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Automating Circulation Data Records: A Write-Up of My Final Project

EXECUTIVE SUMMARY

I have been a student worker in the Harold B. Lee Library's Office of Digital Content Management for close to three years. Among other things, my office is in charge of generating and recording the library's circulation reports. Circulation data is collected as follows: At the beginning of each month, a text file is generated using a program called WorkFlows, which, among other things, stores and records information about library circulation. This text file shows 1) the number of items checked out, 2) the number of individual patrons who check out items, and 3) the ratio of items checked out per patron for each hour of each day that the library's circulation desks are in operation during the last full month. The output from these text files is then read into an Excel spreadsheet, where it can be used for analysis. Up until recently, data from these text files was entered manually into the spreadsheet. For my project, I made the decision to write a program which would automate this process, saving on average half an hour to 45 minutes of worktime.

The program that I have written includes a File Dialog, which allows the user updating the spreadsheet to open the text file containing the data for the month that they wish to import into the spreadsheet. The program then uses arrays to find and paste in the data, as well as the date heading for the data. After the program has run, the user is asked whether they would like to import more text files containing circulation into the spreadsheet, continuing in a loop if the user selects the "Yes" option and exiting the program if the user selects the "No" option.

IMPLEMENTATION

The text files which WorkFlows generates which must be read into the spreadsheet each month consist of several sections like the one shown below:

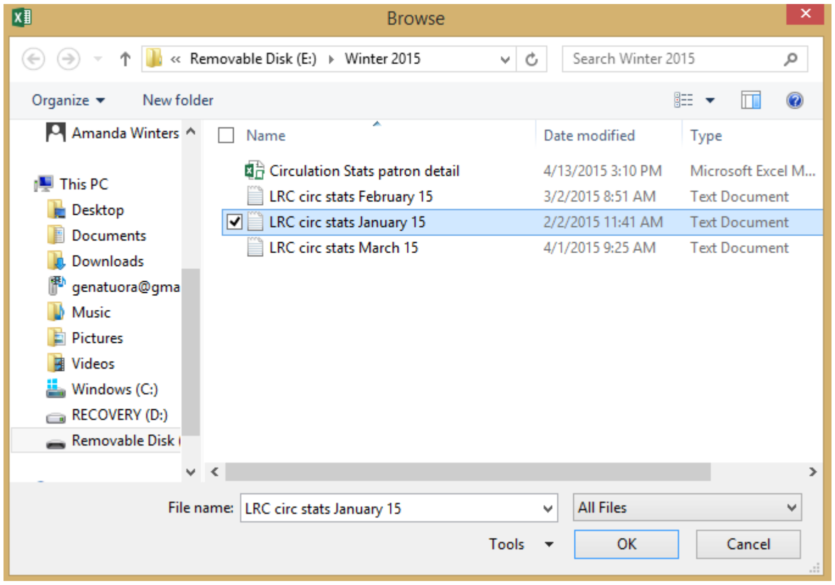
```
DateTime   Items  Ptrns   I/P

   7,    4,    2,  2.00

   8,    1,    1,  1.00

   9,    5,    3,  1.67

  10,    1,    1,  1.00

  11,   13,   11,  1.18

  12,    7,    7,  1.00

  13,   12,    8,  1.50

  14,   11,    7,  1.57

  15,   12,    9,  1.33

  16,    6,    6,  1.00
```

```
        17,    7,    4,  1.75

        18,    7,    6,  1.17

        19,    7,    2,  3.50

        21,    5,    3,  1.67

        22,    1,    1,  1.00

**20150105,    99,    71,   1.39
```

Each section in each text file begins with a row of headers (“DateTime Items Ptrns I/P”) and ends with a row in which the first entry consists of two asterisks (“**”) followed by an eight-digit number which represents a certain date in ymd format (e.g., **20150105 represents January 5, 2015), indicating that a single section represents a single day of circulation activity within the library. Each section is delimited by commas, tabs, and spaces, and is organized into columns, which represent (from left to right) the hour in military time, the number of items which were checked out that hour, the number of patrons who checked out items that hour, and the items per patron ratio that hour. The bottom row, which contains the date code, shows the total sum of items checked out and patrons checking out items that day, along with the average items per patron ratio for the day.

The workbook into which the data from the text file must be read is organized into different spreadsheets by year. These spreadsheets are organized so that each date has its own column in the spreadsheet, with rows consisting of different military times which are organized in three blocks of twenty for the separate recording of item totals, patron totals, and average items per patron.

In order to import this code into the library records spreadsheet, a user need only press the “Update Circulation Stats” button which appears on the far right of the ribbon underneath the data tab. The user will then be prompted to select the text file with the data that he or she wants to import:



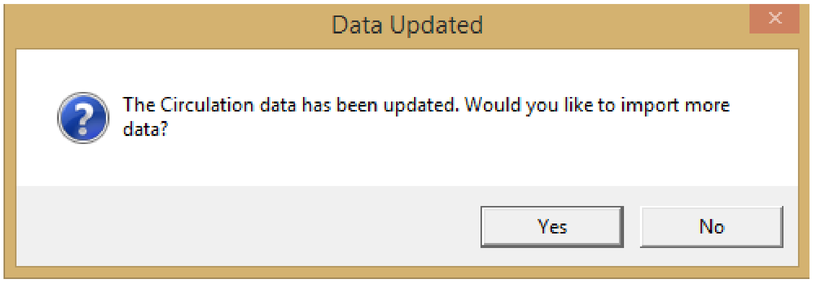
	Name	Date modified	Type
	Circulation Stats patron detail	4/13/2015 3:10 PM	Microsoft Excel M...
	LRC circ stats February 15	3/2/2015 8:51 AM	Text Document
☑	LRC circ stats January 15	2/2/2015 11:41 AM	Text Document
	LRC circ stats March 15	4/1/2015 9:25 AM	Text Document

File name: LRC circ stats January 15

All Files

The program will then fill input the values from the selected text file into the proper cells. If there is not a spreadsheet for the year from which the data in the text file was collected, the program will automatically create one.

After the program has been run, the following dialog box is shown:



The Circulation data has been updated. Would you like to import more data?

If the user selects the “Yes” option, the program repeats, asking for the user to choose another text file to import. If the user selects “No”, the program is exited.

DISCUSSION

To make it so that I could import the data in the text file into the workbook, I wrote the program to read each text file line by line, convert each line into an array, and identify what kind of information was contained in each line by examining the array dimensions of each line and the content of the first entry of each array. I spent most of my time doing this project making sure that each individual line was being properly converted to an array, with the right number of elements in each array. I also practiced using multiple text functions and date formatting—I used these to format the date values in each column of the worksheet, find the weekday of each day of data to include in each spreadsheet, and name new worksheets the proper year name (if applicable). I toyed with the idea of implementing userforms into this worksheet, but ultimately decided that they were not needed in this case. I also experimented with File Dialogs, and managed to learn how to get them to work.

ASSISTANCE

I was offered assistance in this project by my father, who is a computer program at Intel. When I had issues with my code or the structure of the assignment, he would help walk me through those issues. I did not receive any other outside help on this assignment.