

BYUTranslate Database Manager

VBA FINAL PROJECT

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BYUTranslate Database Manager

1 EXECUTIVE SUMMARY

The BYUTranslate Database Manager tool was built to solve a business problem faced by the Creative Works department at Brigham Young University with regard to managing the mobile application: BYUTranslate. This tool aids the Creative Works department mainly by 1) providing a uniform method of importing translations into the database, 2) alleviating unnecessary work from the developers, and 3) providing the department director means of managing the database in an easy-to-use fashion.

In terms of providing background of the BYUTranslate app, the app has been available to users since the 2012 London Olympics, as a means of providing Olympic workers with a reliable means of translating phrases. Since that time, the app has grown tremendously in functionality and breadth of available translations. Several Creative Works employees and volunteers enter translations into the app's database through a complicated process involving reading books in different languages, recording the phrases and their translations, running unreliable scripts to import the phrases into the database, and verifying that the database holds accurate and appropriate data. This process involves several complicated steps, multiple transfers of information, and technology that has a history of failure. The BYUTranslate Database Manager was made in order to simplify this process and bring greater reliability.

This tool aids those that import translations into the database by provided a uniform means of accomplishing their task. The BYUTranslate Database Manager provides a simple form (on the "Upload" sheet) for the user to enter phrases, their appropriate translations, and the languages involved in the translations. This was designed through consultation of the Creative Works director and people involved in importing new translations into the database. Furthermore, this project removes the task for developers in the department of running PHP scripts on the new translations in order to import the information into the database. By doing this, it will allow the developers to focus solely on managing the mobile application, adding enhancements to it, and fixing any bugs in the application. Lastly, the director of the Creative Works department will now be able to personally manage the integrity of the database through the functionality available on the "Download" sheet. On this sheet, it is possible to download a range of translations that have been inputted into the database, view important metadata about the translation, and even delete the translation if the director deems it to be necessary. This functionality, as requested by the department director, will less time than the current process of requesting information about the database from the developers.

Overall, the BYUTranslate Database Manager solves multiple problems faced by the Creative Works Department at BYU, while saving time and money for the organization. This tool aids those involved in identifying translations to be added to the database, and makes the process uniform for all of these people. Additionally, the tool removes the need for the BYUTranslate developers to perform the actual importing of the phrases into the BYUTranslate database, to be accessed by the app users. Lastly, the BYUTranslate Database Manager is a resource to the department director as a means of providing a way to download and view the translations in the database, and make any changes if necessary. This project successfully uses VBA to solve multiple business needs, and improves the current process.

2 IMPLEMENTATION DOCUMENTATION

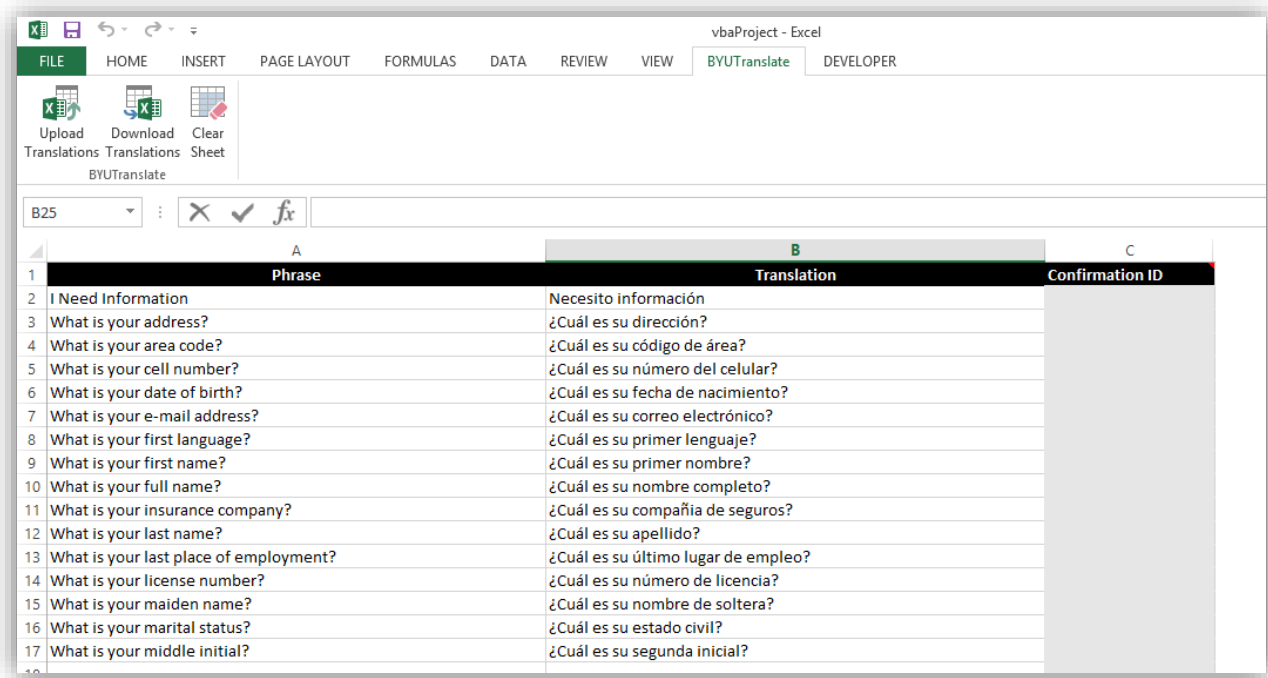
At a high level, this tool is built around two primary user forms:

