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TARP Report Generator: United States Department of the Treasury

Executive Summary

The Department of the Treasury's mission is to serve the American people and strengthen national security by managing the U.S. Government's finances effectively, promoting economic growth and stability, and ensuring the safety, soundness, and security of the U.S. and international financial systems.

The Treasury Department is the executive agency responsible for promoting economic prosperity and ensuring the financial security of the United States. Treasury is responsible for a wide range of activities such as advising the President on economic and financial issues, encouraging sustainable economic growth, and fostering improved governance in financial institutions. Treasury operates and maintains systems that are critical to the nation's financial infrastructure, such as the production of coin and currency, the disbursement of payments to the American public, revenue collection, and the borrowing of funds necessary to run the federal government. The Department works with other federal agencies, foreign governments, and international financial institutions to encourage global economic growth, raise standards of living, and to the extent possible, predict and prevent economic and financial crises. Treasury also performs a critical and far-reaching role in enhancing national security by implementing economic sanctions against foreign threats to the U.S., identifying and targeting the financial support networks of national security threats, and improving the safeguards of our financial systems.

Organization

The Department of the Treasury is organized into two major components the Departmental offices and the operating bureaus. The Departmental Offices are primarily responsible for the formulation of policy and management of the Department as a whole, while the operating bureaus carry out the specific operations assigned to the Department. Our bureaus make up 98% of the Treasury work force. The basic functions of the Department of the Treasury include:

- Managing Federal finances;
- Collecting taxes, duties and monies paid to and due to the U.S. and paying all bills of the U.S.;
- Currency and coinage;
- Managing Government accounts and the public debt;
- Supervising national banks and thrift institutions;
- Advising on domestic and international financial, monetary, economic, trade and tax policy;
- Enforcing Federal finance and tax laws;
- Investigating and prosecuting tax evaders, counterfeiters, and forgers.



My Internship

Last Fall, I completed an internship at the United States Department of the Treasury where I was a member of the TARP team charged with analyzing applications from over 650 financial institutions for preferred equity under the Capital Purchase Program. Part of my duties included designing and maintaining an excel-based information system to record and track all applications including the amount requested and the amount disbursed. I started out using index functions, but after 50 or so applications the spreadsheet began to slow considerably. I spent a considerable amount of time producing such reports and a VBA-based solution would have saved our team a tremendous amount of time.

For my project, I put together a series of user forms which any end-user with a basic understanding of how Microsoft Excel works can interact with to produce dynamic reports of amounts from various investment committee meetings. I presented my former colleagues with my project and they are now using it to track and manage Treasury's investments which total nearly \$100 billion to save time and resources to produce the reports that in the past took hours to produce now take only a matter of seconds.

Implementation Documentation

The TARP team collects numerous financial institution-specific data including: financial institution name, unique financial regulator identification number, CEO name, CFO name, etc. (see exhibit 1). By clicking on the "Generate Report" button the user effectively initiates the following process:

1. Fire the open frmSelect event to display the "Select Investment Committee Date" Form to the user
 - a. txtDate_Change subprocedure ensures the user enters a valid date
 - b. cmbOK_Click subprocedure loads the number of investment committee dates from the "Input Data" worksheet into an array to be called later on in the program
2. If a valid investment committee date is found, the code will then fire the open "Select Report Criteria" event
 - a. The user is greeted by a welcome page on the user form and then moves to the "Select Criteria" page
 - b. The User Form receives the checked fields and once the user clicks "OK" inserts a new worksheet displaying the user's custom generated report

Exhibit 1

(\$ in millions)

