Budgeting Tool

PREPARED BY: James Zelnick

Executive Summary

Mint.com is a personal budgeting tool by Intuit. The site collects the user's bank account information and uses this to populate items such as cash balances, outstanding loans, etc. Users can create different budgets on the site, which will then be automatically updated based on transactions that occur during the month (unless transaction occurs with cash).

With this project, I wanted to build functionality into the budgeting tool that allowed the user to project their budget for a period from 6 months – 2 years. The intent behind this was to allow the user to take advantage of the up-to-date account and transaction information on Mint, while being able to project/edit income and expense items easily in Excel. This spreadsheet provides a much more dynamic budgeting environment that allows the user to accurately project their financial position up to 2 years from the time when the budget is created.

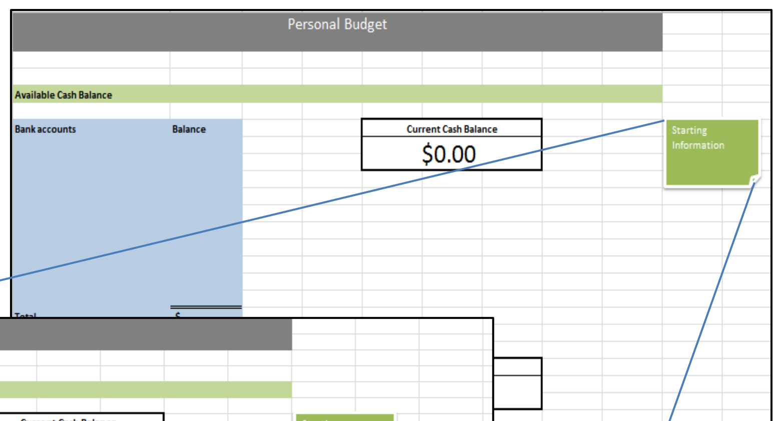
Implementation Documentation

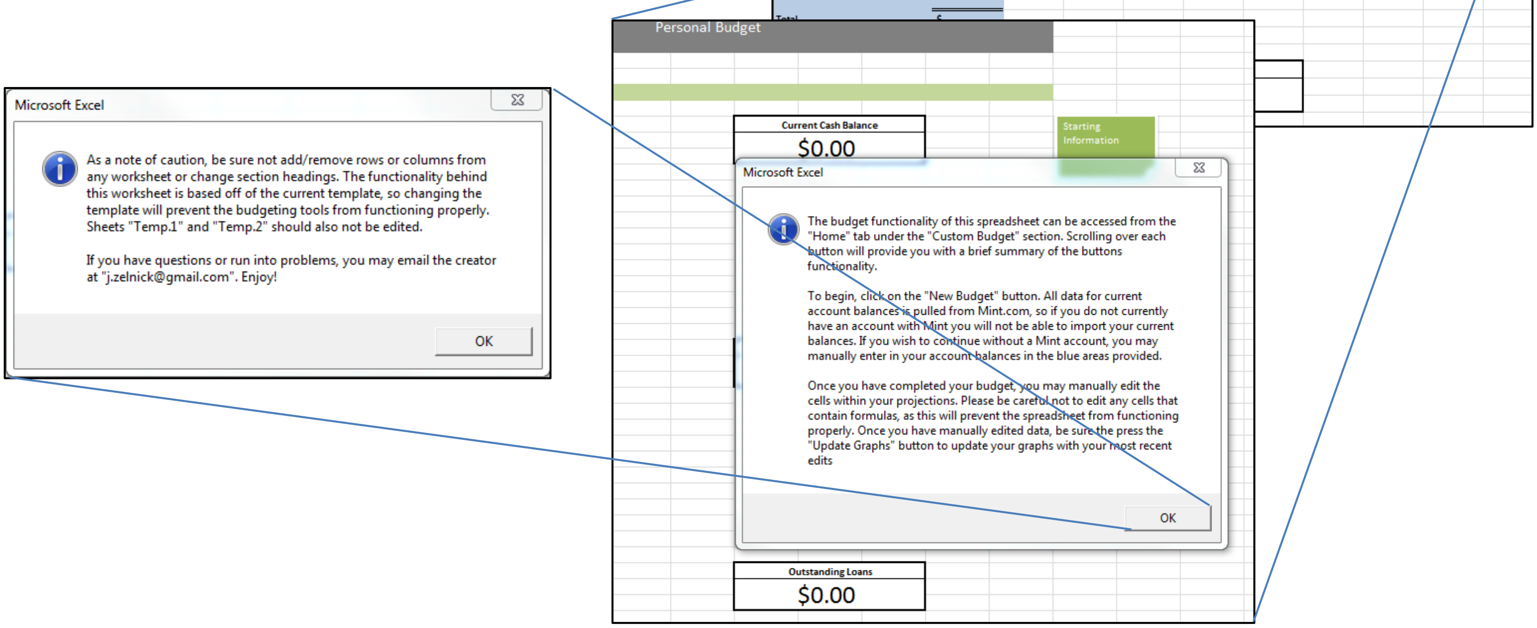
Getting Started

Basic Instructions

When the user opens the spreadsheet they will notice a blank worksheet with a box that contains the text "Starting Information." Clicking on this box shows a series of text boxes that contain instructions for the user on how to use the spreadsheet.