1. Upload Translations
2. Download Translations

The following subsections describe what these accomplish in VBA, and the importance of the functionality to the Creative Works department. These explanations are meant to be at a level that requires very little to no technical background. Furthermore, an ability for the people importing the translations to clear their work quickly, in order to begin a new set of translations, was also added as part of the Clear Sheet functionality.

2.1 UPLOAD TRANSLATIONS

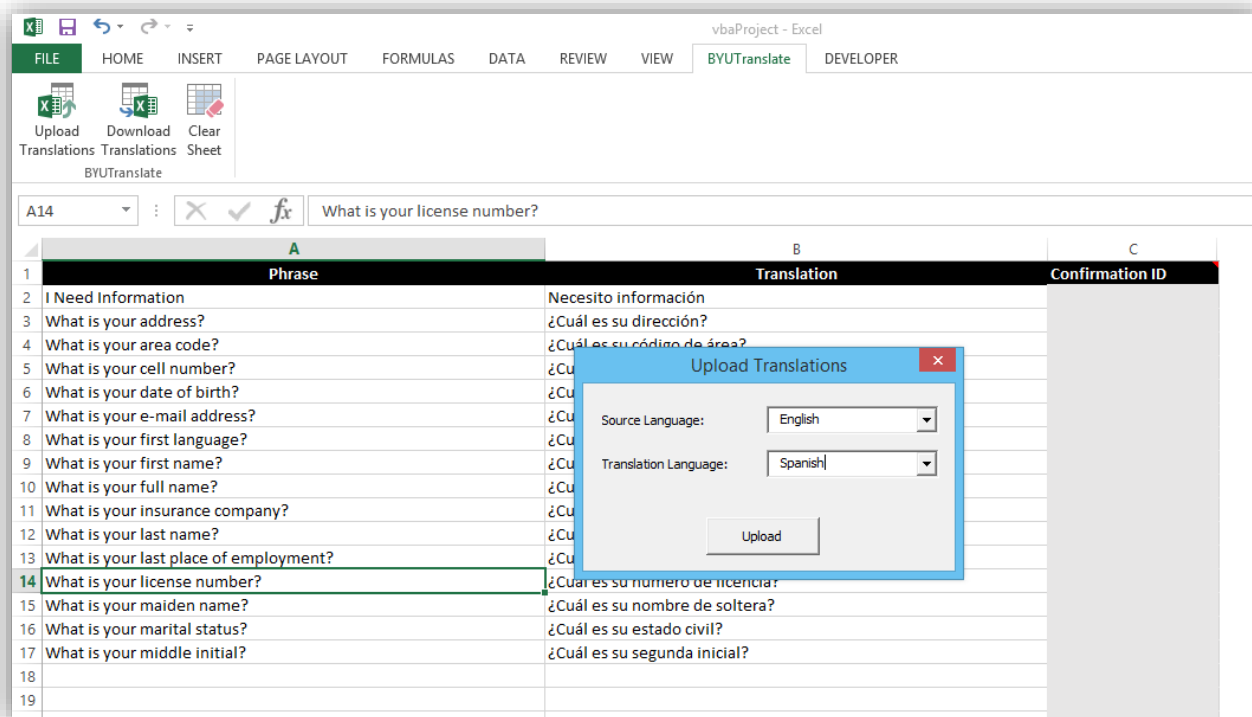
Without change to the current process, volunteers and employees are able to enter phrases and translations into Excel. However, the BYUTranslate Database Manager provides a standard form, on the Upload sheet, for these to be entered, as seen in the screenshot below.



