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December 9, 2014  
Spreadsheet automation Final Project Write up

## Executive Summary

I am working with a non-profit organization called the “Family Support and Treatment Center”. One of the services that they provide at the center is a nursery for underprivileged children. The center tracks the patrons that use the service, the hours that they are at the center, and reports the data to the State of Utah for reimbursement purposes. Currently the center is tracking all of the time that patrons are at the nursery on paper. The hours are recorded on an ad hoc basis and then later the data are transferred into an excel sheet for the necessary reporting purposes. The center also schedules appointments for the nursery a week in advance on a piece of paper generated from Excel.

After talking to the organization, I volunteered to decrease the amount of administrative effort they expend on tracking nursery patrons by automating the process. This project allows the center to check in and check out their patrons using a simple user interface. In the background, the spreadsheet tracks the time in and out for each patron and also generates the end of month numbers needed to submit to the State of Utah for reimbursement.

In order to increase the safety of the patrons, the spreadsheet automatically sends emails to a Gmail account whenever a patron is checked in, so that the most updated list of patrons are available on any mobile device in the case of an emergency or evacuation.

A ‘patrons’ tab also includes the names and demographics of the patrons which frequent the center.

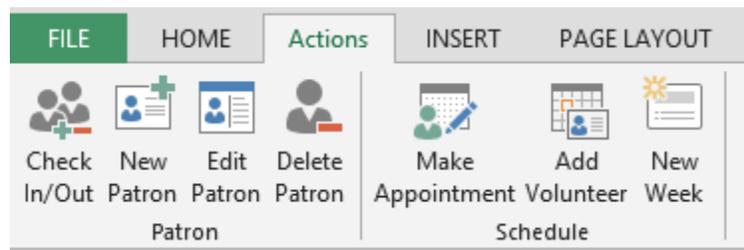
Finally, the ‘weekly schedule’ tab helps the center prepare for the upcoming visits of their patrons. The center only schedules appointments for a week at a time, and so the schedule will be created for a week at a time and there will be a button that prepares the sheet for the next week’s schedule.

## Implementation Documentation

This documentation provides a user's guide to the functionality contained in the spreadsheet. It assumes a basic understanding of the Family Support and Treatment Center as well as the purpose for using the spreadsheet. This implementation documentation is parceled into sections mirroring the tabs in the worksheet and the Excel Ribbon.

### **Excel Ribbon**

The Excel ribbon has been customized with an 'Actions' tab, which allows the user to take specific actions particular to this spreadsheet. This tab is located between the 'HOME' and 'INSERT' tabs and can be accessed regardless of which sheet the user has selected. All commands in this unique tab will function properly, again regardless, of which sheet the user has selected.

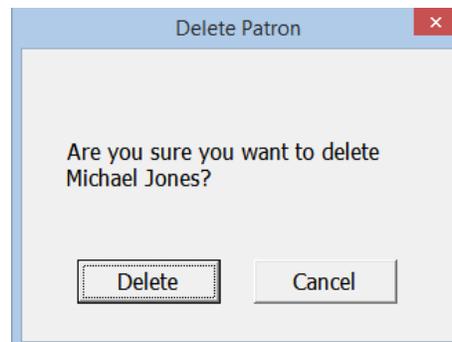


The 'Check In/Out' button launches the window and allows a user to check in, check out, or see which patrons are currently checked into the nursery. More is explained about this in the section detailing the 'Checkin' sheet.

The 'New Patron' button will launch the window to enter the demographics for a new patron. More is explained about this in the section detailing the 'Patrons' sheet.

The 'Edit Patron' button will launch the window to enter the demographics for a current patron. More is explained about this in the section detailing the 'Patrons' sheet.

The 'Delete Patron' button will launch a window confirming the deletion of a specific patron (the name will appear in the pop-up window). More is explained about this in the section detailing the 'Patrons' sheet. Be careful about using this option from the ribbon. Double check that the correct patron is selected for deletion by reviewing the message in the pop-up box.



The 'Make Appointment' button will launch the window to allow the user to create an appointment for a patron. More is explained about this in the section detailing the 'Weekly Schedule' sheet.

The 'Add Volunteer' button will launch the window to allow the user to create an appointment for a volunteer. More is explained about this in the section detailing the 'Weekly Schedule' sheet.

The 'New Week' button will launch a window asking to confirm that the current's week schedule should be deleted and a new blank schedule should be created. More is explained about this in the section detailing the 'Weekly Schedule' sheet.

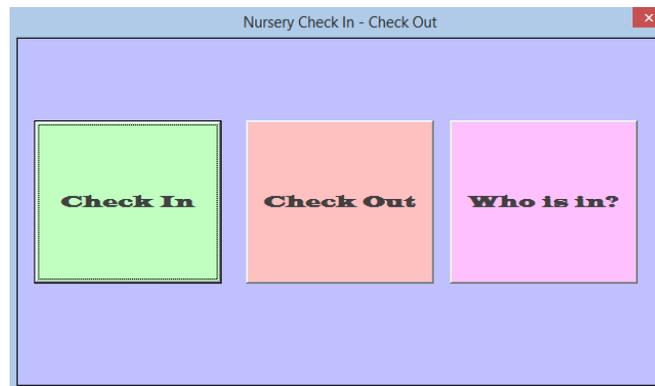
All of these buttons, as stated previously allow the users to quickly launch the many functions of the worksheet without having to select the sheet which holds the specific button to launch the same function.

### **Checkin Sheet**

The 'Checkin' sheet only has one button entitled, 'Click here to begin'.

