
Final Project

IS 520 Spreadsheet Automation / Modeling

April 15, 2013

BYU MPA

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Executive Summary

I have worked with a nonprofit organization called “Asian Association of Utah – Refugee and Immigrant Center.” During the Fall 2013 semester, some of my MPA classmates and I developed a protocol to evaluate a youth refugee program that included regression analysis and 360 assessment methodology to determine whether the program is reaching its intended outcomes. We launched the program evaluation plan at the beginning of the Winter 2014 semester. This evaluation plan is designed to be conducted until April 2015.

We have collected monthly survey data from youth refugees, case managers, school counselors, teachers, probation officers, mental therapists, and others who are related to the refugee students to perform statistical analysis. There were approximately between 60 and 100 surveys collected each month. Since each student has a different period of participation in the program and those who affect the students vary, managing the survey-recipient pool and sending the survey to the right recipients with limited employees have hindered the efficiency of the organization.

According to the evaluation plan, the case manager has collected administrative data, such as students’ GPA, absences, and tardiness, to evaluate the impact of the program. My client wanted to have an organized data collection sheet so that he could look at the data at a glance and edit them if necessary. Also, this data is confidential so it should not be revealed to those who did not pass the background check. These problems led me to create this project as a solution. The contents of the solution that I created for the problems are as follows:

- Created password input box for security of the workbook
 - Password pop-up
 - Hidden worksheet
- Created user form to input administrative data and edit it
 - Inputting and editing student’s information and administrative data
- Created email distributor to improve the efficiency and effectiveness of the organization
 - Managing mailing list
 - Sending email to everyone on the list or selected ones
- Created ribbon to make the access to the user form and email distributor easy

The following paragraphs discuss more details about these areas.

Implementation

Password user form

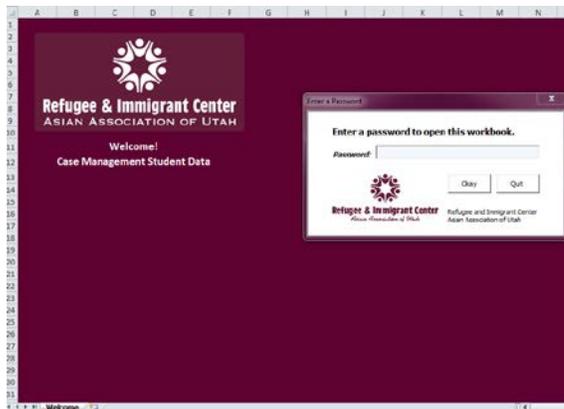
I created a password user form to make the workbook secured. Although VBA password cannot guarantee 100% security of the workbook, I was able to improve its security by using some VBA techniques. As a tip, another way to secure workbook is to open the VBA window and choose 'Thisworkbook', and then set password in property box. This is a built-in password form, so the user cannot change the interface as I did on the user form. The following illustrates what I did for this user form.

- **End-user friendly interface:** I used the matching color with the organization's one. Also, I used its logo on the user form to make the workbook friendlier to the end-user.

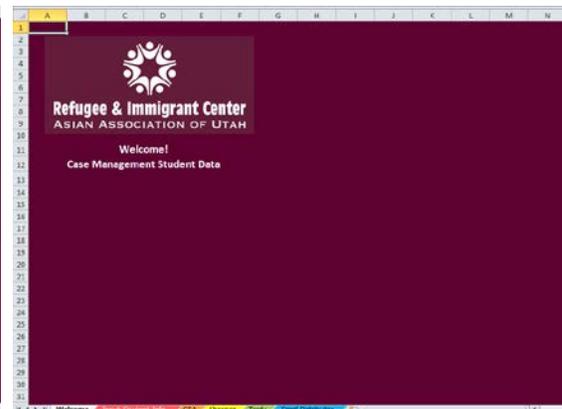


Password Form

- **Very-Hidden worksheets:** Once the workbook is opened, all the worksheets except the welcome sheet are hidden by using 'Very-hidden' function. This action prevents the sensitive data shown before someone inputs correct password. After inputting the correct password, the rest of the sheets will be shown.



Before Entering Password - Sheets hidden



After Entering Password – Sheets restored

- **Validation:** If a user does not type any character in the text box or the password input does not match with the set one, a message box will inform the user of the following messages.