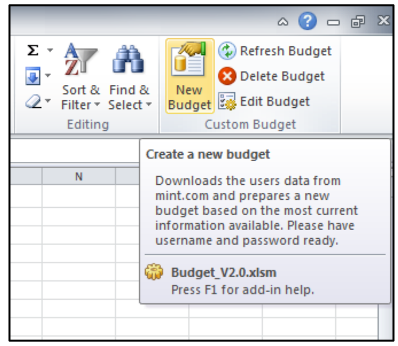
These instructions direct the user to the custom buttons created on the Home tab, and give some basic notes for use such as "Do not add or remove columns," and "Do not edit cells containing formulas."





Home Buttons

I created four custom buttons on the Home tab for using the budget tools. Scrolling over each budget provides the user with a brief description of what the button does. I have outlined the functionality of each button below.



1. *New Budget:* Creates a new budget.
2. *Refresh Budget*: Refreshes cash, credit card, and loan balances.
3. *Delete Budget*: Deletes budget and restores template.
4. *Edit Budget*: Shows form used to edit the budget.

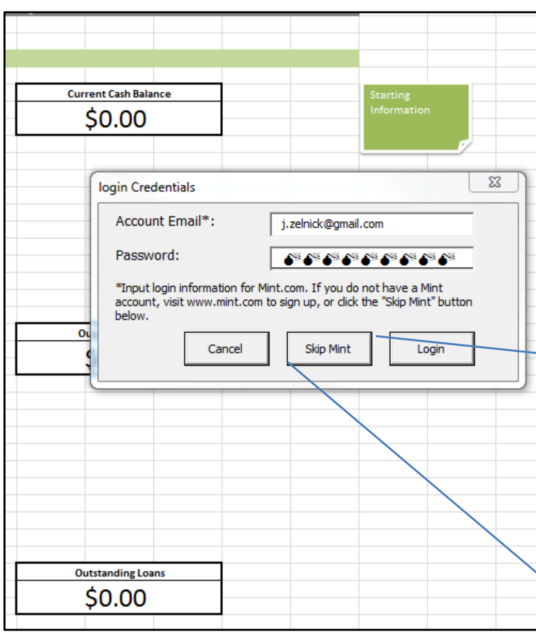
Creating a Budget

New Budget Button

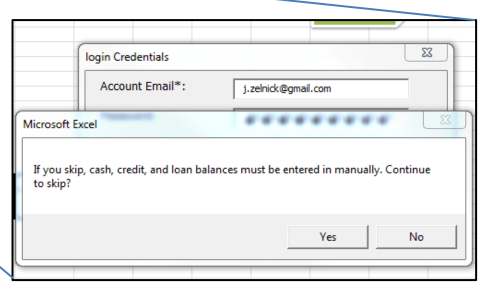
When the user clicks on the "New Budget" button they are first asked for the name of the person preparing the budget (for our example we will use the name "George"). They are then shown a form that asks the user for login information. From this point the user has 3 options:

1. *Cancel:* Cancels the creation of the budget.