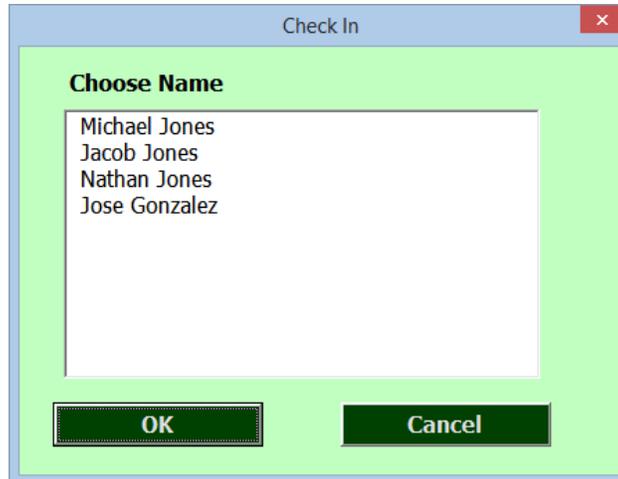


This intentionally simple interface is used to launch a window used to check in, check out, and quickly see which patrons are in house. The intent is that during the day, the user would leave the 'Nursery Check In – Check Out' window open and use the buttons to complete the actions.

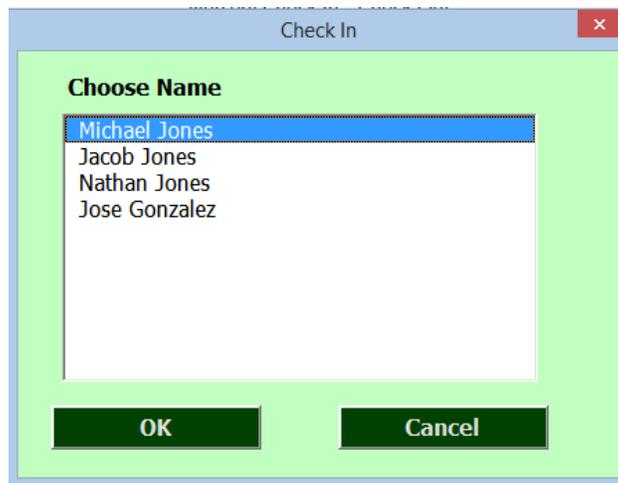


### **Check In Button**

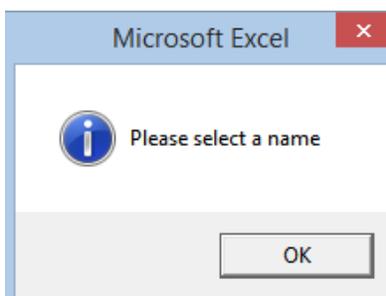
First, the 'Check In' button launches another window which presents the user with a list of all of the patrons who are not currently checked into the nursery. A name can be found on this list by scrolling or typing the name of the patron.



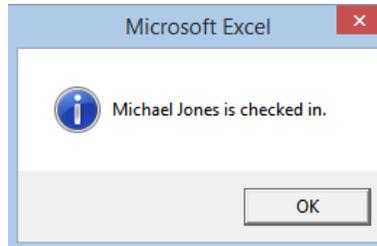
The color of the 'Check In' window is the same green as the 'Check In' button on the 'Nursery Check In – Check Out' form. This visual clue helps remind the user that she is checking in a patron, not checking one out. Select a name from the list, again, by either beginning to type the name or using the mouse to select the name, and then click the 'OK' button to check the patron in.



**Note:** If a user tries to click on the 'OK' button without a patron selected, a reminder window will pop up telling the user to select a patron.



When the patron is checked in, a confirmation box will appear, certifying that the correct patron was checked in.



After the 'OK' button is selected on the above window, the confirmation window and the 'Check In' window will close taking the user back to the 'Nursery Check In – Check Out' window.

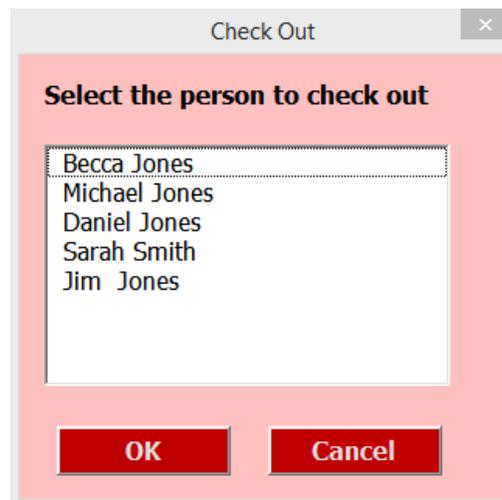
At this point in time, the patron's name, as well as the current time as of check in, will be recorded on the 'Time in – out' sheet'. No further action from the user is needed.

**Note:** The 'Cancel' button on the 'Check In' window can be selected to cancel the check in process and take the user back to the 'Nursery Check In – Check Out' form.

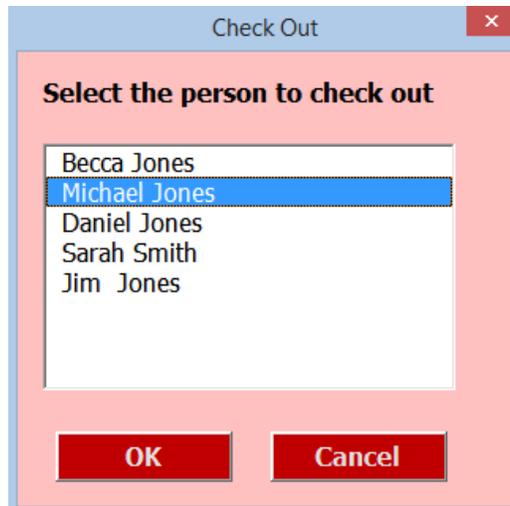


### Check Out Button

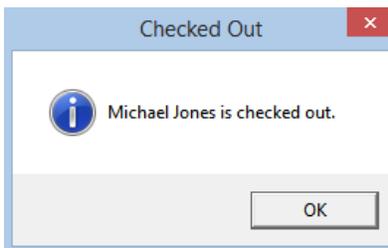
The 'Check Out' button in the 'Nursery Check In – Check Out' form works much the same way as the check in button, but performs the action of checking a patron out. After selecting the red 'Check Out' button then a list of the patrons currently checked into the nursery will be displayed in a window colored red.