Investment Committee Date	Bank Id Number	Date Received	Financial Institution	TARP Amount	Date Approved	Phone Number	Address	CEO Name	CEO Phone Number	CFO Name	CFO Phone Number	Fax Number
09/09/2008	1	10/23/2008	JP Morgan	\$25,000	11/6/2008	(123) 456-0945	411 York Dr.	Jamie Dimon	(123) 456-7890	Jaime Dimon	(123) 456-7890	(123) 456-2312
09/09/2008	2	10/23/2008	Goldman Sachs	\$10,000	11/6/2008	(459) 980-1223	85 Broad St.	Lloyd Blankfein	(459) 980-7890	David Vnair	(459) 980-7890	(459) 456-1200
09/18/2008	3	10/30/2008	Morgan Stanley	\$10,000	11/13/2008	(800) 437-1234	200 West St.	John Mack	(800) 437-7890	John Mack	(800) 437-7890	(800) 456-0657
09/18/2008	4	10/30/2008	Citi	\$25,000	11/13/2008	(100) 111-5678	1 New York Plaza	Vikram Pandit	(100) 111-7890	Vikram Pandit	(100) 111-7890	(100) 456-0900
09/25/2008	5	11/6/2008	Wells Fargo	\$25,000	11/20/2008	(134) 908-9101	683 Knight Dr.	Ryan Wood	(134) 908-7890	Ryan Wood	(134) 908-7890	(134) 456-5400
09/25/2008	6	11/6/2008	National City	\$3,000	11/20/2008	(763) 399-2131	60 Wall Street	Lori Bettinger	(763) 399-7890	Gove Allen	(763) 399-7890	(501) 456-7050
09/25/2008	7	11/13/2008	PNJC	\$15,000	11/27/2008	(103) 123-4151	180 Maiden Lane	Justin Hall	(103) 123-7890	Jose Sanchez	(103) 123-7890	(504) 456-9000
10/30/2008	8	11/13/2008	Firm, Trid	\$3,000	11/27/2008	(120) 470-6178	100 Park Ave.	Lindy Gustafsson	(120) 470-7890	James Downs	(120) 470-7890	(890) 456-2310
10/30/2008	9	11/13/2008	Zion's	\$3,000	11/27/2008	(989) 830-0009	670 5th Ave.	Gordon Brown	(732) 830-7890	Rachel Wood	(853) 830-7890	(844) 456-1111
10/30/2008	10	11/13/2008	Huntington Bancshares	\$1,000	11/27/2008	(231) 300-9944	284 Grand Ave.	Simon Rome	(231) 456-0984	Ulysses Grant	(280) 234-2040	(280) 105-2310

Generate TARP Report



Select Investment Committee Date User Form

By clicking on the “Generate TARP Report” button, the user calls the *launchReport* subprocedure which simply shows the following user form entitled “Select Investment Committee Date”.

A subprocedure entitled *txtDate_Change* then ensures that the characters the user has entered are of the appropriate character so that the program will be able to read them later on. If characters are not between 48 and 57 according to the ASCII scale, the *txtDate_Change* subprocedure will return an error prompting the user to enter a valid date. This code was included to ensure that the user enters a valid string of characters which represent the MM/DD/YYYY date convention. The code is intended to produce a dialogue box notifying the user if he or she entered an illegitimate string of characters and then immediately exiting the program. This was done so that the user could re-attempt the query with a fresh start:

```
Private Sub txtDate_Change()  
    Dim TempTxt As String  
    Dim LTempTxt As String  
    Dim V As String  
    Dim Wrong As String  
    Dim msg As String  
    Dim MM As String  
  
    icd = txtDate.Text  
  
    TempTxt = txtDate.Text  
    LTempTxt = Len(TempTxt)  
    x = 1  
    '48 TO 57 = ASCII for Numbers 0 to 9 (NB 47 = "\")  
    If TempTxt = "" Then GoTo Fin 'Test for empty entry  
    For x = 1 To LTempTxt  
        V = CDb1(Asc(Mid(TempTxt, x, 1)))  
        Wrong = Mid(TempTxt, x, 1)  
        If V < 47 Or V > 58 Then  
            msg = "The input you entered:= <" & Wrong & " >,is not valid!" & Chr(13)  
            msg = msg & "Valid data = a Number or /"  
            MsgBox msg, vbCritical, "Invalid Input"  
            txtDate.Text = Left(TempTxt, x - 1)  
        End  
    End If  
    Next x  
    On Error GoTo ErrDate  
    If LTempTxt > 6 Then MM = txtDate.Text  
    Fin:  
    lblDescription.Caption = " Date = " & Format(txtDate.Text, "dd mmmm yyyy")  
    Exit Sub  
    ErrDate:  
    MsgBox "Error in Date input"  
  
End Sub
```

Once the user has entered a date following the correct syntax as prescribed above, the user will then click the “OK” button which fires the *cmbOK_click* subprocedure. Fundamentally, this next segment of code loads the date the user entered previously into an array and then checks the date against all the dates in the current investment committee database for matches. If the date entered does not match any of the dates in the database, the user will encounter a message box