2. *Skip Mint:* Skips gathering data from Mint, goes straight to budgeting form. User is prompted with an alert that tells them they must manually enter in account information if they skip Mint and asks if they would like to continue. If they choose not to continue, they are directed back to the login form, otherwise they are taken to the edit budget form.



3. *Login:* Logs the user in to Mint and collects cash, credit card, and loan information. This information is populated to the sheet, and the edit budget form is then loaded.

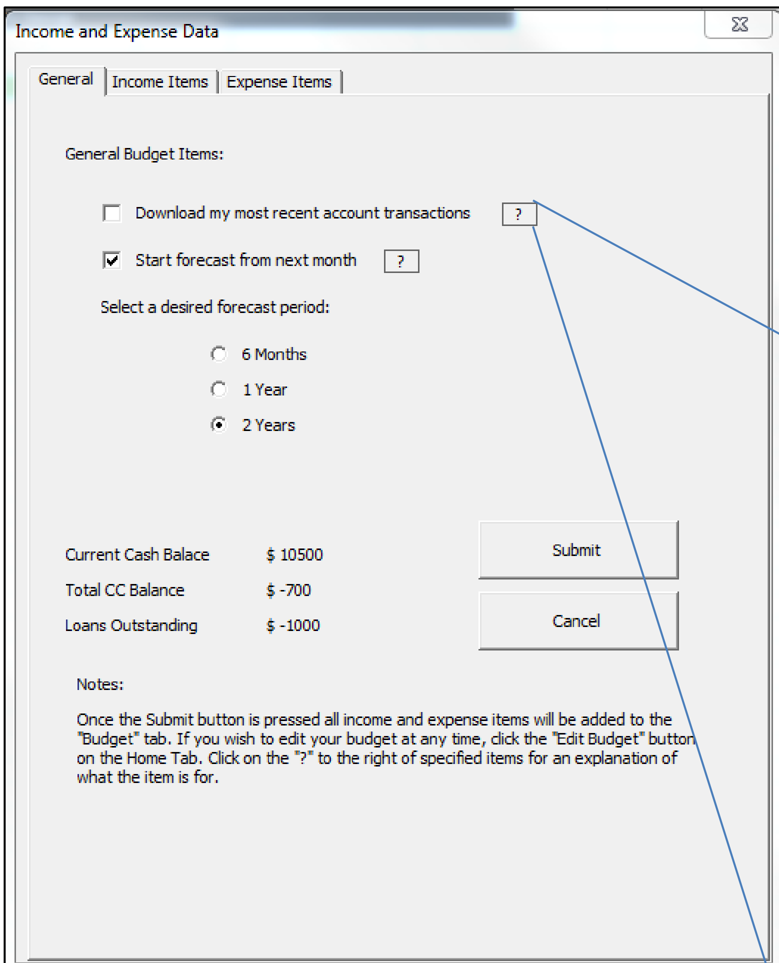


Using the Edit Budget Form

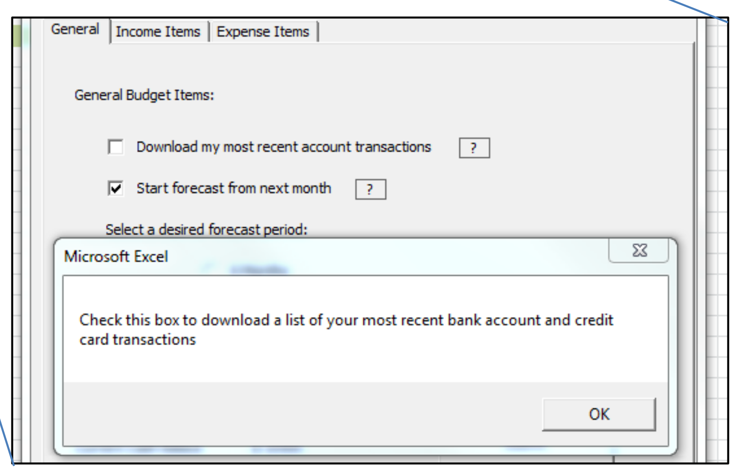
After the login button has been pressed and Excel has accessed Mint, a message box will appear letting the user know if their information has been successfully downloaded or not. After this, the edit budget form will be loaded (shown below). You will notice that current cash, credit card, and loan balances all appear on the form for planning purposes when the user is populating the budget (values edited for sake of example).