The 'Check Out' window also requires the user to either click on a name, or begin typing the name of the patron to be checked out.



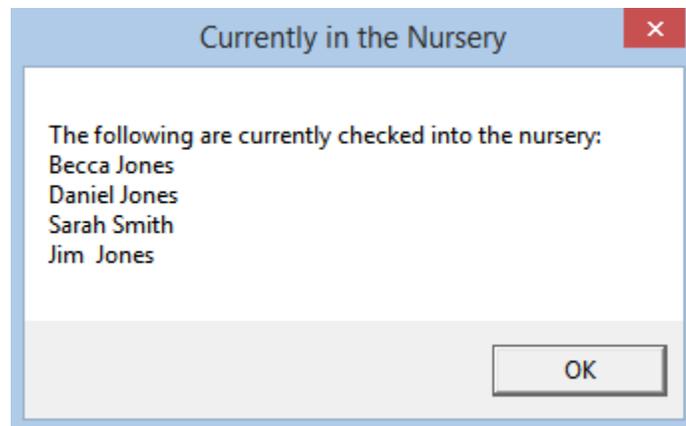
After a name is selected and the 'OK' button is clicked a brief pop-up window will confirm that the patron has been checked out.



After the 'OK' button is clicked by the user on the confirmation window, both the confirmation window and the 'Check Out' window will be closed. The user will again see the 'Nursery Check In – Check Out' window again.

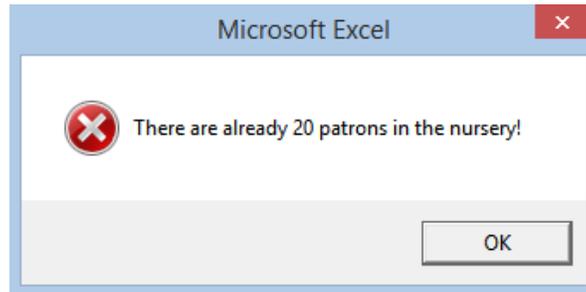
### Who Is In Button

This button launches a window which displays a list of who is currently checked into the nursery. The list is not interactive (a user cannot check in or out from this list). But is meant to serve as a quick reference to see which patrons, and how many patrons, are in the nursery.



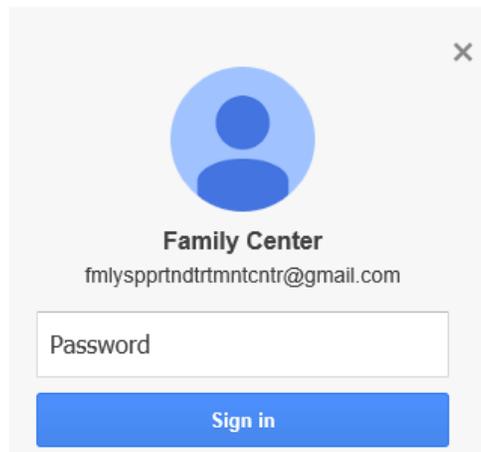
As noted in the Excel Ribbon section, the exact same windows and functionality is available to the user whether she selects the 'Click here to begin' button on the 'Checkin' sheet or the 'Check In/Out' button on the 'Actions' tab of the Excel Ribbon.

**Note:** If there are ever already 20 patrons in the nursery and a user tries to check in another patron (above the limit prescribed for the nursery) then a warning window will appear. The user will still be able to check the patron in, but should note that the nursery is now over-capacity.



**Note:** An email is automatically generated and sent from the spreadsheet every time that a patron is checked in. This provides the most up-to-date list of patrons in the nursery in case there is an emergency or evacuation and the list of patrons needs to be referenced without the use of this spreadsheet. The Gmail account can be accessed on any internet enabled device with a connection. The most recent email in the account will have the most up-to-date list of the patrons checked into the nursery.

The Gmail account name is [fmlyspprtndtrtmntcntr@gmail.com](mailto:fmlyspprtndtrtmntcntr@gmail.com) (the full name of the center without any vowels). The password for the account is \*\*\*\*\* (removed due to sensitivity).



<input type="checkbox"/>	☆	me	<b>Nursery Update</b> - Becca Jones Michael Jones Daniel Jones Sarah Smith Jim Jones
<input type="checkbox"/>	☆	me	<b>Nursery Update</b> - Becca Jones Michael Jones Daniel Jones Sarah Smith Jim Jones
<input type="checkbox"/>	☆	me	<b>Nursery Update</b> - Becca Jones Michael Jones Daniel Jones Nathan Jones Sam Smith
<input type="checkbox"/>	☆	me	<b>Nursery Update</b> - Becca Jones Michael Jones Jacob Jones Daniel Jones Nathan Jones
<input type="checkbox"/>	☆	me	<b>Nursery Update</b> - Becca Jones Michael Jones Jacob Jones Daniel Jones

## Weekly Schedule Sheet

The weekly schedule sheet provides the user with a week-at-a-glance view of the schedule for the current/upcoming week. The schedule is color coded to provide visual clues for the user as to how full the nursery schedule is at a given time and whether there is a 4:1 ratio of patrons to volunteers at a given time. The display also allows the user to 'drill down' and see exactly who is scheduled to come in at a given time through the use of comments in the cells.

	Make Appointment		Add Volunteer		New Week			
	Sunday		Monday		Tuesday		Wednesday	
	Patrons	Volunteer	Patrons	Volunteer	Patrons	Volunteer	Patrons	Volunteer
Overnight								
8:00 AM			1	1				
8:30 AM			1	1				
9:00 AM			1	1	1			
9:30 AM			1	1	1			
10:00 AM			1	1				
10:30 AM			1	1				
11:00 AM			4	1				
11:30 AM			5	1				
12:00 PM			4	1				
12:30 PM			4	1				
1:00 PM			4	1				
1:30 PM			3	1				
2:00 PM			3	1				
2:30 PM			3	1				
3:00 PM			3	1				
3:30 PM			3	1				

## Make Appointment Button

Selecting the 'Make Appointment' button from either the sheet or the Excel Ribbon will launch the 'Make Appointment' Window.