The screenshot shows an Excel spreadsheet titled "vbaProject - Excel" with the "BYUTranslate" tab selected. The ribbon includes "FILE", "HOME", "INSERT", "PAGE LAYOUT", "FORMULAS", "DATA", "REVIEW", "VIEW", "BYUTranslate", and "DEVELOPER". The "BYUTranslate" tab has three buttons: "Upload Translations", "Download Translations", and "Clear Sheet". The spreadsheet displays a table with three columns: "Phrase", "Translation", and "Confirmation ID". The table contains 17 rows of data, each with a phrase in English and its Spanish translation.

	A	B	C
	Phrase	Translation	Confirmation ID
1	I Need Information	Necesito información	
2	What is your address?	¿Cuál es su dirección?	
3	What is your area code?	¿Cuál es su código de área?	
4	What is your cell number?	¿Cuál es su número del celular?	
5	What is your date of birth?	¿Cuál es su fecha de nacimiento?	
6	What is your e-mail address?	¿Cuál es su correo electrónico?	
7	What is your first language?	¿Cuál es su primer lenguaje?	
8	What is your first name?	¿Cuál es su primer nombre?	
9	What is your full name?	¿Cuál es su nombre completo?	
10	What is your insurance company?	¿Cuál es su compañía de seguros?	
11	What is your last name?	¿Cuál es su apellido?	
12	What is your last place of employment?	¿Cuál es su último lugar de empleo?	
13	What is your license number?	¿Cuál es su número de licencia?	
14	What is your maiden name?	¿Cuál es su nombre de soltera?	
15	What is your marital status?	¿Cuál es su estado civil?	
16	What is your middle initial?	¿Cuál es su segunda inicial?	
17			

When doing their work, the user need only pay attention to the first two columns, entering the phrases in the source language they are working with, and their translations in the second column. Upon completing the inputting of phrases and translations, the user can then select the "Upload Translations" button, found under the "BYUTranslate" tab on the ribbon. Upon selecting this button, the user is presented with the form, pictured below, which will allow them to select the source and translation languages for the entered translations.



