33333	147398	Tsakos En	Greece	TSAKOS EI	100	147398	Tsakos En	Greece	147398	Greece
13	cost of cap	Don't forg	2021-10-0	TSAKOS EI	TNP.N - Ev	73107609	TSAKOS EI	TSAKOS EI	TSAKOS EI	93.33333	147398	Tsakos En	Greece	TSAKOS EI	100	147398	Tsakos En	Greece	147398	Greece
14	cost of cap	Don't forg	2021-10-0	TSAKOS EI	TNP.N - Ev	73107609	TSAKOS EI	TSAKOS EI	TSAKOS EI	93.33333	147398	Tsakos En	Greece	TSAKOS EI	100	147398	Tsakos En	Greece	147398	Greece
15	cost of cap	Don't forg	2021-10-0	TSAKOS EI	TNP.N - Ev	73107609	TSAKOS EI	TSAKOS EI	TSAKOS EI	93.33333	147398	Tsakos En	Greece	TSAKOS EI	100	147398	Tsakos En	Greece	147398	Greece
16	cost of cap	So really v	2021-10-0	UNITI GRC	UNIT.OQ -	73099472	UNITI GRC	UNITI GRC	UNITI GRC	100	23077	Uniti Grou	United Sta	UNITI GRC	100	23077	Uniti Grou	United Sta	23077	United States
17	return on	ResMed e	2021-10-0	AUSTRALI.	AFI.AX - E	73092348	AUSTRALI.	AUSTRALI.	AUSTRALI.	95.65217	200334	Australian	Australia	AUSTRALI.	100	200334	Australian	Australia	200334	Australia
18	return on	As we exe	2021-10-0	DOW INC	DOW.N - E	73107610	DOW INC	DOW INC	DOW INC	100	34443	Dow Inc.	United Sta	DOW INC	100	34443	Dow Inc	United Sta	34443	United States
19	return on	As we exe	2021-10-0	DOW INC	DOW.N - E	73107610	DOW INC	DOW INC	DOW INC	100	34443	Dow Inc.	United Sta	DOW INC	100	34443	Dow Inc	United Sta	34443	United States
20	return on	As we exe	2021-10-0	DOW INC	DOW.N - E	73107610	DOW INC	DOW INC	DOW INC	100	34443	Dow Inc.	United Sta	DOW INC	100	34443	Dow Inc	United Sta	34443	United States
21	return on	As we exe	2021-10-0	DOW INC	DOW.N - E	73107610	DOW INC	DOW INC	DOW INC	100	34443	Dow Inc.	United Sta	DOW INC	100	34443	Dow Inc	United Sta	34443	United States
22	return on	As we exe	2021-10-0	DOW INC	DOW.N - E	73107610	DOW INC	DOW INC	DOW INC	100	34443	Dow Inc.	United Sta	DOW INC	100	34443	Dow Inc	United Sta	34443	United States
23	return on	As we exe	2021-10-0	DOW INC	DOW.N - E	73107610	DOW INC	DOW INC	DOW INC	100	34443	Dow Inc.	United Sta	DOW INC	100	34443	Dow Inc	United Sta	34443	United States
24	return on	Pursuing t	2021-10-0	DOW INC	DOW.N - E	73107610	DOW INC	DOW INC	DOW INC	100	34443	Dow Inc.	United Sta	DOW INC	100	34443	Dow Inc	United Sta	34443	United States
25	return on	Pursuing t	2021-10-0	DOW INC	DOW.N - E	73107610	DOW INC	DOW INC	DOW INC	100	34443	Dow Inc.	United Sta	DOW INC	100	34443	Dow Inc	United Sta	34443	United States
26	return on	Pursuing t	2021-10-0	DOW INC	DOW.N - E	73107610	DOW INC	DOW INC	DOW INC	100	34443	Dow Inc.	United Sta	DOW INC	100	34443	Dow Inc	United Sta	34443	United States
27	return on	Pursuing t	2021-10-0	DOW INC	DOW.N - E	73107610	DOW INC	DOW INC	DOW INC	100	34443	Dow Inc.	United Sta	DOW INC	100	34443	Dow Inc	United Sta	34443	United States

