

## VBA Final Project (Fetch Reports for an Investment Fund)

### Executive Summary

A three-year-old investment fund is changing its administration software to another platform that better tracks the portfolio's performance. I originally thought that I would be extracting data and performing the performance analysis, but it turns out that we do not have adequate access to the necessary index weighting and return history to properly accomplish that. Luckily, the new software is able to do it if given the portfolio's performance history.

The current account administration software is web-based. This project accesses the fund's current performance history through this website and navigates the site's menu, selects the proper report for each trading day since the fund's initiation, formats the report in Excel, and saves the report. The reports will be imported to the new platform.

### Implementation

The user interface is simple and not as intuitive as I wanted, but the instructions are strait forward. There is not much data that needs to be entered; just the report dates. I entered dates of all of the weekdays from June 6, 2008 until today. Holidays will still produce a report, but the price column will be blank since stock markets are closed. This should not cause a problem for the new platform.

	A	B	C	D	E	F	G	H
1	2008-06-04							
2	2008-06-05							
3	2008-06-06							
4	2008-06-09							
5	2008-06-10							
6	2008-06-11							
7	2008-06-12							
8	2008-06-13							
9	2008-06-16							
10	2008-06-17							
11	2008-06-18							
12	2008-06-19							
13	2008-06-20							
14	2008-06-23							
15	2008-06-24							
16	2008-06-25							
17	2008-06-26							
18	2008-06-27							

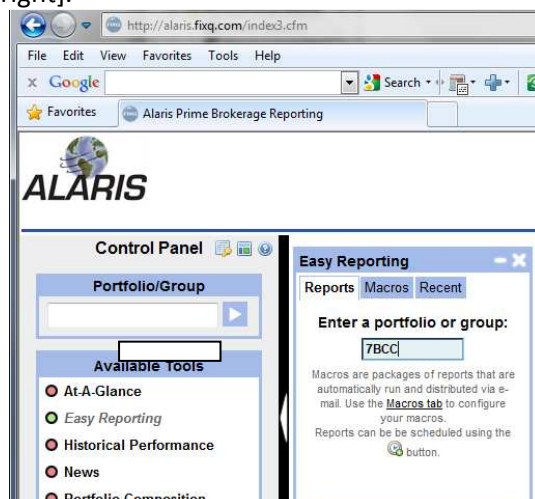
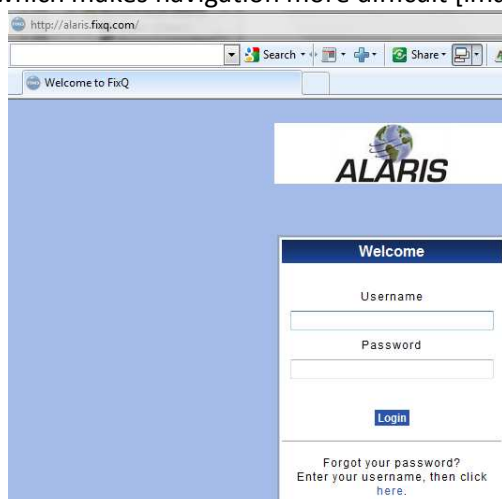
Enter the dates of the reports you wish to extract in column A, starting in cell A1. Enter your Alaris username and password below and click Retrieve Reports.

The reports will be saved at the same location as this workbook. The report that is being produced will appear in bold text in column A and saved reports will appear in column C.

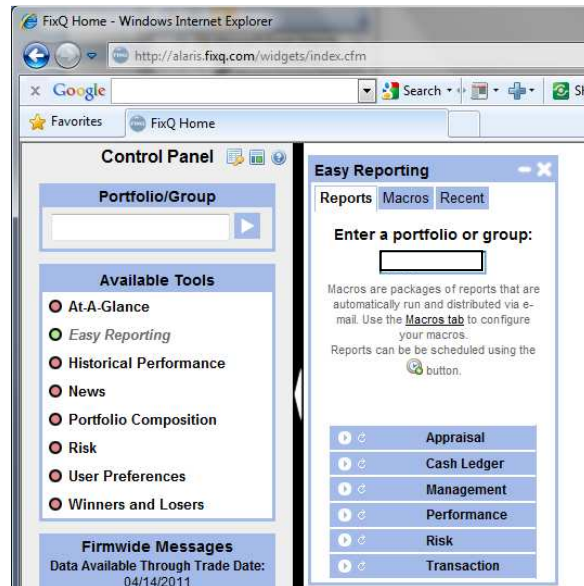
Username:

Password:

Upon pressing "Retrieve Reports," the module, with help from the agent.cls, opens an Internet Explorer window and enters the username and password logs into the Alaris website [left image]. Once logged in, the home page is split into two frames, which makes navigation more difficult [image on right].