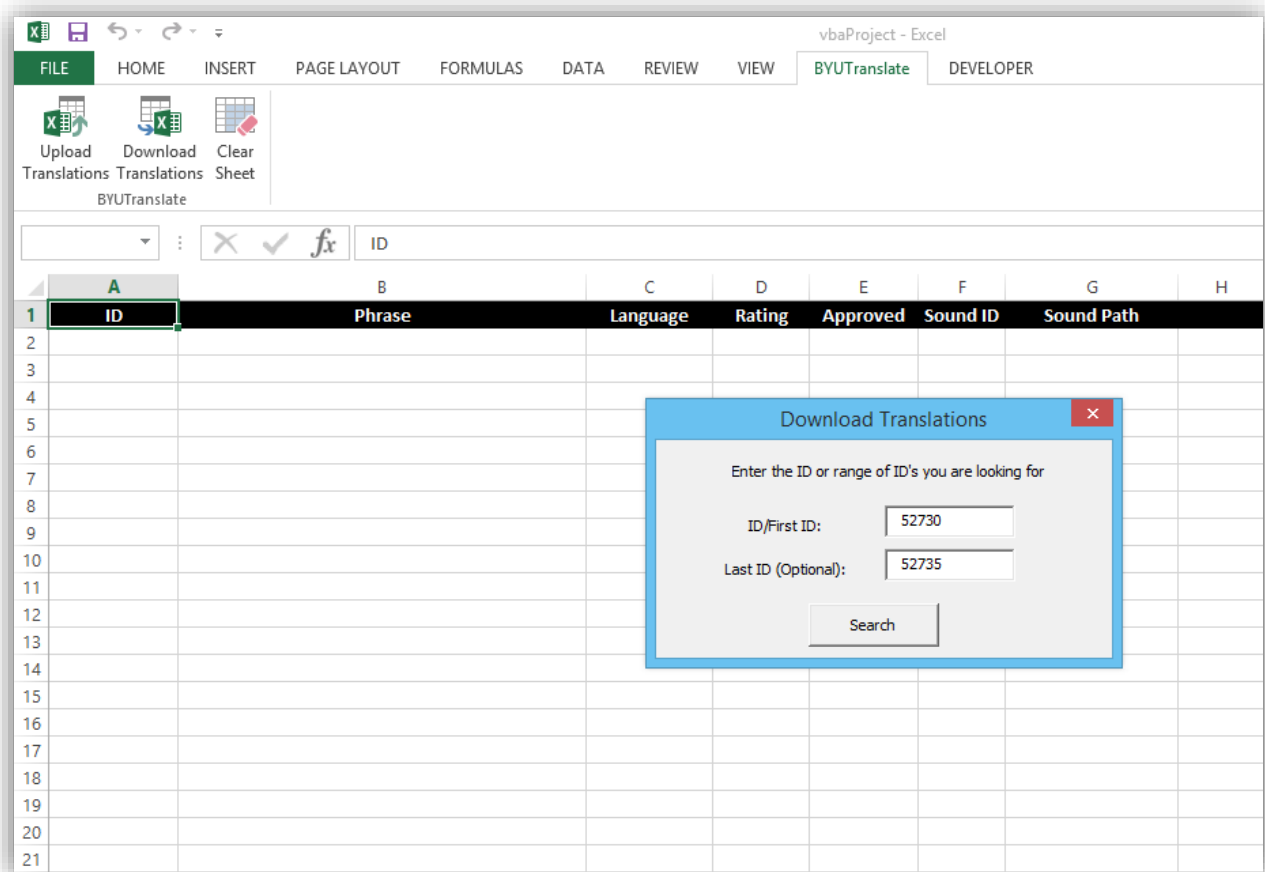
After selecting the languages from the drop down boxes, the user selects “Upload” in order to upload the phrases to the BYUTranslate database. If the phrase has been uploaded successfully, a Confirmation ID is displayed in the rightmost column (as pictured below), which can then be used to look up the phrase later if necessary. If the upload was not successful, a message will be displayed in the right column which will aid the user and the BYUTranslate developers in determining what went wrong in the upload.

Phrase	Translation	Confirmation ID
I Need Information	Necesito información	57798
What is your address?	¿Cuál es su dirección?	1862
What is your area code?	¿Cuál es su código de área?	25340
What is your cell number?	¿Cuál es su número del celular?	52731
What is your date of birth?	¿Cuál es su fecha de nacimiento?	25342
What is your e-mail address?	¿Cuál es su correo electrónico?	11243
What is your first language?	¿Cuál es su primer lenguaje?	52732

If the user sees that there is a Confirmation ID for each phrase, they then know that all the translations have been uploaded successfully, and can be accessed immediately by the mobile app users. This uploading process is simple and more efficient compared to the current process involving multiple parties that enter and upload the translations, and has been found to be more reliable in practice as well.

2.2 DOWNLOAD TRANSLATIONS

In addition to uploading new translations into the BYUTranslate database, the BYUTranslate Database Manager also provides a way for users, primarily the director of the Creative Works department, to download translations from the database and also delete any translations that have been deemed inaccurate or inappropriate. If a user needs to view translations in the database, they select the Download sheet in the workbook, and then click the “Download Translations” button under the BYUTranslate tab on the ribbon of the document. The user is then presented with the user form pictured below:



The user then enters the ID or ID's (also known as Confirmation ID on the Upload sheet) that they wish to view, and hit the “Search” button on the form. Upon hitting “Search” the spreadsheet is then populated with the translations from the database within the range that they have searched for, as pictured on the following page.

The screenshot shows an Excel spreadsheet titled "vbaProject - Excel" with a ribbon containing "FILE", "HOME", "INSERT", "PAGE LAYOUT", "FORMULAS", "DATA", "REVIEW", "VIEW", "BYUTranslate", and "DEVELOPER". Below the ribbon are buttons for "Upload Translations", "Download Translations", and "Clear Sheet". The spreadsheet displays a table with the following data:

ID	Phrase	Language	Rating	Approved	Sound ID	Sound Path	Delete
52731	"¿Cuál es su número del celular?"	Spanish	0	0	0	""	Delete
52731	"What is your cell number?"	English	0	0	0	""	Delete
52732	"¿Cuál es su primer lenguaje?"	Spanish	0	0	0	""	Delete
52732	"What is your first language?"	English	0	0	0	""	Delete
52733	"¿Cuál es su compañía de seguros?"	Spanish	0	0	0	""	Delete
52733	"What is your insurance company?"	English	0	0	0	""	Delete
52734	"¿Cuál es su segunda inicial?"	Spanish	0	0	0	""	Delete
52734	"What is your middle initial?"	English	0	0	0	""	Delete