The 'Make Appointment' dialog box contains the following fields and controls:

- Patron:** A dropdown menu for selecting a patron.
- Day:** A group of radio buttons for selecting the day of the week (Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday).
- Time:** A dropdown menu for selecting the time of the appointment.
- Duration:** A dropdown menu for selecting the duration of the appointment.
- Reason for Visit:** A group of radio buttons for selecting the reason for the visit (C, R, S, SH).
- Notes:** A text area for entering additional information.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom.

The user is presented with the fields necessary in this window to schedule a patron's appointment. The cursor will start out in the 'Patron' field. A patron's name can either be selected from the drop down

(which pulls all of the names from the list of patrons on the 'Patrons' tab), or she may type in any name desired. The field will attempt to completion match the name if the user begins typing a name.

A screenshot of a web form with a 'Patron' dropdown menu. The dropdown is open, showing a list of names: Becca Jones (highlighted in blue), Michael Jones, Jacob Jones, Daniel Jones, Nathan Jones, Sarah Smith, Jim Jones, and Jose Gonzalez. To the left of the dropdown, there is a 'Day' section with radio buttons for 'Sunday' and 'Monday'.

Next, if the user presses the 'tab' key on the keyboard, the 'Day' will be selected. Select the day of the appointment by clicking on the appropriate radio button.

A screenshot of a 'Day' selection panel. It features a title 'Day' and a list of radio buttons for the days of the week: Sunday, Monday, Tuesday (selected and highlighted with a dotted border), Wednesday, Thursday, Friday, and Saturday.

Next, again by using the 'tab' key, the 'Time' field will be selected. The user may type a time into the box or use the drop down list to select a time. Please only use the options that are given in the list! Typing in a time which does not completion match or is in the list will not cause the appointment to be appropriately scheduled on the schedule grid.

A screenshot of a 'Time' dropdown menu. The dropdown is open, showing a list of time slots: Overnight AM (highlighted in blue), 8:00 AM, 8:30 AM, 9:00 AM, 9:30 AM, 10:00 AM, 10:30 AM, and 11:00 AM. To the left of the dropdown, there are labels for 'Duration' and 'Reason' and a radio button.

Next, the 'Duration' field will be selected. Completion match or choose from one of the options in the list again.

A screenshot of a 'Duration' dropdown menu. The dropdown is open, showing a list of duration options: 30 mins, 1 hr, 1:30 hrs, 2:00 hrs, 2:30 hrs, 3:00 hrs (highlighted in blue), 3:30 hrs, and 4:00 hrs. To the left of the dropdown, there are labels for 'Reason for' and 'Notes' and radio buttons.

**Note:** A user can also use the up and down arrows on the keyboard to scroll through and select options for the 'Duration', 'Time', or 'Name' fields.

Next the 'Reason for Visit' component will be selected. The user should select one of the reasons for visit from the options given next to the radio buttons (C-Crisis, R-Respite, S-Supplemental, SH-Shelter Care).



A dialog box titled "Reason for Visit" with four radio button options: C, R, S, and SH. The "R" option is selected.

Next, any notes about the upcoming visit may be entered in the 'Notes' field. This is a free-text field.



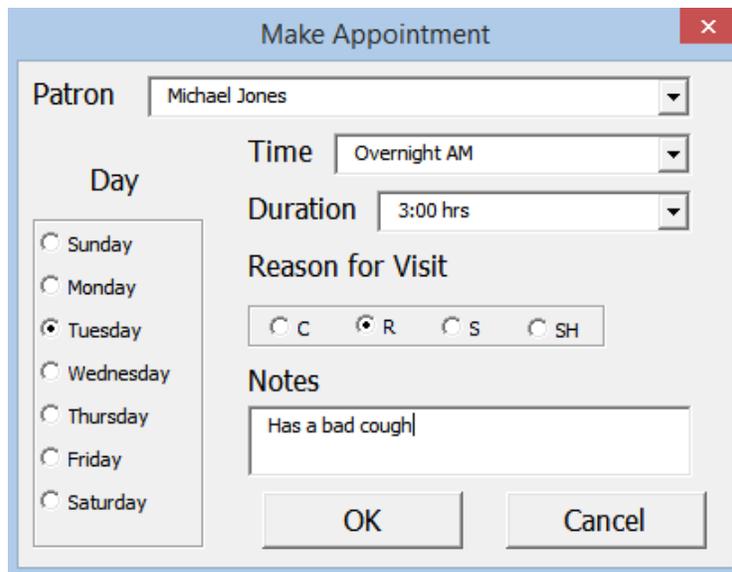
A dialog box titled "Notes" with a text input field containing the text "Has a bad cough".

Once the form is completed, the user can choose either the 'OK' button to schedule the appointment and it will be added to the schedule, or 'Cancel' which will close the window and not schedule the appointment.



Two buttons: "OK" and "Cancel".

An example of a completed form:



A screenshot of a "Make Appointment" dialog box. The "Patron" field is set to "Michael Jones". The "Day" field has radio buttons for Sunday through Saturday, with "Tuesday" selected. The "Time" field is set to "Overnight AM". The "Duration" field is set to "3:00 hrs". The "Reason for Visit" field has radio buttons for C, R, S, and SH, with "R" selected. The "Notes" field contains the text "Has a bad cough". At the bottom are "OK" and "Cancel" buttons.

After the user selects 'OK' the appointment is added to the schedule.

	Sunday		Monday		Tuesday	
	Patrons	Volunteer	Patrons	Volunteer	Patrons	Volunteer
Overnight					1	
8:00 AM			1	1	1	
8:30 AM			1	1	1	
9:00 AM			1	1	2	
9:30 AM			1	1	2	
10:00 AM			1	1	1	

**Note:** There was another patron previously scheduled from 9-10 am on Tuesday morning in the above example, it is for this reason that the numbers appear the way that they do above.