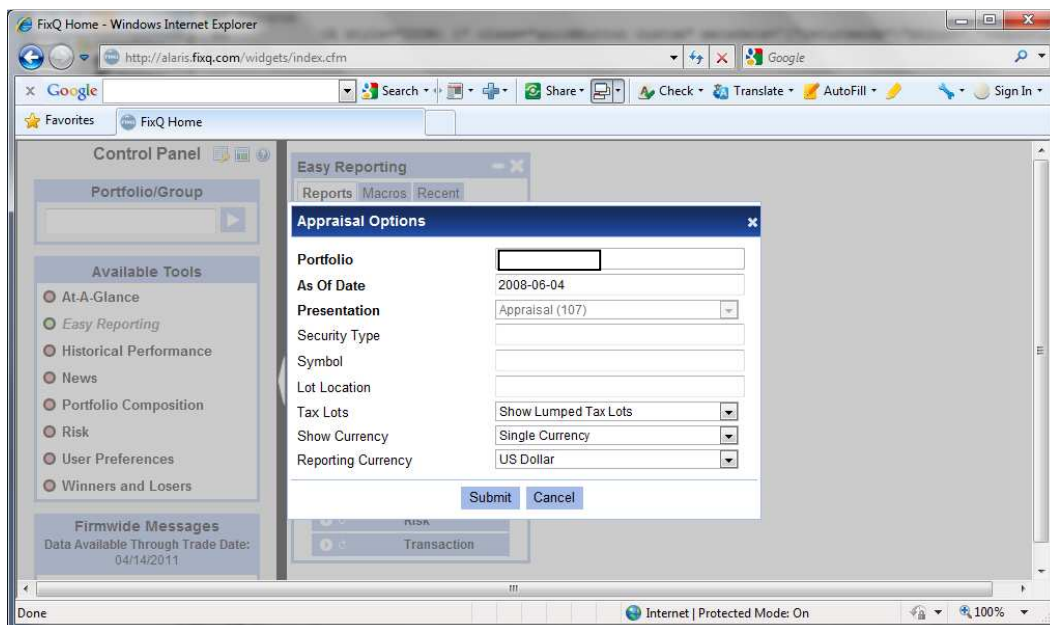
The agent redirects IE to the page of the bottom frame.