The edit budget, or "Income and Expense Data," form has three tabs. A description of the functionality of each tab follows.

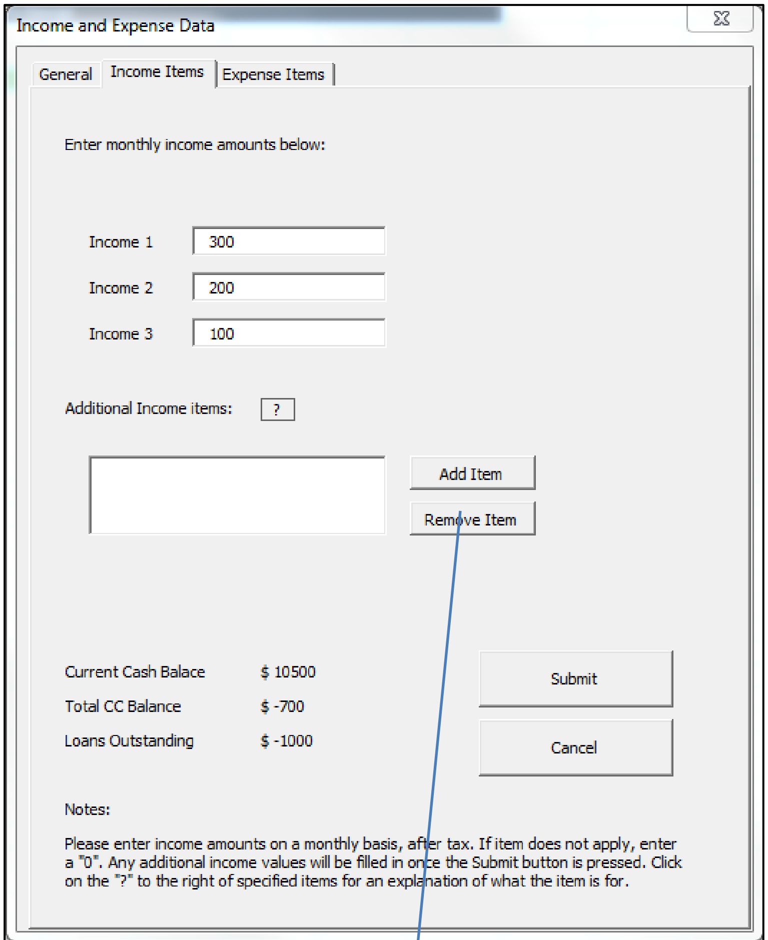
General Tab



The general tab includes boxes for the desired forecast period, desired start date, and whether or not the user would like to download their most recent transactions. If they user clicks on a "?" to the right of an item, it will display a box that tells the functionality of the object. For example, if the user clicked on the "?" to the right of "Download my most recent account transactions" they would see the following:



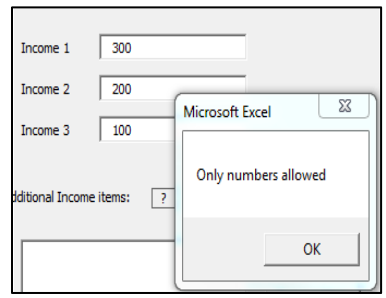
Income Tab



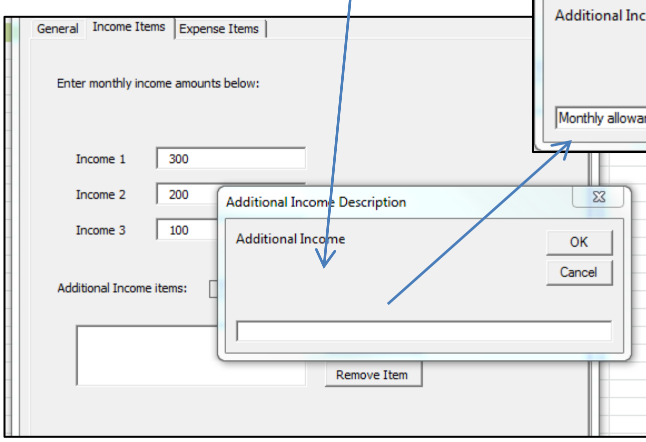
The income tab is used to input the user's monthly income information. You will not that this tab (as do all) has the same built in "?" functionality, as well as instructions for the user in a "notes" section at the bottom.