When the appointment is scheduled any cells previously white or gray will be turned dark green with a number of 1. Another cell previously colored with a number will have the previous number augmented by 1. At different thresholds, pictured below, the color of a cell may change, denoting that a particular time slot is filling up. This provides another visual cue, quickly discerned, to see where the nursery has availability.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21

Also note that when an appointment is scheduled and added to the schedule, the first cell denoting the appointment will include a comment (as can be seen by the small red triangle in the upper right-hand corner of the cell).



When a user hovers over that cell with the mouse cursor the comment box will appear. The box will hold the Patron's name, the duration of the appointment, the type of appointment (abbreviated), and any notes added during the scheduling process.

Patrons	Volunteer	Patrons
1		
1		
1		
2		

Michael Jones (3:00 hrs)  
 (R) Has a bad cough

If two or more patrons are scheduled to come at the same time then the comment will be updated to hold both patron's information in the same comment box.

Patrons	Volunteer	Patrons
2	Michael Jones (3:00 hrs) (R) Has a bad cough	
1	Becca Jones (30 mins) (S)	
1		
2		

**Note:** No notes were entered for Becca Jones, the second patron, so the only information included is the patron's name, duration of the appointment, and type of appointment are shown.

### Add Volunteer Button

The 'Add Volunteer' button functions in much the same way as the 'Make Appointment' button. Only the differences in function will be addressed in this section.

Selecting the 'Add Volunteer' button launches the 'Add Volunteer' window as pictured below.

A difference between this window and the 'Make Appointment' window is that no list will prepopulate for the 'Name' field. A volunteer's name will need to be typed into that box. The other difference on the window is that there is no 'Type of Appointment' field on the 'Add Volunteer' form. This information is not needed for scheduling volunteers.

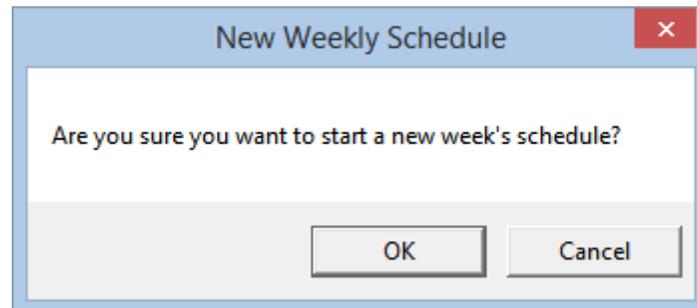
Clicking the 'OK' button at the bottom of the form will draw the appointment onto the schedule for the specified day and time in the 'Volunteer' column. It will also automatically generate a comment, just as scheduling an appointment from the 'Make Appointment' window.

The final difference is the color coding for the 'Volunteer' column on the schedule itself. When the ratio of patrons to volunteers is greater than 4:1 (more than four patrons are scheduled for each volunteer scheduled at a given time) then the cell in the 'Volunteer' column will turn red. This visual cue alerts the user that the nursery will be insufficiently staffed if all scheduled patrons arrive and no more volunteers are found.

Mondy	
Patrons	Volunteer
1	1
1	1
1	1
1	1
1	1
1	1
4	1
5	1
4	1
4	1

### New Week Button

The new week button will launch a confirmation window asking the user if she really wants to delete the current schedule and begin a new one.



The user can either use the 'Cancel' button to stop the action, or select the 'OK' button to generate a blank schedule (as shown below).

	Make Appointment		Add Volunteer		New Week			
	Sunday		Monday		Tuesday		Wednesday	
	Patrons	Volunteer	Patrons	Volunteer	Patrons	Volunteer	Patrons	Volunteer
Overnight								
8:00 AM								
8:30 AM								
9:00 AM								
9:30 AM								
10:00 AM								
10:30 AM								
11:00 AM								
11:30 AM								
12:00 PM								
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5:30 PM								
6:00 PM								
6:30 PM								
7:00 PM								
7:30 PM								
8:00 PM								
8:30 PM								
9:00 PM								
9:30 PM								
Overnight								

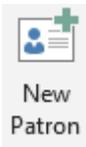
### Patrons Sheet

The 'Patrons' sheet acts as the record of, or the database for, patron data. The regular workflow will involve the potential patrons who would like to enjoy the service of the nursery to fill out and submit a form to the center with their demographics on it. This will be done outside of this Excel Workbook. Once the potential patron turns in their completed form and is approved, the corresponding patrons will be added to the 'Patrons' tab.

New Patron		Edit Patron		Delete Patron						
First Name	Middle Name	Last Name	Adopted/Foster Family	Birthdate	Age	Parent/guardian (1)	Parent/guardian (2)	Parent/guardian (3)	Parent/guardian (4)	Notes
Becca	Maria	Jones	Pieper	Becca Jones	5/6/1983	31			to see	what happens
Michael	Reid	Jones		Michael Jones	10/26/1985	29				
Jacob	Samuel	Jones		Jacob Jones	7/21/2010	4	Michael Jones	Becca Jones	test	test
Daniel	Reid	Jones		Daniel Jones	3/25/2012	2	Michael Jones	Becca Jones		Can not be picked up by cries a lot
Nathan	Richard	Jones		Nathan Jones	6/6/2014	0	Michael Jones	Becca Jones		
Sarah	Ann	Smith		Sarah Smith	12/25/2002	11	Annie Smith	George Smith		Allergies to peanuts
Jim		Jones		Jim Jones	5/24/1989	25				
Jose		Gonzalez		Jose Gonzalez	10/20/2000	14				

### New Patron Button

Adding a patron can be done either via the 'New Patron' button on the 'Actions' tab on the Excel Ribbon, or through the 'New Patron' button on the 'Patrons' sheet.