Next, the agent searches to find the correct report, report # 107, selects it, and enters the date of the report to run.

```
'Search for and select the Appraisal Custom Period Report (107)
'open form to enter date
endoflist = agent1.explorer.document.body.all.Length
For x = 0 To agent1.explorer.document.body.all.Length - 1
  If agent1.explorer.document.body.all(x).tagname = "A" Then
    If InStr(1, agent1.explorer.document.body.all(x).outerHTML, "Appraisal for a Custom Period") > 0 Then
      Debug.Print x, agent1.explorer.document.body.all(x).outerHTML
      agent1.explorer.document.body.all(x).Click
    Exit For
  End If
End If
Next

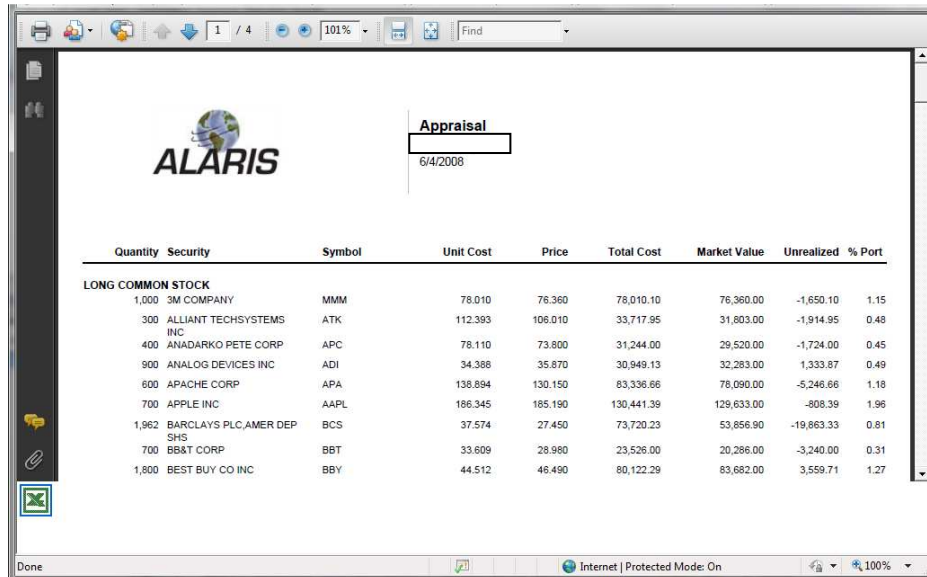
'Enter date
Cells(rptNumber, 1).Font.Bold = True
Debug.Print Cells(rptNumber, 1)
rptDate = Cells(rptNumber, 1).text
agent1.explorer.document.body.all("requestdate").Value = Cells(rptNumber, 1).text
```



It's import to enter the agent's sub, waitForLoad, so that the program waits for the report to appear before send the next command. The agent needs to then attach to the newly opened report on a new IE window.

```
'attach to newly opened browser window
Do
agent1.waitForLoad
Loop Until agent1.attach("reports")
Debug.Print agent1.explorer.document.Location
```

Here is an example of one of the reports. From here, the program finds the Excel version of this PDF, which is named similarly to the PDF. The agent saves the excel file in the same location as the workbook. The new name carries the report date at the end.