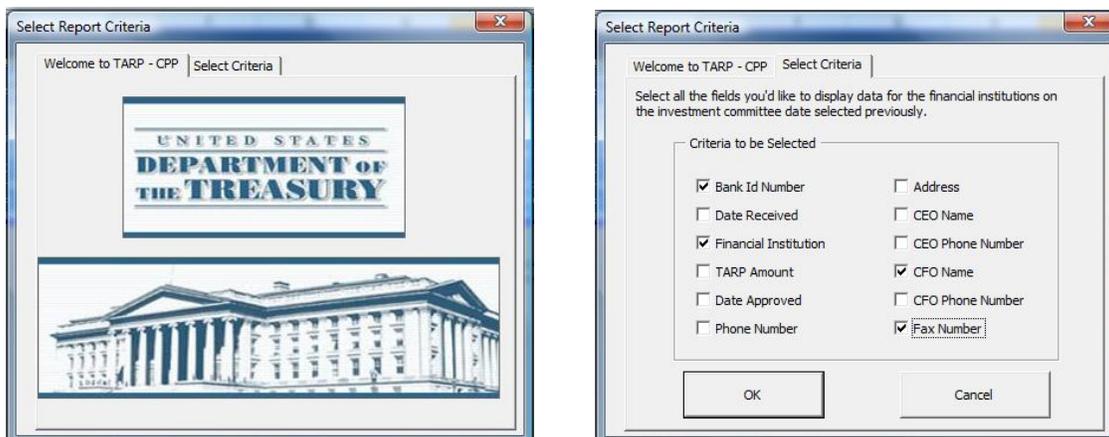


indicated that no match could be located. If a valid match is found, the code will load the “Select Report Criteria” user form:

```
Sub cmbOK_Click()  
  
    ' initialize the key variables  
    isFound = False  
    x = 0  
  
    ' set the range to analyze  
    Set rngData = Sheets("Input Data").Range("A4:A" & Range("A4").End(xlDown).row)  
  
    ' set up array  
    ReDim report(x)  
    For Each cell In rngData  
        If cell.Value = icd Then  
            isFound = True  
            ReDim Preserve report(x)  
            report(x) = cell.Address  
  
            x = x + 1  
        End If  
    Next  
  
    ' if no date was entered, return error message  
    ' show the next form if a valid investment committee date exists  
    ' if an invalid investment committee date was entered, return error message  
    If icd = "" Then  
        MsgBox "Please enter a valid investment committee date.", vbCritical  
    ElseIf isFound = True Then  
        frmEdit.Show  
        Unload Me  
    Else  
        MsgBox "There was no investment committee meeting held that day, so no report can be generated.", vbCritical  
    End If  
End Sub
```

Select Report Criteria User Form

Once the user has selected a valid investment committee date the “Select Report Criteria” User Form will load and the user will see the “Welcome to the TARP – CPP” page greeting and can then flip to the “Select Criteria” page. After doing so the user can then select the relevant fields he or she would like to build the report on. The user has a total of 12 fields to choose from.