  - updated_unmatched_conf_calls_match.xlsx



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	Keywords	Paragraph	Date	Title	Subtitle	Report	eaned_Nan	me_No_P	tion_Com	Compustan	_Compust	Compustat	_Compusta	uation_Has	_Hassan_	on_Hassan	_Hassan_	n_Hassan	inal_gvkey	nal_country
2	hurdle rat	In terms o	2021-10-0	COMPAGN	SGOB.PA -	73107574	COMPAGN	COMPAGN	COMPAGN	92.30769	101811	Compagni	France	COMPAGN	94.33962	101811	Compagni	France		
3	hurdle rat	In terms o	2021-10-0	COMPAGN	SGOB.PA -	73107574	COMPAGN	COMPAGN	COMPAGN	92.30769	101811	Compagni	France	COMPAGN	94.33962	101811	Compagni	France		
4	hurdle rat	In terms o	2021-10-0	COMPAGN	SGOB.PA -	73107574	COMPAGN	COMPAGN	COMPAGN	92.30769	101811	Compagni	France	COMPAGN	94.33962	101811	Compagni	France		
5	hurdle rat	In terms o	2021-10-0	COMPAGN	SGOB.PA -	73107574	COMPAGN	COMPAGN	COMPAGN	92.30769	101811	Compagni	France	COMPAGN	94.33962	101811	Compagni	France		
6	hurdle rat	In terms o	2021-10-0	COMPAGN	SGOB.PA -	73107574	COMPAGN	COMPAGN	COMPAGN	92.30769	101811	Compagni	France	COMPAGN	94.33962	101811	Compagni	France		
7	hurdle rat	In terms o	2021-10-0	COMPAGN	SGOB.PA -	73107574	COMPAGN	COMPAGN	COMPAGN	92.30769	101811	Compagni	France	COMPAGN	94.33962	101811	Compagni	France		
8	hurdle rat	In terms o	2021-10-0	COMPAGN	SGOB.PA -	73107574	COMPAGN	COMPAGN	COMPAGN	92.30769	101811	Compagni	France	COMPAGN	94.33962	101811	Compagni	France		
9	hurdle rat	In terms o	2021-10-0	COMPAGN	SGOB.PA -	73107574	COMPAGN	COMPAGN	COMPAGN	92.30769	101811	Compagni	France	COMPAGN	94.33962	101811	Compagni	France		
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				

4.2 Do manual matching for unconfirmed cases

- 1 for matches, 0 for non-matches
- Output:
  - Filled_Updated_CC_Compustat_FuzzyMatchCandidates.xlsx
  - Filled_Updated_CC_Hassan_FuzzyMatchCandidates.xlsx

4.3 Combine manually matched cases with results from fuzzy matching

- Run cc_fuzzy_match_part2.py (the commented out section)
- Output: manual_full_updated_conf_calls.xlsx

4.4 Make a paragraph record file that splits the number of entries into groups of 500 [L]

- Run make_paragraphrecord.py and add the number of entries as an argument
- Output: paragraphrecord.xlsx

4.5 Bold the keywords and separate file into "entryfiles", each containing 500 entries. [M, L]

- Run makeentryfiles.py
- Output: A set of entryfiles, [i].xlsx

4.6 Combine entry files [L]

- Run combine_entryfiles.py
- Output: entryfiles_combined.xlsx

5 Get Front Page Descriptions

5.1 Extract front page descriptions from conference calls [M, L]

- Run extractdescriptioninfrontpage.py
- Helpful code: copyfiles.py
- Output: [yyyymmdd-yyyymmdd]_withfrontpagedesc.xlsx