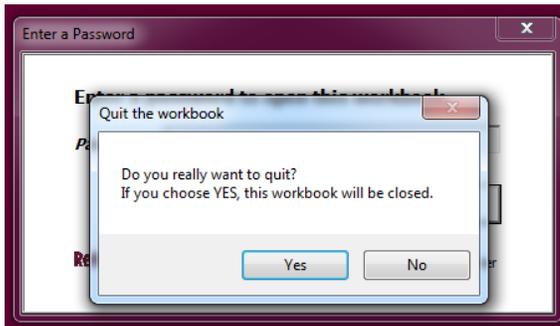


Message box when no character is input



Message box when incorrect password is input

- **Quit button:** If a user clicks 'Quit' button or 'X' button, the workbook will be closed as the user clicks 'Yes' button in the message box. However, if one or more excel workbooks are opened while this one is opened, 'Quit' button or 'X' button will only close this workbook.



Quit Button

Customized Ribbon

I created two customized ribbon: 1) Student Report and 2) Send Email.

- **Student Report ribbon:** By clicking this ribbon, it will execute the user form so that the user can input, edit, and see the data of a student that the user choose. I will explain more about the user form later.
- **Send Email ribbon:** By clicking this ribbon, it will bring the user to the 'Email Distributor' worksheet on the workbook so that the user can manage the email recipient lists, check the email sent status, and send emails to everyone on the list or to selected ones.



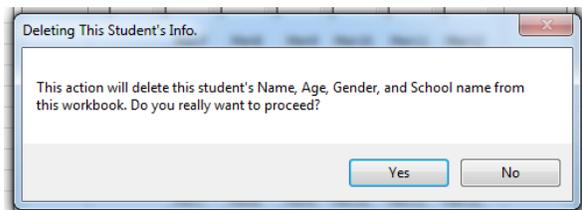
Customized Ribbon

Administrative Data User Form

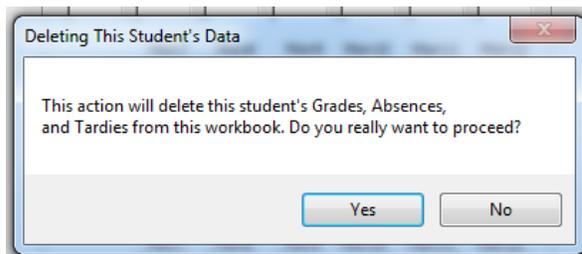
This user form is to help the user see each student's information and administrative data at a glance. This user form has several functions:

- Student information and administrative data input and edit:** To start using this form, the user needs to input student information either on the 'Input Student Info.' worksheet or on the user form. In the same way, the user can input a student's GPA, Absence, and Tardy on the form. Then, if the user clicks 'Okay' button, all the information on the form will be recorded on each worksheet. On the other hand, if the user clicks 'Cancel,' the data on the form will not be updated to each sheet. At the top-right side, there are 'Prev' and 'Next' button, and these buttons will help the user move to the previous' or next student's information and data.
- Clearing contents:** Below the 'School' and 'Gender' text boxes, there are two buttons, 'Clear Student Info.' and 'Clear Data on the Sheets.' The former button, 'Clear Student Info.,' will delete the chosen student's information, and the latter button, 'Clear Data on the Sheets,' will delete the chosen student's GPA, Absence, and Tardy data. Each button will execute a message box, which asks the confirmation of the action.

Student Report User Form



When execute 'Clear Student Info.' Button



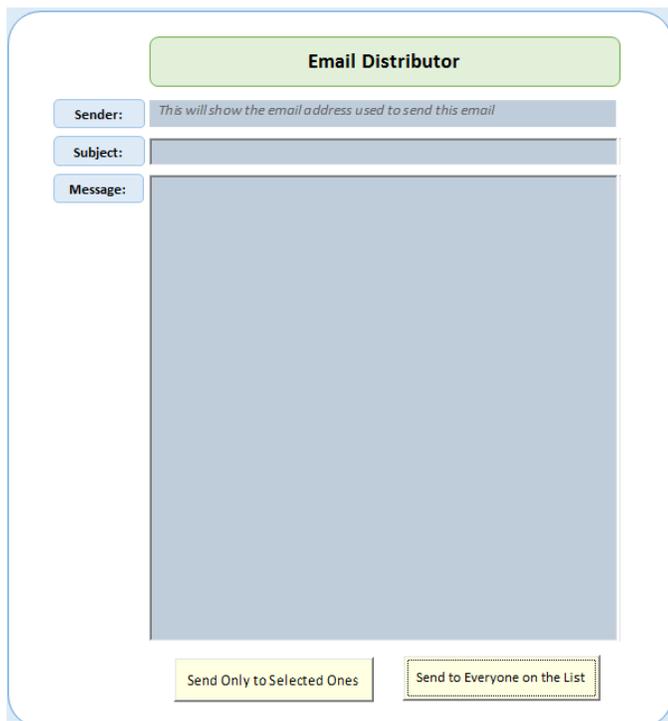
When execute 'Clear Data on the Sheets.' Button

- **Cross-sheet change for student information:** The student information of each sheet is linked by a VBA event. I used 'Private Sub Worksheet_Deactivate ()' event, so if the user changes the student information in one sheet, then the student information in other sheets also changes. This cross-sheet change is also applicable if the user changes the student information on this user form. By doing so, the student information on every sheet will be changed.
- **Out of data range alert:** The first and second rows are a title and a sub-title. Thus, if the user executes this user form on row 1 or 2, it cannot show the correct information. In order to prevent this problem, I wrote a code that the activecell only moves between row 3 and the last row that contains data. When the user tries to execute this form out of range, the Excel will make a beep sound and not allow the activecell to move out of range.