Each option button located on the “Select Criteria” page has a value property which can be either true or false. If the user checks the option button indicating he or she would like to include the field in the report the following code will ensure that the field appears in the report:



```
Private Sub btnOK_Click()  
Dim Sheet As Worksheet  
Dim WS As Worksheet  
Dim ID As Worksheet  
Dim lngIndex As Integer  
Dim ckbArray(2 To 13) As Boolean  
  
' initialize variables  
x = 0  
  
' set the range to analyze  
Set rngData = Sheets("Input Data").Range("A4:A" & Range("A4").End(xlDown).row)  
  
' Load checkbox data into checkbox array  
For lngIndex = 2 To 13  
    ckbArray(lngIndex) = Me.Controls("ckb" & lngIndex).Value  
Next  
  
' Prepare name of new sheet and check to make sure a report for the date selected does not already exist  
Set ID = Sheets("Input Data")  
formatDate = Replace(frmSelect.txtDate, "/", ".")  
For Each Sheet In ActiveWorkbook.Worksheets  
    If Sheet.Name = formatDate & "Report" Then  
        MsgBox "A report for this investment committee date already exists. Please select another date.", vbCritical  
        Unload Me  
        End  
    End If  
Next  
  
' Add the new sheet and begin preliminary formatting  
Application.ScreenUpdating = False  
Set WS = Sheets.Add  
WS.Name = formatDate & " " & "Report"  
WS.Range("A1").Value = ID.Range("A1").Value  
WS.Range("A1").Font.ThemeColor = xlThemeColorDark1  
WS.Range("A1").Font.Size = 12  
  
' Load the row array with all financial institutions matching the investment committee date selected  
x = 0  
ReDim row(x)  
For Each cell In rngData  
    If cell.Value = frmSelect.txtDate Then  
        ReDim Preserve row(x)  
        row(x) = cell.row  
        x = x + 1  
    End If  
Next  
  
' Using the checkbox array previously created, load the information from each applicable financial institution  
' as well as the appropriate field previously selected in the frmSelect userform  
' also set formatting to match original report  
x = 0  
For lngIndex = 2 To 13  
    If ckbArray(lngIndex) = True Then  
        With WS.Cells(3, x + 1)  
            .Value = ID.Cells(3, lngIndex).Value  
            .Font.Bold = True  
            .Font.Underline = xlUnderlineStyleSingle  
            .Font.Size = 14  
            .Font.ThemeColor = xlThemeColorDark1  
            .Interior.ThemeColor = xlThemeColorLight2  
            .Interior.TintAndShade = -0.249946592608417  
        End With  
        With WS.Cells(1, x + 1)  
            .Interior.ThemeColor = xlThemeColorLight2  
            .Interior.TintAndShade = -0.249946592608417  
        End With  
        With WS.Cells(2, x + 1)  
            .Interior.ThemeColor = xlThemeColorLight2  
            .Interior.TintAndShade = -0.249946592608417  
        End With  
        x = x + 1  
    End If  
  
' load in the data from the Input Data worksheet for each appropriate financial institution  
y = 0  
For x = 0 To UBound(row())  
    y = 0  
    For lngIndex = 2 To 13  
        If ckbArray(lngIndex) = True Then  
            WS.Cells(x + 4, y + 1).Value = ID.Cells(row(x), lngIndex).Value  
            With WS.Cells(x + 4, y + 1).Font  
                .Size = 12  
                .Underline = xlUnderlineStyleNone  
                .ThemeColor = xlThemeColorDark1  
            End With  
            With WS.Cells(x + 4, y + 1).Interior  
                .ThemeColor = xlThemeColorLight2  
                .TintAndShade = 0.399945066682943  
            End With  
            y = y + 1  
        End If  
    Next  
Next  
  
' Set print area, zoom to 100%, resize row 2, and turn screenupdating back on  
WS.PageSetup.PrintArea = WS.Range("A1:" & Mid(WS.Range("A3").End(xlToRight).Address, 2, 1) & CStr(WS.Range("A3")  
ActiveWindow.View = xlPageBreakPreview  
WS.Columns.AutoFit  
ActiveWindow.Zoom = 100  
Rows("2:2").RowHeight = 6  
Application.ScreenUpdating = True  
Unload Me  
End  
End Sub
```



At a high level, the previous code checks to see which option buttons are selected and then loads the values into an array. Next, a new sheet is created as long as a report for the same investment committee date does not already exist. Finally, the selected fields from the fields array load themselves along with their associated values for each financial institution which culminates in a final report. The aforementioned code is intended to provide the end user with a dynamic medium for creating customized reports in a fraction of the time required to produce said report manually (see Exhibit 2).

Exhibit 2

(\$ in millions)

Bank Id Number	Financial Institution	TARP Amount	CEO Name	CEO Phone Number	Fax Number
8	Fifth Third	\$3,000.00	Lindy Gustafasson	(120) 470-7890	(890) 456-2310
9	Zion's	\$3,000.00	Gordon Brown	(732) 830-7890	(944) 456-1111
10	Huntington Bancshares	\$1.00	Simon Rome	(231) 456-0984	(260) 105-2310

Learning & Conceptual Difficulties

I must admit the going into the project I felt very insecure while using both user forms and arrays and was less than confident that I'd be able to employ these two powerful aspects of the VBA programming environment to solve this Treasury report problem. However, I knew that in order to make my project successful that I would need to include both elements into my final work product. Two of the most valuable lessons I learned while attempting to solve a myriad of debugging issues included (1) using break points and the "F8" key to step through individual lines or code and (2) using internet resources where fellow programmers gave detailed walk-throughs to common programming problems.

For example, I spent literally five hours attempting to debug one line of code while I was setting up an array called "report" which stored the row number of each financial institution that matched the investment committee date selected. Even though Dr. Allen had time and time again emphasized the importance of using both break points and the "F8" key it wasn't until I stumbled upon a VBA posting online that I remembered these important debugging tools. Using them, I found the bug rapidly and had moved on to the next problem with my code. This painfully experience, illustrates the importance of both (1) the use of break points and (2) leveraging the existing knowledge available on the internet.

Fortunately, I was able to get all of the elements I wanted to include in this project to work which helped me meet the needs of my former colleagues who are currently using the report generator I created. Although this project took over 80 hours to create, I not only solved a very relevant business problem, but also learned a great deal more about arrays and user forms which further solidified the material I learned this semester.