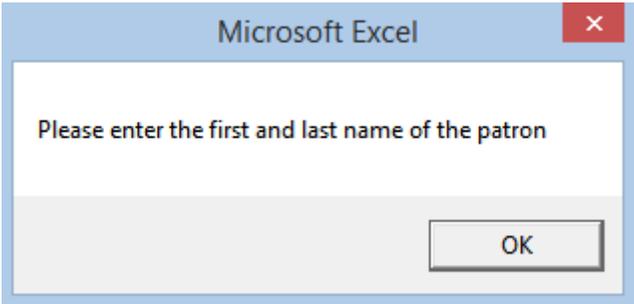


When either 'New Patron' button is selected then the 'Enter New Patron Information' window is displayed. All of the fields in the window are free text and are fairly self-explanatory. A short description of selected fields follows the screenshot below.

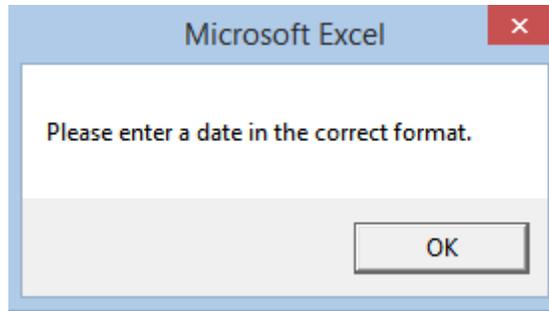
A screenshot of a software window titled 'Enter New Patron Information'. The window contains several text input fields: 'First Name', 'Middle Name', 'Last Name', 'Birthdate', 'Adopted/Foster Family', 'Parent/Guardian 1', 'Parent/Guardian 2', 'Parent/Guardian 3', 'Parent/Guardian 4', and 'Notes'. The 'Birthdate' field has a label 'month/day/year i.e. 01/16/2005' next to it. The 'Adopted/Foster Family' field has a label 'First and Last Name' above it. At the bottom of the window are 'OK' and 'Cancel' buttons.

The 'First Name' and 'Last Name' fields are required, as is the 'Birthdate' field. The Adopted/Foster Family is to record the last name of the adoptive or foster family, if applicable. The 'Parent/Guardian' fields should be used to specify the names of individuals who have visitation rights and can drop off and pick up the patron. The 'Notes' field will be used for any information that is pertinent for the patron and should be used as the information fields on the paper forms were used previously.

**Note:** If either the first or last name of the patron is not entered then the user will see the following warning box.



**Note:** If something is entered into the 'Birthdate' field which is not a date then the user will get the following warning box.



**Note:** If a first and last name are entered into corresponding fields, but nothing is entered into the 'Birthdate' field, then the following warning box will be displayed.



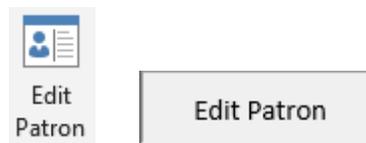
**Note:** The Cancel button will back the user out of the form without saving any information. The 'OK' button on the 'Enter New Patron Information' form will save the data in the window to the next blank line on the 'Patrons' sheet.

**Note:** When a patron's data is added to the 'Patrons' tab the cell corresponding to the number of new patrons from the month on the 'Time in – out' tab will increase by 1.



### Edit Patron Button

The 'Edit Patron' buttons launch the 'Edit Patron Data' form.



This form is identical to the 'New Patron' form, except for the title and the 'Next' and 'Previous' buttons. However, even though the form looks the same, when the 'Edit Patron' button is selected the form will show all of the patron information from the line on the spreadsheet that was selected.

**Note:** If the first line on the ‘Patrons’ sheet (the one with all of the headers that are blue with white text) is selected when the ‘Edit Patron’ button is selected, the patron’s information on the second line will be displayed in the ‘Edit Patron Data’ window. If a line is selected that does not have any data, then the data from the last line with patron data will be displayed in the window.

The user can update any of the data fields and click the ‘OK’ button to save the changes and close the ‘Edit Patron Data’ window. The ‘Cancel’ button will close the window without saving any data. The ‘Previous’ and ‘Next’ buttons will allow the user to move to the previous or next patron’s data and displays them in the window without having to use the ‘Cancel’ button to close the window, select the line on the ‘Patrons’ sheet, and then select the ‘Edit Patron’ button again.

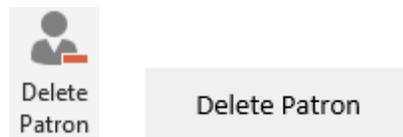
Please be aware that if changes are made to a patron’s data and then the ‘Previous’ or ‘Next’ button is clicked the user will see the ‘Move on without saving?’ window.

This reminds the user that NO MODIFIED INFORMATION will be saved for a patron if the user clicks on the ‘Previous’ or ‘Next’ buttons. Only the ‘OK’ button will save the modified user data. The ‘Move on without saving?’ window provides the user with two options. The ‘Continue’ button will display either the previous or next patron’s data without saving any of the modified data for the previous patron displayed. The ‘Go Back’ button will allow the user to go back to the previous patron’s data that was showing with the modifications made. At this point the user can use the ‘OK’ button to save the modified data.

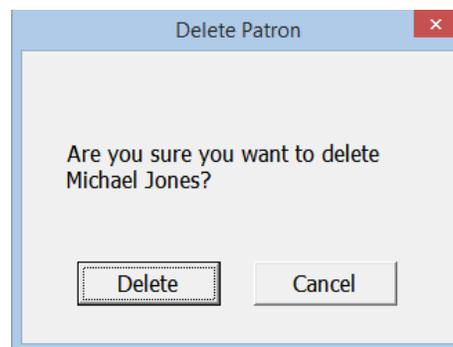
**Note:** If the 'Previous' button is clicked when the user is on the second line (the first patron's information is showing), then the user will hear a 'beep' and the information showing in the window will remain the same.