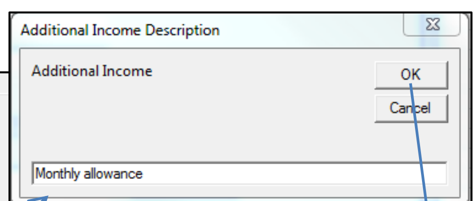
The form has room for up to 3 standard income amounts, but if the user wishes to add more they may do so using the "Add Item" button. These items can likewise be removed by using the "Remove Item" button. This functionality is demonstrated in the screenshots at the bottom of the page.

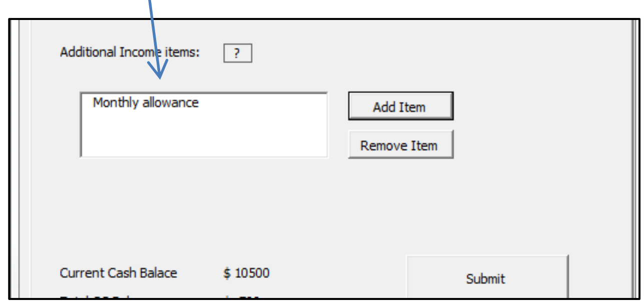
If the user attempts to enter anything but text into one of the income boxes, they will receive the following error message (to right):



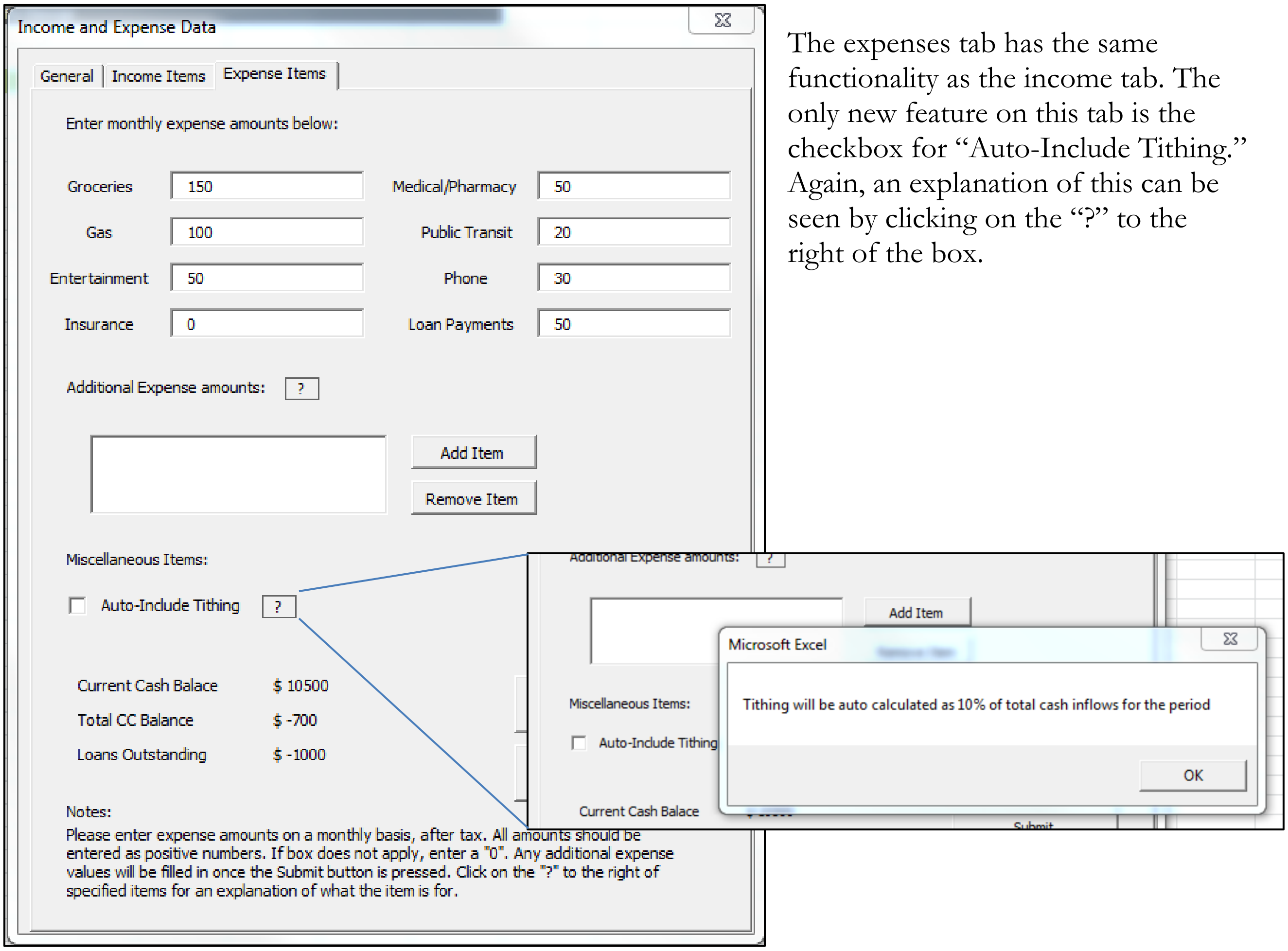
(adding an additional item)