5.2 Manually check through error cases and correct accordingly [L]

- Output: [yyyymmdd-yyyymmdd]_withfrontpagedesc.xlsx

5.3 Combine xls files [L]

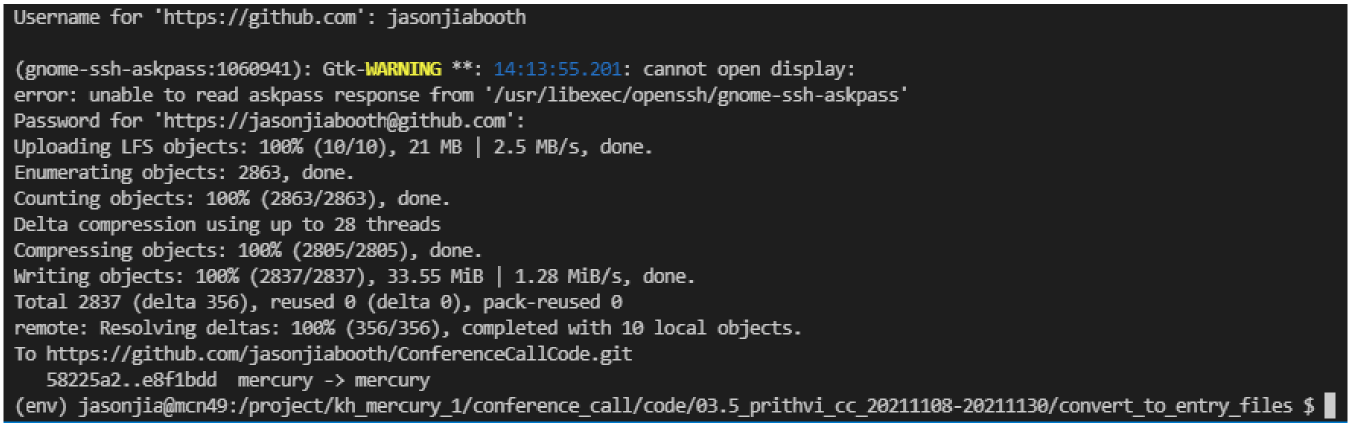
- Run combine_xlsfiles_withdescription.py
- Output: xlscombined_withfrontpagedescription.xlsx

5.4 Match and add front page descriptions to combined entry files [L]

- O33: entryfiles_combined_withfrontpagedesc.xlsx (updated)

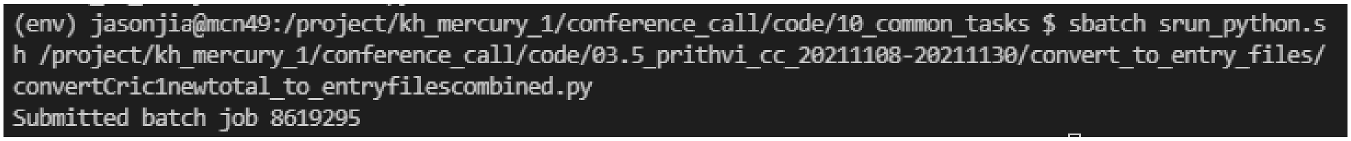
Misc

- Working with Git Large File Storage (LFS):



```
Username for 'https://github.com': jasonjiabooth

(gnome-ssh-askpass:1060941): Gtk-WARNING **: 14:13:55.201: cannot open display:
error: unable to read askpass response from '/usr/libexec/openssh/gnome-ssh-askpass'
Password for 'https://jasonjiabooth@github.com':
Uploading LFS objects: 100% (10/10), 21 MB | 2.5 MB/s, done.
Enumerating objects: 2863, done.
Counting objects: 100% (2863/2863), done.
Delta compression using up to 28 threads
Compressing objects: 100% (2805/2805), done.
Writing objects: 100% (2837/2837), 33.55 MiB | 1.28 MiB/s, done.
Total 2837 (delta 356), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (356/356), completed with 10 local objects.
To https://github.com/jasonjiabooth/ConferenceCallCode.git
   58225a2..e8f1bdd  mercury -> mercury
(env) jasonjia@mcn49:/project/kh_mercury_1/conference_call/code/03.5_prithvi_cc_20211108-20211130/convert_to_entry_files $ 
```