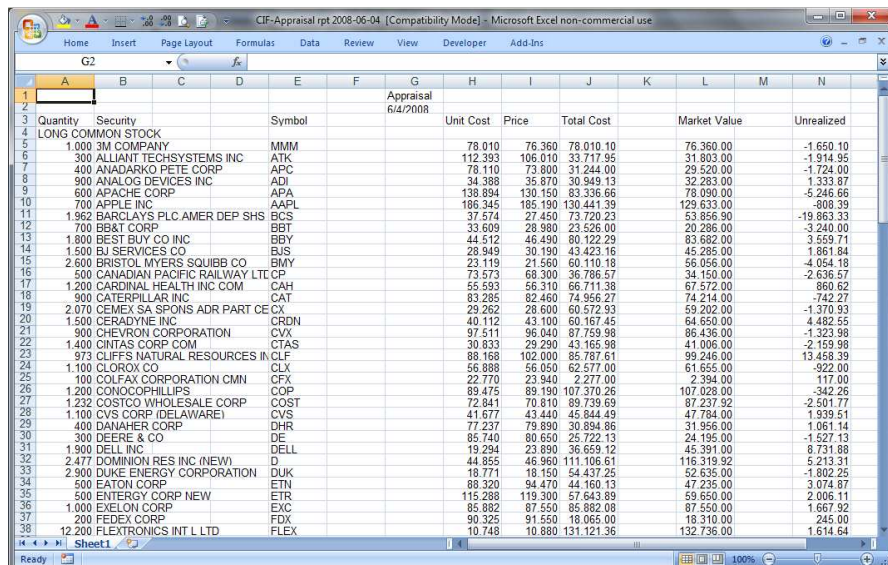


Quantity	Security	Symbol	Unit Cost	Price	Total Cost	Market Value	Unrealized	% Port
<b>LONG COMMON STOCK</b>								
1,000	3M COMPANY	MMM	78.010	78.360	78,010.10	76,360.00	-1,650.10	1.15
300	ALLIANT TECHSYSTEMS	ATK	112.393	106.010	33,717.95	31,803.00	-1,914.95	0.48
400	ANADARKO PETE CORP	APC	78.110	73.800	31,244.00	29,520.00	-1,724.00	0.45
900	ANALOG DEVICES INC	ADI	34.388	35.870	30,949.13	32,283.00	1,333.87	0.49
600	APACHE CORP	APA	138.894	130.150	83,336.66	78,090.00	-5,246.66	1.18
700	APPLE INC	AAPL	186.345	185.190	130,441.39	129,633.00	-808.39	1.96
1,962	BARCLAYS PLC/AMER DEP SHS	BCS	37.574	27.450	73,720.23	53,856.90	-19,863.33	0.81
700	BB&T CORP	BBT	33.609	28.980	23,526.00	20,286.00	-3,240.00	0.31
1,800	BEST BUY CO INC	BBY	44.512	46.490	80,122.29	83,682.00	3,559.71	1.27

The Excel file is then opened, and formatted. Empty columns and unnecessary rows are removed, and some detail is added to the cash line.

```
'Format File
Workbooks.Open ThisWorkbook.path & "\CIF-Appraisal rpt " & Cells(rptNumber, 1).text & ".xls"
Call deleteColumns
Call deleteRows
ActiveSheet.Name = rptDate
ActiveWorkbook.Close SaveChanges:=True
```

Before :



Quantity	Security	Symbol	Unit Cost	Price	Total Cost	Market Value	Unrealized
<b>LONG COMMON STOCK</b>							
1,000	3M COMPANY	MMM	78.010	76.360	78,010.10	76,360.00	-1,650.10
300	ALLIANT TECHSYSTEMS	ATK	112.393	106.010	33,717.95	31,803.00	-1,914.95
400	ANADARKO PETE CORP	APC	78.110	73.800	31,244.00	29,520.00	-1,724.00
900	ANALOG DEVICES INC	ADI	34.388	35.870	30,949.13	32,283.00	1,333.87
600	APACHE CORP	APA	138.894	130.150	83,336.66	78,090.00	-5,246.66
700	APPLE INC	AAPL	186.345	185.190	130,441.39	129,633.00	-808.39
1,962	BARCLAYS PLC/AMER DEP SHS	BCS	37.574	27.450	73,720.23	53,856.90	-19,863.33
700	BB&T CORP	BBT	33.609	28.980	23,526.00	20,286.00	-3,240.00
1,800	BEST BUY CO INC	BBY	44.512	46.490	80,122.29	83,682.00	3,559.71
1,500	BJ SERVICES CO	BJS	28.949	30.190	43,423.16	45,285.00	1,861.84
2,600	BRISTOL MYERS SQUIBB CO	BMJ	23.119	21.560	60,110.18	56,056.00	-4,054.18
500	CANADIAN PACIFIC RAILWAY LTD CP	CP	73.573	68.300	36,786.57	34,150.00	-2,636.57
1,200	CARDINAL HEALTH INC COM	CAH	55.593	56.310	66,711.38	67,572.00	860.62
900	CATERPILLAR INC	CAT	83.285	82.460	74,956.27	74,214.00	-742.27
2,070	CEMEX SA SPONS ADR PART CEX	CEX	29.262	28.600	60,572.93	59,202.00	-1,370.93
1,500	CERADYNE INC	CRDN	40.112	43.100	60,167.45	64,650.00	4,482.55
900	CHEVRON CORPORATION	CVX	97.511	96.040	87,759.98	86,436.00	-1,323.98
1,400	CINTAS CORP COM	CTAS	30.833	29.290	43,166.98	41,006.00	-2,159.98
973	CLIFFS NATURAL RESOURCES INC	CLF	88.168	102.000	85,787.61	99,246.00	13,458.39
1,100	CLOROX CO	CLX	56.888	56.050	62,577.00	61,655.00	-922.00
100	COLFAX CORPORATION	CFX	22.770	23.940	2,277.00	2,384.00	107.00
1,200	CONOCOPHILLIPS	COP	89.475	89.190	107,370.26	107,028.00	-342.26
1,232	COSTCO WHOLESALE CORP	COST	72.841	70.810	89,739.69	87,237.92	-2,501.77
1,100	CVS CORP (DELAWARE)	CVS	41.677	43.440	45,844.49	47,784.00	1,939.51
400	DANAHER CORP	DHR	77.237	79.890	30,894.86	31,956.00	1,061.14
300	DEERE & CO	DE	85.740	80.650	25,722.13	24,195.00	-1,527.13
1,900	DELL INC	DELL	19.294	23.890	36,659.12	45,391.00	8,731.88
2,477	DOMINION RES INC (NEW)	D	44.855	46.960	111,106.61	116,319.92	5,213.31
2,900	DUKE ENERGY CORPORATION	DUK	18.771	18.150	54,437.25	52,635.00	-1,802.25
500	EATON CORP	ETN	88.320	94.470	44,160.13	47,235.00	3,074.87
500	ENTERGY CORP NEW	ETR	115.288	119.300	57,643.89	59,650.00	2,006.11
1,000	EYELON CORP	EXC	85.882	87.550	85,882.00	87,550.00	1,667.92
200	FEDEX CORP	FDX	90.325	91.550	18,065.00	18,310.00	245.00
12,200	FLEXTRONICS INT L LTD	FLEX	10.748	10.880	131,121.36	132,736.00	1,614.64