Expenses Tab



The expenses tab has the same functionality as the income tab. The only new feature on this tab is the checkbox for "Auto-Include Tithing." Again, an explanation of this can be seen by clicking on the "?" to the right of the box.

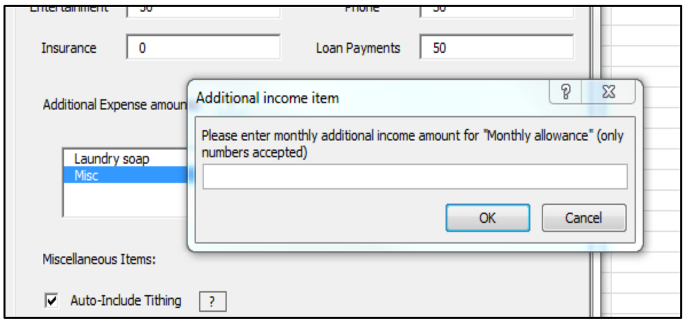
The user may press submit on any tab to submit the current budget and populate the worksheet template. If the user presses cancel, they will be prompted that changes will not be saved, and asked if they would like to continue. If they choose not to continue, they will return to the edit budget form, otherwise they will be taken back to the "Budget" worksheet.

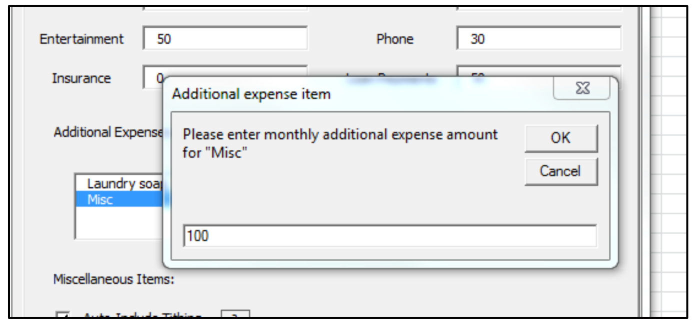
The following pages show what happened when we input our budget. For our example, we'll assume that we want to do the following:

- Download transactions
- Auto-included tithing
- Project the budget for 1 year
- Include an extra income item called "Monthly allowance"
- Include two additional expense items: "Laundry soap" and "Misc"