- A .sh file to run python files: srun_python.sh
    - Useful because you won't have to make a new .sh file for each .py file you want to run, when the only thing that changes is the location and name of the python file.
    - Optional: Copy it into a folder for easier use. You can edit the settings for your purposes too (e.g. highmem)
    - Ensure that your current directory has an out folder to contain the out files



```
(env) jasonjia@mcn49:/project/kh_mercury_1/conference_call/code/10_common_tasks $ sbatch srun_python.s
h /project/kh_mercury_1/conference_call/code/03.5_prithvi_cc_20211108-20211130/convert_to_entry_files/
convertCric1newtotal_to_entryfilescombined.py
Submitted batch job 8619295
```

Summary of Main Processing Pipeline (Previous Version, based on codes by Sixun and Valerii)

	Task	Codes	Input	Output
1	**Download Raw Data**			
1.1	Download Thomson One's Conference Calls [L]	mouse_key_recorder.py automatic_download.py	-	O1: [yyyymmdd-yyyymmdd].pdf O2: [yyyymmdd-yyyymmdd].xls
2	**PDF Processing**			
2.1	Convert Conference Calls from .pdf to .txt [M]	pdftransfer.sh	O1	O3: [yyyymmdd-yyyymmdd].txt
2.2	Split Conference Call .txt files to separate out individual conference calls, and combine with report information from .xls files [M, L]	ParseCCpdf.jl	O3, O2	O4: [yyyymmdd-yyyymmdd].csv
3	**Firm Identification (Firm Name Matching)**			
3.1	Download Compustat datasets [L]	-	-	O5: ciqcompany.sas7bdat O6: ciqcountrygeo.sas7bdat O7: wrds_gvkey.sas7bdat
3.2	Download Hassan dataset [L]	-	-	O8: Hassanfile_raw_updated20219030.csv
3.3	Process Compustat and Hassan datasets into usable and truncated .csv files. [L]	convert_sas7bdattocsv.py join_compustatcsvfiles.py hassanfilecsv_viewable_truncate.py	O5, O6, O7, O8	O9: ciqcompany.csv O10: ciqcountrygeo.csv O11: wrds_gvkey.csv O12*: ciqcompany_mergedwithgvkeyandcountry.csv O12: Hassanfile_raw_updated20219030_truncated.csv
3.4	Match titles in conference calls with firm names in Hassan and Compustat datasets, with	linkCCtoGvkey.jl	O9, O10, O11, O12	O13: CC_List[yyyy].csv O14: CC_List_2020-2021.csv

	both exact and fuzzy matching [M, L]			
4	**Keyword Identification**			
4.1	Make a folder structure with x groups (default: x = 50) [M, L]	mkdir.py dividefilesequallyinto folders.py	-	-
4.2	Make a list of keywords and template entry file [L]	-	-	O15: keyterms.txt O16: Entry mask.xlsx
4.3	Identify keywords in each conference call [M, L]	keyword_ident_1.py keyword_ident_1.sh	O15, O4	O17: FR5.csv
4.4	Extract all paragraphs from each conference call that contains a specific keyword [M, L]	keyword_ident_2.py keyword_ident_2.sh	O17	O18: TotalCircnew.xlsx
4.5	Cleans the identified matches and merges with gvkey dataset [L]	mergeclean.do	O18, O14	O19: cric1_newtotal.xlsx
4.6	Make a paragraph record file that splits the number of entries into groups of 500 [L]	make_paragraphrecord.py	O19	O20: paragraphrecord.xlsx
4.7	Bold the keywords and separate file into “entryfiles”, each containing 500 entries. [M, L]	makeentryfiles.py makeentryfiles.sh	O19, O20, O15, O16	O21: [i].xlsx