After :

Quantity	Security	Symbol	Unit Cost	Price	Total Cost	Market Val	Unrealized	% Port
1,000	3M COMP	MMM	78.010	76.360	78,010.10	76,360.00	-1,650.10	1.15
300	ALLIANT	TEATK	112.393	106.010	33,717.95	31,803.00	-1,914.95	0.48
400	ANADARK	APC	78.110	73.800	31,244.00	29,520.00	-1,724.00	0.45
900	ANALOG	DADI	34.388	36.870	30,949.13	32,283.00	1,333.87	0.49
600	APACHE	CAPA	138.894	130.150	83,336.66	78,090.00	-5,246.66	1.18
700	APPLE	INCAAPL	186.345	185.190	130,441.39	129,633.00	-808.39	1.96
1,962	BARCLAYS	BGS	37.574	27.450	73,720.23	53,856.50	-19,863.73	0.81
700	BEST	CORBBT	33.609	28.980	23,526.00	20,286.00	-3,240.00	0.31
1,800	BEST	BUYBBY	44.512	46.490	80,122.29	83,682.00	3,559.71	1.27
1,500	BJ	SERVICBUS	28.949	30.190	43,423.16	45,285.00	1,861.84	0.68
2,600	BRISTOL	M BMY	23.119	21.560	60,110.18	56,056.00	-4,054.18	0.85
500	CANADIAN	CP	73.573	68.300	36,786.57	34,150.00	-2,636.57	0.52
1,200	CARDINAL	CAH	55.593	56.310	66,711.38	67,572.00	860.62	1.02
900	CATERPILL	CAT	83.285	82.460	74,956.27	74,214.00	-742.27	1.12
2,070	CEMEX	SACX	29.262	28.600	60,572.93	59,202.00	-1,370.93	0.90
1,500	CERADYNE	CRDN	40.112	43.100	60,167.45	64,650.00	4,482.55	0.98
900	CHEVRON	CVX	97.511	96.040	87,759.98	86,436.00	-1,323.98	1.31
1,400	CINTAS	CCCTAS	30.833	29.290	43,165.98	41,006.00	-2,159.98	0.62
973	CLIFFS	HA CLF	88.168	102.000	85,787.61	99,246.00	13,458.39	1.50
1,100	CLOXOX	CCLX	56.888	56.050	62,577.00	61,655.00	-922.00	0.93
22,770	COLFAX	CCLFX	22.770	23.940	2,277.00	2,394.00	117.00	0.04
1,200	CONOCOP	COP	89.475	89.190	107,370.26	107,028.00	-342.26	1.62
1,232	COSTCO	W COST	72.841	70.810	89,739.69	87,237.52	-2,501.77	1.32
1,100	CVS	CORPCVS	41.677	43.440	46,844.48	47,784.00	939.51	0.72
400	DANAHER	DHR	77.237	79.890	30,894.86	31,956.00	1,061.14	0.48
300	DEERE & DE	DE	85.740	80.650	25,722.13	24,195.00	-1,527.13	0.37
1,900	DELL	INC DELL	19.284	23.890	36,659.12	45,391.00	8,731.88	0.69
2,477	DOMINION	D	44.855	46.960	111,106.61	116,319.92	5,213.31	1.76
2,900	DUKE	ENE DUK	18.771	18.150	54,437.25	52,635.00	-1,802.25	0.80
500	EATON	CO ETN	88.320	94.470	44,160.13	47,235.00	3,074.87	0.71
500	ENTERGY	ETR	115.288	119.300	57,643.89	59,650.00	2,006.11	0.90
1,000	EXELON	CEXC	85.882	87.550	85,882.08	87,550.00	1,667.92	1.32
200	FEDEX	CO FDX	90.325	91.550	18,065.00	18,310.00	245.00	0.28
12,200	FLEXTRON	FLEX	10.748	10.880	131,121.36	132,736.00	1,614.64	2.01
500	FLOWSER	FLS	123.420	134.480	61,710.01	67,240.00	5,529.99	1.02
400	FLUOR	CO FLR	164.979	185.510	65,991.61	74,204.00	8,212.39	1.12
700	FOSTER	W FWLT	67.166	76.400	47,016.40	53,480.00	6,463.60	0.81