### Delete Patron Button

The 'Delete Patron' button selects a patron for deletion in the same manner as the 'Edit Patron' button does.



When the user selects the 'Delete Patron' button she is shown a confirmation window to verify the deletion.



The user can either use the 'Delete' button to confirm the deletion, or use the 'Cancel' button to close the window without deleting the patron data.

**Note:** Data can be directly added or deleted from the 'Patrons' worksheet if desired. Although it is not recommended to add or delete data without the use of the buttons, it is possible, however certain functionality of the worksheet could be affected.

**Note:** There is a column 'M' that is hidden on the 'Patrons' sheet. For each patron that is checked in, column 'M' will have an 'X' in the corresponding row. Unless a patron is checked in or out in error, this column should not be modified manually. If a patron is checked in or checked out in error, this column can be unhidden and updated accordingly. If this is done please also make sure that the corresponding time stamp on the 'Time in – out' sheet is also updated accordingly. For example: erroneous check ins should be corrected by removing the 'X' from column 'M' on the 'Patrons' tab; as well as the line with the patron's name and the time stamp for check in, on the 'Time in – out' sheet, should be deleted. Erroneous check outs should be fixed by entering an 'X' in column 'M' on the 'Patrons' tab; as well as the line with the patron's name and check out time stamp on the 'Time in – out' sheet as well as the 'Duration' in column 'F' should be deleted from the 'Time in – out' tab.

### Time In – Out Sheet

The 'Time in – out' sheet should not be updated manually, except in the case of erroneous check ins or check outs (as described in the Note directly preceding this section). The time that a patron is checked in and out of the nursery via the spreadsheet is automatically recorded on this sheet in addition to the name of the patron, the date for the check in and check out, the duration of the stay, and a flag (column with the word 'TRUE') if the patron stayed overnight.

Name	Time In - Date	Time In - Time	Time Out - Date	Time Out - Time	Duration	Overnight?
Nathan Jones	11/25/2014	5:12:41 PM	11/25/2014	5:12:48 PM	0:00:07	
Nathan Jones	11/25/2014	5:12:51 PM	11/25/2014	5:12:55 PM	0:00:04	
Becca Jones	11/25/2014	5:12:59 PM	11/25/2014	5:13:07 PM	0:00:08	
Michael Jones	11/25/2014	5:13:03 PM	11/25/2014	5:13:11 PM	0:00:08	
Becca Jones	11/25/2014	7:56:56 PM	11/25/2014	8:35:10 PM	0:38:14	
Michael Jones	11/25/2014	7:59:35 PM	11/25/2014	8:35:13 PM	0:35:38	
Jacob Jones	11/25/2014	8:04:57 PM	11/26/2014	4:07:36 PM	20:02:39	TRUE

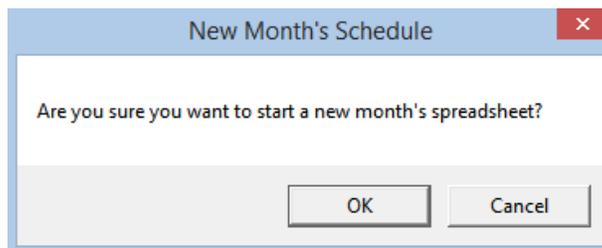
There are fields on the right hand side of the sheet near the top that are updated as the sheet is updated and keeps track of the numbers necessary for reporting purposes to the state.

Total Hours	56:04:34
Unique Patrons	7
Total Patron visits	14
New Patrons	
Overnight Visits	3
Adopted/Foster Families	1

These fields should be self-explanatory and can easily be verified by counting the data on either the 'Time in – out' or 'Patrons' tab. Again, these cells will update in real time and do not need to be changed or modified manually.