4.8	Combine entry files [L]	combine_entryfilesjason.py combine_entryfilessixun.py combine_sixunand jasonentryfiles.py	O21	O22: entryfiles_combined.xlsx
5	**Get Front Page Descriptions**			
5.1	Extract front page descriptions from conference calls [M, L]	extractdescriptioninfrontpage.py extractdescriptioninfrontpage.sh copyfiles.py copyfiles.sh	O21, O2, O3	O23: [yyyymmdd-yyyymmdd]_withfrontpagedesc.xlsx
5.2	Manually check through error cases and correct accordingly [L]	-	O23	O24: [yyyymmdd-yyyymmdd]_withfrontpagedesc.xlsx
5.3	Combine xls files [L]	combine_xlsfiles_withdescription.py	O24	O25: xlscombined_withfrontpagedescription.xlsx
5.4	Match and add front page descriptions to combined entry files [L]	-	O25, O22	O26: entryfiles_combined.xlsx (updated)

* M = Mercury, L = Local. [M] / [L] means this stage can be run on Mercury / locally (on your Booth Windows laptop) respectively. [M, L] means this stage can be run on both Mercury and your local laptop, where Mercury is preferred for large datasets and local is preferred for initial testing, debugging and small datasets.

Prithvi's Additional Part

1	Identify keywords for the whole CC data.	CC_identify_keywords.py	CC Data on the server at "CriCount/group{X}" where X = 1, 2, 3 ..50	XXX1: CC Data with relevant keywords at "/project/kh_mercury_1/CriCount/Full_Identified_Keywords/group{X}" where X = 1, 2, 3 ..50
2	Concatenating all these files into a single dataset.	concatenateOutputs.py	XXX1	XXX2: Full_Master_Keywords.csv
3	Filter only those entries which were not	optimizedGetNewEntries.py	XXX2	XXX3: Full_New_Not_Done.csv

	collected during the first run			
4	Filter based on a more exact keyword identification algorithm (rather than just checking in, doing a holistic check by looking at the spaces around the keyword)	getCorrect.py	XXX3	XXX4: Amended_Correct_No_IR.csv
5	Filter based on the presence of a percentage (the words percent, per cent, percentage, %) and then order based on the sorting rule provided.	Ordering And Filtering.ipynb	XXX4	XXX5: Filtered_Ordered_Amended_Correct_No_IR.csv
6	Perform the fuzzy matching between the Hassan/Compustat and the CC datasets.	CCFuzzyMatch.ipynb	XXX5, Hassanfile_raw_updated2019030_viewable.csv, O10.5	XXX6: manual_full_updated_conf_calls.xlsx

3.4 Match titles in conference calls with firm names in Hassan and Compustat datasets, with both exact and fuzzy matching [M, L]

[to be added]

4 Keyword Identification

4.1 Make a folder structure with x groups (default: x = 50) [M, L]

- Run mkdir.py, specifying the output folder that will contain x groups.
- The output will be x empty sub-folders in the output folder, named group1, …, groupx.

4.2 Make a list of keywords and template entry file [L]

- This is done manually. The existing version of keywords and template entry file are found in \conference_call\output\04_keyword_identification\04.2_reference_files as keterms.txt and Entrymask.xlsx.
- Changes to keyterms are recorded in changelog.txt. You can also consider adding suffixes to record different sets of keywords.

4.3 Identify keywords in each conference call [M, L]

- The csvs will now be copied over and divided equally into 50 (or x) groups, to enable parallelization on Mercury.
- Run dividefilesequallyintofolders.py.
- Then, identify keywords in each conference call.
- Run keyword_ident_1.py.
- The output will be

4.4 Extract all paragraphs from each conference call that contains a specific keyword [M, L]

- -

4.5 Cleans the identified matches and merges with gvkey dataset [L]

- -

4.6 Make a paragraph record file that splits the number of entries into groups of 500 [L]

- Run make_paragraphrecord.py and inputting the number of entries.

4.7 Bold the keywords and separate file into “entryfiles”, each containing 500 entries. [M, L]

- If doing locally, run makeentryfiles.py; if doing on Mercury, run makeentryfiles.sh

4.8 Combine entry files [L]

- Run combine_entryfiles.py.