The agent reattaches to the Alaris site's menu, and the next report is selected.

'Return to Index page

agent1.attach ("index")

Cells(rptNumber, 1).Font.Bold = False

rptNumber = rptNumber + 1

A	B	C	D	E	F	G	H	I
2008-06-04	6/4/2008							
2008-06-05	6/5/2008							
2008-06-06	6/6/2008							
2008-06-09	6/9/2008							
2008-06-10	6/10/2008							
2008-06-11	6/11/2008							
2008-06-12	6/12/2008							
2008-06-13	6/13/2008							
2008-06-16	6/16/2008							
2008-06-17	6/17/2008							
2008-06-18	6/18/2008							
2008-06-19	6/19/2008							
2008-06-20	6/20/2008							
2008-06-23	6/23/2008							
2008-06-24	6/24/2008							
2008-06-25	6/25/2008							
2008-06-26	6/26/2008							
2008-06-27	6/27/2008							
2008-06-30	6/30/2008							
2008-07-01	7/1/2008							
2008-07-02	7/2/2008							
2008-07-03								
2008-07-04								
2008-07-07								
2008-07-08								

Enter the dates of the reports you wish to extract in column A, starting in cell A1. Enter your Alaris username and password below and click Retrieve Reports.

The reports will be saved at the same location as this workbook. The report that is being produced will appear in bold text in column A and saved reports will appear in column C.

Username:

Password:

To prevent IE from crashing, added a pause of 5 seconds.

PauseApp 5

## Things learned and technical difficulties

- I found out dates are difficult to deal with. I was not able to use the form I spent so much time on. The form had a simple from-to date entry, but I was not able to get the right dates to load into an array. Dates in arrays are also touchy. I was able to get an array to load all of the dates I put in column A, but then I difficulty using the array variable throughout the rest of script. Formatting the dates properly was also a struggle. If Alaris accepted the date to be entered in the customary format, m/d/yyyy, I think it would have been easier.

- Memory, processing power and/or timing. The program runs well for 5-7 reports and then IE disappears and the program stops. If I run it manually by pressing play once every report, it runs consistently. I am not sure if the problem is due to memory issues or timing. I entered a sleep for 3 seconds, and I thought that would be a quick fix. Each report already takes about 12 seconds to fetch so what's another 3, right? Well, not enough. IE would still collapse after about five reports. I moved it to 5 seconds, and produced 27 reports before IE crashed.

```
Private Declare Sub AppSleep Lib "kernel32" Alias "Sleep" (ByVal dwMilliseconds As Long)
```

```
Public Sub PauseApp(PauseInSeconds As Long)  
    Call AppSleep(PauseInSeconds * 1000)  
End Sub
```

- Forms. I designed a sleek entry form for the username, password, and dates, but I was not successful at having the module read from the text boxes on the forms. In the question of time, I went with entering the data onto the Excel spreadsheet instead.
- Navigating Cascading Style Sheets is challenging, but similar to html.