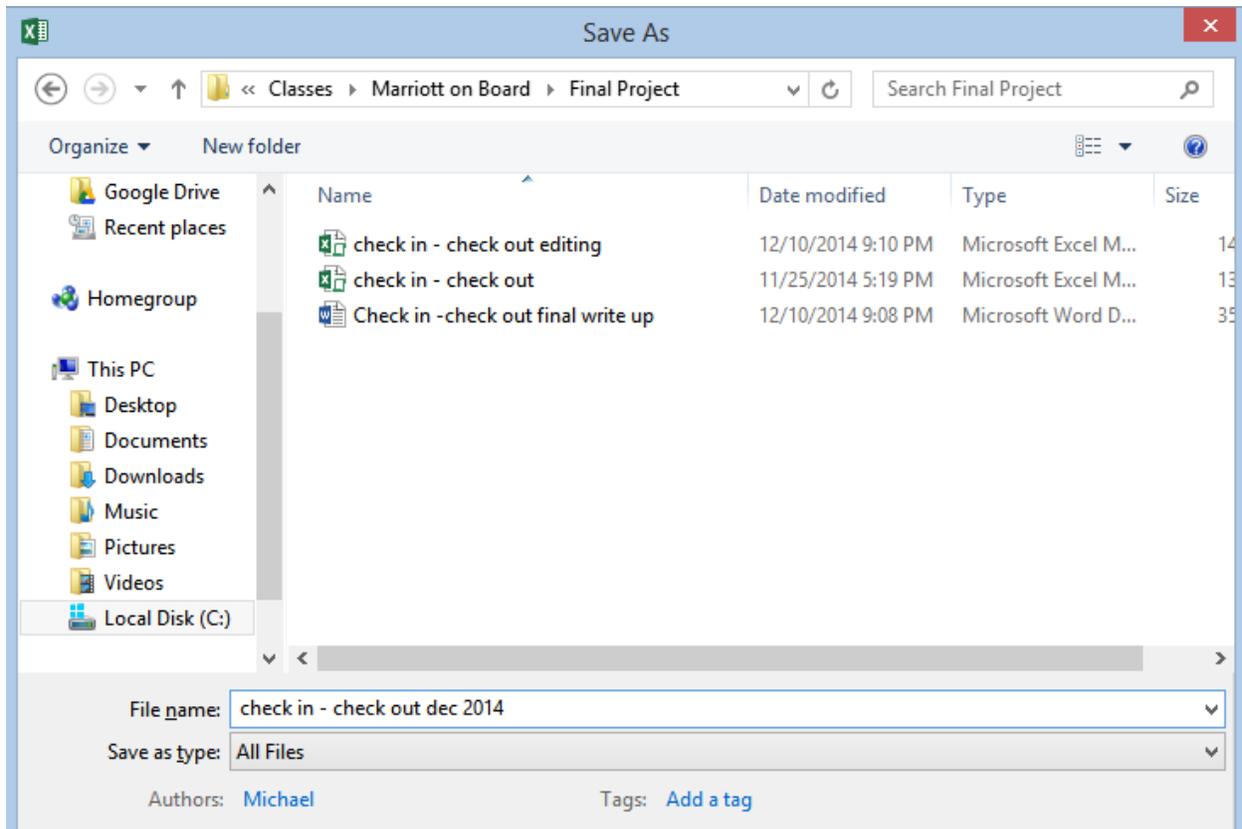
### New Month Button

When the user selects the New Month button, she is first presented with a confirmation window asking if the user does in fact want to begin a new month's spreadsheet.



Clicking the 'Cancel' button will exit the pop-up window without making any changes to the data. Clicking the 'OK' button will first save the current Excel spreadsheet automatically to make sure that no data is lost. Next, it will open a 'Save As' dialog box in order for the user to select where

the new month's spreadsheet should be saved. The user should select the correct folder and enter a new name for the next month's spreadsheet (recommended naming convention would include the core file name with the month and year that the spreadsheet will be tracking).



The user should click the 'Save' button at this point to save the new copy of the spreadsheet for the upcoming month.

The previous month's spreadsheet will close and the new month's spreadsheet will be saved at the location just specified and be opened. All of the data on the 'Time in – out' sheet will be deleted. Also, all patrons, if any, that were marked as checked in, will be automatically checked out (in other words the new month's spreadsheet will not start with any patrons checked in).

**Note:** Both the 'Patrons' tab and the 'Weekly Schedule' tab will be exactly the same as the previous month's corresponding sheets. This is to make sure that if a month ends in the middle of the week, the schedule for that week is not deleted. Keeping the data on the 'Patrons' tab maintains consistency from month to month and doesn't require the re-entry of all the data.

**Note:** Even though the previous month's spreadsheet was closed it can still be accessed. Open up the spreadsheet as you would any other Excel file and continue to modify it as necessary. The patrons that were checked in on the old month's spreadsheet when the 'New Month' button was clicked will still be shown as checked in on that spreadsheet. It is only the new month's spreadsheet, which was just created, that will have all of the patrons checked out.

## Discussion of Learning and Conceptual Difficulties Encountered

Overall the project took a tremendous amount of time to complete over the period of nearly two months. At the beginning of the project I was worried about providing all of the functionality that the client wanted, because there was still a lot of concepts which we were planning to learn later in the class that I did not know at the time (email, modifying the ribbon, etc.). The initial coding took much longer, in the neighborhood of three to four times longer, as producing similar code near the end of the project.

A few of the pieces of functionality that provided a challenge were the Weekly Schedule and sheer number of user forms, message boxes, 'confirmation boxes', and checks for valid information. The weekly schedule was difficult because I had to carefully think through a method to get the proper coordinates on the sheet from the input of 'day', of the 'week' and 'duration' from the user form. Also, I wanted to improve upon their current schedule and provide an at-a-glance weekly schedule that would quickly show availability and the ratio of volunteers to patrons (most of this was done through conditional formatting), but still allow for all of the scheduling details to be available on the same screen. The solution that I came up with to provide the details about each appointment was inserting the data into comment boxes. Using comment boxes was not something we had worked with previously in class, but by guessing and checking, and using intellisense and intuition I was able to find the properties and methods to produce the desired functionality.

The other main difficulty, and learning opportunity, that I ran into dealt with the sheer number of user forms, message boxes, etc. There is a lot more functionality in this spreadsheet than in any of the other projects or homework assignments completed for the class. Keeping all of the code straight and making sure that everything is working as desired was difficult.

I often had other people try to 'break' the spreadsheet in order to test it. I would watch them use the spreadsheet, note when, where and why they had questions and then address the problems by making the form more intuitive and 'bulletproof'. The testing brought up a different 'hole' in my code every time until the end. This definitely served to make the code more robust and the spreadsheet easier to use.

I also learned that clients are often unsure of what they want. They may have a general idea initially, but no concrete requirements or layout that they are looking for (unlike the class projects). I had to design the forms and think through much of the requested functionality on my own. It was also interesting, but not surprising, to see how much more the client requested be done with each version of the spreadsheet that was delivered. It was even requested that I create a similar spreadsheet just for the volunteers to check in and out and log their time. For various reasons it cannot be just additional functionality added onto this spreadsheet. Often scope changes, and occasionally it changes dramatically, and that is why many B2B tech companies have change orders.

This project provided significant learning opportunities related to writing and creating code, as well as dealing with a client relationship and testing to make sure that the quality of the project is high.

## Outside Assistance

While I referred to the textbook and the code generated during class and class assignments extensively there were only three instances in which I consulted the internet for help with code. Also, I discussed at a high level what the project would be like with the class TA's, but specific code was not discussed.

- 1) I wanted to have a msgbox that only had an OK button, I looked up online the syntax to make this possible. I needed to use something similar to: Call msgbox ("This is a message box with only an OK button", vbOKOnly).
- 2) New Week button - this button with clear all of the numbers and comments from the weekly schedule to prepare the sheet for a new week of scheduling. I found the proper syntax of selection.clearcomments from the internet.
- 3) I wanted to use a formula to count the unique patron visits on the 'Time in – out' sheet. I found the formula used for that on the internet.