Email Distributor

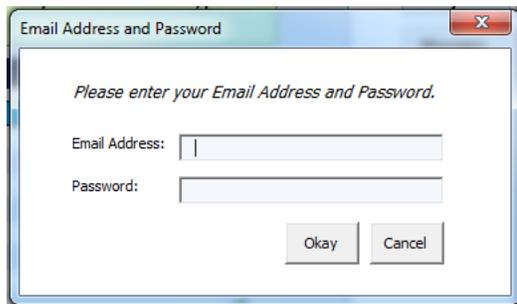
This email distributor is to help the user effectively manage the mailing list, check the email distribution status, and improve efficiency of tasks. Since the user needs to send out 60 to 100 emails monthly, the user can manage the list by inputting the email recipient's name, organization, email address, and other information on the sheet.

- **Active X Controls:** I created an email composer on the worksheet by using active X controls. This will allow the user to compose emails and send survey link to those who are on the mailing list without accessing their own email account.



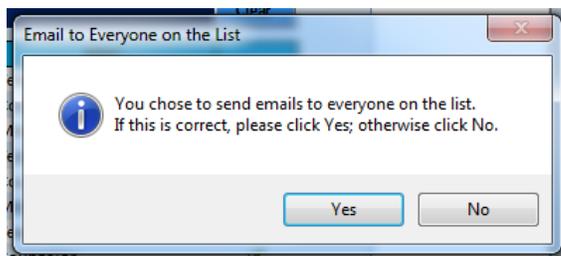
Active X Controls on 'Email Distributor' sheet

- **Email log-in:** Through this log-in process to the user's email account, the user can send emails on the excel sheet without accessing his or her email account on the internet. By entering this information and clicking 'Okay' button, the email will be sent out.



Email Log-in pop-up

- **Send to All:** After composing the email, the user can choose either 'Send to Everyone on the List' or 'Send Only to Selected Ones.' If the user wants to send the same email to everyone on the list, he or she can choose the former. Then, a message box will be shown to confirm the decision before the log-in pop-up. It is necessary to have this confirmation process because as soon as the user completes the log-in process, the email will be sent. If the user clicks 'Yes,' the Email log-in pop-up will be shown, and the user can finish the step to send the email to everyone.



Confirmation - Email to Everyone on the List

- **Send to selected ones:** This button will allow the user to send emails only to those he or she selected. In order to do this action, the user needs to select the individuals he or she wants to send emails to. To make it possible, I tried another way; however, I ended up using this code suggested by Dr. Allen after I modified a little bit:

```
Private Sub Worksheet_SelectionChange(ByVal Target As Range)
    If Target.Column = 2 And Target.Row >= 5 Then

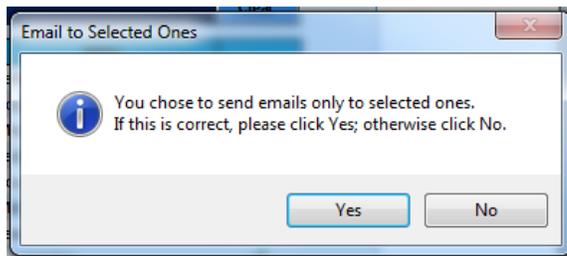
        If Target.Cells(1).Interior.Color = 16247773 Then
            Target.Interior.ColorIndex = 41
        Else
            Target.Interior.Color = 16247773
        End If

        Target.Offset(0, 1).Select
    End If

End Sub
```

This code allows the user to choose recipients by clicking cells on the column B ('No.'). After selecting people, the user clicks 'Send Only to Selected Ones' button, and then a message box

below will be shown and ask for the confirmation. As previously mentioned in the 'Send to All,' the user proceeds with the log-in process; emails are sent to selected ones.