As seen in the screenshot, the spreadsheet displays the ID for the translation, the phrase in the different languages, the language of the phrase, the user rating, whether or not the translation has been approved, information about the sound recording of the pronunciation of the phrase (if one exists) and the option to delete the phrase from the database. The information displayed about each translation matches the requests by the Creative Works director on his desires of what should be available on this sheet. This information will allow him, or other authorized users, to view the translations in the database and make any necessary deletions.

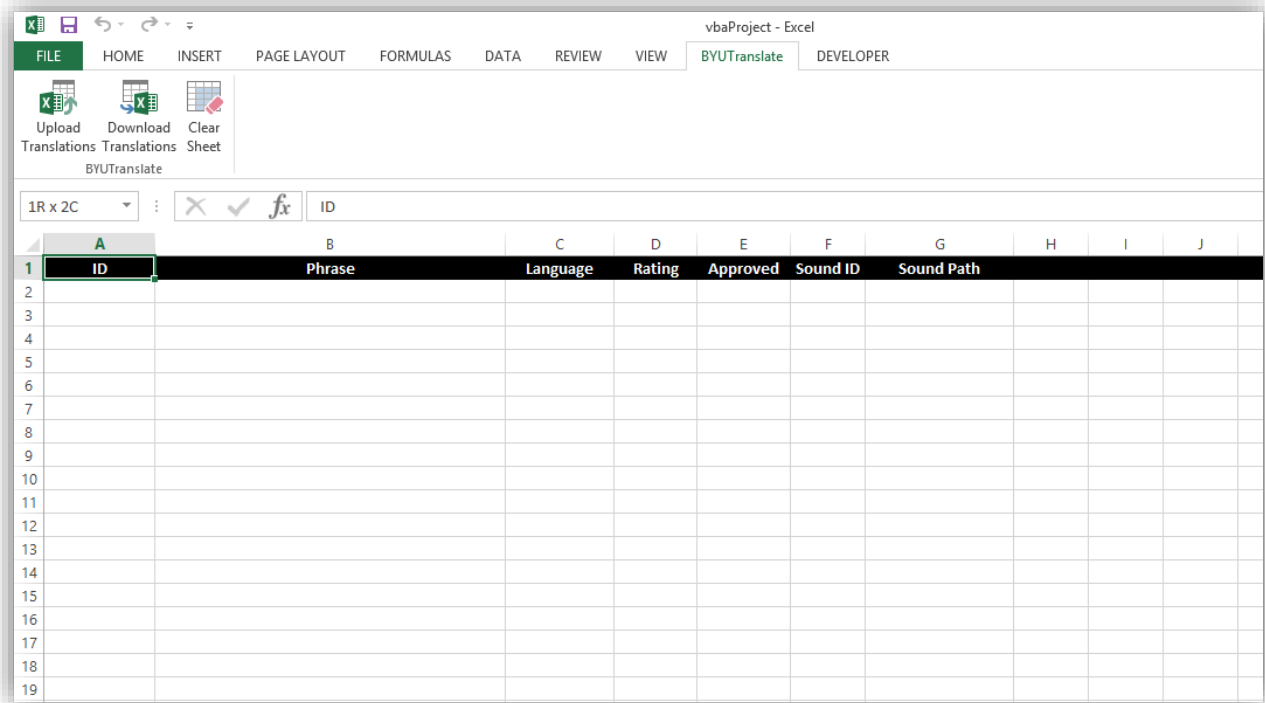
If the user decides that it is necessary to delete a translation from the database, they need only click the "Delete" button on the row of the translation that needs to be deleted. Notice that there is a delete button for each phrase that makes up the whole translation, which is for the situation in which the user needs to only delete an incorrect translation in a specific language but may not wish to delete the entire translation from the database. When a user does click a "Delete" button, they are presented with a confirmation, as seen below, if the deletion was successful. If deleting the record was not successful, they are shown an error message which will aid developers in determining what went wrong in the deletion process.

The screenshot shows the same Excel spreadsheet as above, but with a confirmation message displayed in the first column of row 8. The message is "Deleted: '52734' in Spanish". The table data remains the same as in the previous screenshot.