Confirmation – Email to Selected Ones

Email List Manager						Clear
No.	Name	Organization	Email	MISC.		
1	Hyeonseung	BYU	a@xxx.xxx	Teacher		✓
2	Kyung min	UOU	a@xxx.xxx	Counselor		✓
3	Bred	AAU	a@xxx.xxx	Mental therapist		✓
4	Dudley Doright	ABC	a@xxx.xxx	Teacher		✓
5	Mark	CDF	a@xxx.xxx	Counselor		✓
6	Brittos	GHI	a@xxx.xxx	Mental therapist		✓
7	Angela	KEOW	a@xxx.xxx	Teacher		✓
8	Friend	JRNL	a@xxx.xxx	Counselor		✓
9	Hi	KWQO	a@xxx.xxx	Mental therapist		✓
10	Hello	QKEJ	a@xxx.xxx	Teacher		✓
11	Nice	SDA	a@xxx.xxx	Counselor		✓
12	Good	QWER	a@xxx.xxx	Mental therapist		✓
13	Bred	TRYE	a@xxx.xxx	Teacher		✗
14	Natalia	ERQER	a@xxx.xxx	Counselor		✗
15	Mark	QWER	a@xxx.xxx	Mental therapist		✗
16	Peter	BCX	a@xxx.xxx	Teacher		✗
17	Angela	DFG	a@xxx.xxx	Counselor		✗
18	Friend	GFHD	a@xxx.xxx	Mental therapist		✗
19	Hi	HJGF	a@xxx.xxx	Teacher		✗
20	Hello	BNC	a@xxx.xxx	Counselor		✗
21	Nice	QR	a@xxx.xxx	Mental therapist		✗
22	Good	SFDG	a@xxx.xxx	Teacher		✗
23	Angela	YTUR	a@xxx.xxx	Counselor		✗

How to Choose Those Who the User Wants to Send Emails to

- **Status indicator:** This is an indicator showing whether the email is successfully sent or not. If the email is successfully sent, the check mark will be shown on the very right column (Status); if the process is not successful, 'X' mark will be shown on the column. The user can clear the status by clicking 'Clear' button. This button is useful when the user wants to send the emails in a new month.

Email List Manager						Clear
No.	Name	Organization	Email	MISC.		Status
1	Hyeonseung	BYU	a@xxx.xxx	Teacher		✓
2	Kyung min	UOU	a@xxx.xxx	Counselor		✓
3	Bred	AAU	a@xxx.xxx	Mental therapist		✓
4	Dudley Doright	ABC	a@xxx.xxx	Teacher		✓
5	Mark	CDF	a@xxx.xxx	Counselor		✗
6	Brittos	GHI	a@xxx.xxx	Mental therapist		✗

Status Indicator

Learning & Difficulties

Before I took this class, I had never known about VBA. Thus, when I started my final project, I had a fear that I could not make a useful tool for the organization. However, at this point I can say that I have learned a lot from the class, the TA, the textbook and other resources; I successfully achieved my final project goals even though there are still many areas that I need to learn and improve. The following paragraphs discuss what I learned as well as what I found difficult from this project.

Learning

Active X Controls: I used active X control for email distributor. I did not know how to use form control and active X control; however, through this project, I came to know when and how to use these tools and it will be very useful.

Use of Events: Through this project, I dealt with different events, such as workbook open, close, beforeClose, activate, workbook deactivate, change, and selection change. I realized that knowing how to use events gives ability to reach the potential of Excel VBA.

Target: Target with SelectionChange was new to me. This tool allowed my codes to be more efficient and removed 'out of memory' issue.

Difficulties

Limitation on Security: Because my codes for the workbook security only work when the macro is enabled, I had to consider different situations where people could get around. For example, if I open my file while another VBA code is run using breakpoint, I could skip the password pop-up.

In order to minimize this security issue, I hid all the sheets except the welcome page. Before the workbook is closed, I activated welcome page and hid rest of the sheets so that when the workbook is opened, the sheets are already hidden.

However, the risk still exists. I googled and talked to Dr. Allen about this issue, and he said that VBA cannot completely secure the workbook. I hope that Microsoft can develop a method for higher security of a file.

Assistance

Since I started my final project early enough, I was able to spend enough time to complete the project. Whenever I faced a wall, first I tried to write a code by myself no matter how efficient the code was. Then, I talked to the TA or Dr. Allen to revise the codes so that they became efficient. I received help for the code revision in these two areas:

- Code for copying and pasting student information to other sheets (using worksheet deactivate event) – I first wrote a code to literally copy and paste the information using change event; however, it caused delay on my worksheet so I asked for help and edited my code.

- Code for choosing recipients (using worksheet selection change and target) – My original code was to use another user form to select recipient; however, it was more complicated than I thought. I asked Dr. Allen of how I could make it simpler. He taught me target object and how to use it.

Conclusion

Through this class, Spreadsheet Automation and Modeling, I have learned valuable knowledge and skills that I can use for not only my professional career but also my life. I have amazed how much potential the VBA has and it can be broadly used. This final project was a stepping stone for me, and I will continue to study VBA so that I can be a competent and contributing person in an organization.