ID	Phrase	Language	Rating	Approved	Sound ID	Sound Path	Delete
52731	"¿Cuál es su número del celular?"	Spanish	0	0	0	""	Delete
52731	"What is your cell number?"	English	0	0	0	""	Delete
52732	"¿Cuál es su primer lenguaje?"	Spanish	0	0	0	""	Delete
52732	"What is your first language?"	English	0	0	0	""	Delete
52733	"¿Cuál es su compañía de seguros?"	Spanish	0	0	0	""	Delete
52733	"What is your insurance company?"	English	0	0	0	""	Delete
Deleted: '52734' in Spanish							
52734	"What is your middle initial?"	English	0	0	0	""	Delete

2.3 CLEAR SHEET

Lastly, a simple but important piece of functionality that was requested by people involved in inputting new translations, is a quick way to clear the spreadsheet from data that has just been uploaded to the database in order to start anew on more translations. This quick reset is possible by clicking the “Clear Sheet” button (pictured below) under the “BYUTranslate” tab in the ribbon. Clicking this button clears any data that has been input by the user, without changing any of the headers or other formatting that has been added as part of the tool itself, as seen in the picture below:



This feature is important because it allows users to quickly begin their work again after they have submitted a set of translations to the database, and furthers the simple and clean look of the document as a whole.

3 LEARNING AND CONCEPTUAL DIFFICULTIES/ASSISTANCE

This project was highly enjoyable to build and has proven to be useful in its implementation and in the learning that I have gained as a result of doing the project. The concepts that I learned the most were also the difficulties that I overcame, which included:

1. How to interact with a MySQL database using VBA
2. How to send a request to a PHP script and receive a response
3. How to programmatically create a button in VBA

Furthermore, because I finished this project prior it being discussed in class, I also learned independently how to make custom ribbon tabs/groups/buttons that persist across different computers. The above three learnings are explained in detail below.

Knowing that the BYUTranslate database is a MySQL database, and only having experience using Access databases with VBA, this was a very early and prevalent challenge in completing this project successfully. From doing independent research, and having experience interacting with the MySQL database from being a mobile developer on the project, I determined that the best way to overcome this obstacle would be to use our existing PHP scripts on our server, as well as to create any that would be needed that did not already exist. Upon realizing that this is possible, I further came to understand the versatility of VBA in interacting with different kinds of databases and data resources.

Once I had determined to use PHP as an entry to the database, I quickly came to find that HTTP requests sent to PHP scripts require a different format in VBA. After hours of research, trial and error, and frustration, I was able to successfully communicate with PHP scripts on the BYUTranslate server. Differences in requests sent to PHP scripts and other HTTP requests in VBA include the type of XMLHTTP object used and the structure of the request. These differences can be seen in detail by viewing the code in the BYUTranslate Database Manager project. Once I was able to overcome this large obstacle of communicating with the PHP scripts, I had overcome the hardest challenges of undertaking this project. I will likely use this knowledge that I have gained from this obstacle in particular in my future endeavors.

A third learning outcome I had from this project was what I gained from overcoming the challenge of having the need to create a separate “Delete” button for each record downloaded from the database on the Download sheet. Because the number of records downloaded from the database can be different with every request, I needed to learn how to create these buttons programmatically using VBA. Fortunately, searching the internet quickly taught me how to accomplish this task. Along with creating the button programmatically, I also needed to pair it to the write functionality that would actually delete the record from the MySQL database when clicked, and I found this to be very similar to how this would be accomplished in iOS development, a concept that I am very familiar with.

In terms of assistance I received in completing this project, I did everything by myself, with only help from searching the internet on learning new tasks. Because I did this project independently, it was a great learning experience for me and I feel like I am walking away with a greater understanding of the strengths and weaknesses of VBA.

In conclusion, I learned a lot while working to accomplish this project, and I enjoyed the experience. Because I was able to use the project as a means of solving a real business need, that I am very familiar with, I was also able to see the impact that VBA can have on improving business processes. Three main takeaways I have from this project include 1) how to interact with a MySQL database using VBA, 2) how to send and receive data from a PHP script in VBA, and 3) how to create a button programmatically in VBA and pair that button with its desired functionality. From having close ties with the business need for this tool, I know that the BYUTranslate Database Manager is useful and an improvement from the old process. This tool will likely add value to the BYUTranslate project for a significant period of time.