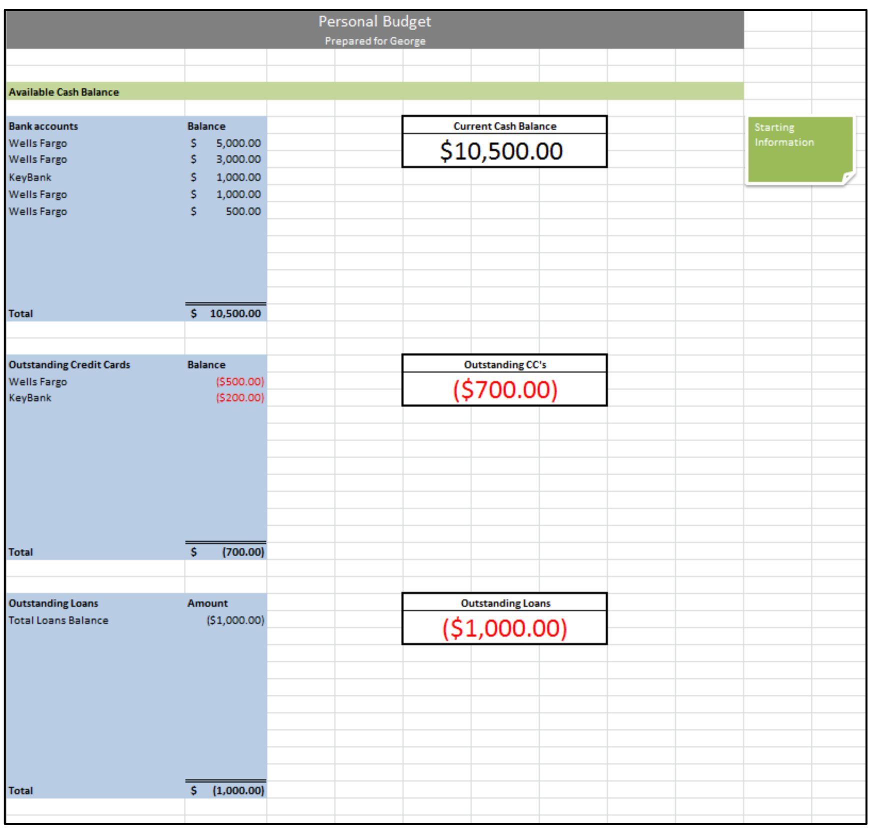
Submitting the Budget

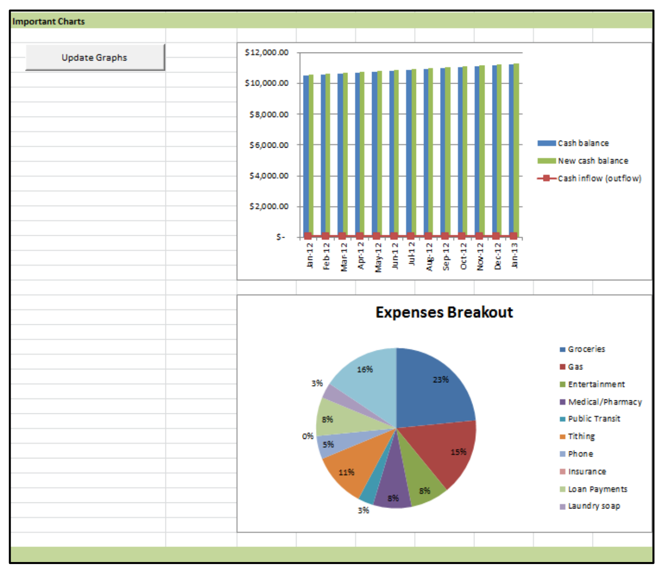
The user will receive a variety of prompts and/or message boxes once the budget is submitted, depending on their selections. If the user has chosen to download transactions, they will see a message box telling them whether or not the transactions were successfully downloaded. The user will also be prompted to enter information for additional income and expense amounts they added to the budget. We can see the prompts for some of these items for our test budget below.





The screenshots below show the outcome of our Mint download and our projections (recent transactions not shown for privacy purposes, but can be seen on the "Recent Transactions" tab.





(projections screenshot on next page)

Projected cash inflows and outflows													
Month	1/8/2012	2/8/2012	3/10/2012	4/10/2012	5/11/2012	6/11/2012	7/12/2012	8/12/2012	9/12/2012	10/13/2012	11/13/2012	12/14/2012	1/14/2013
Income													
Income 1 (after tax)	$300.00	$300.00	$300.00	$300.00	$300.00	$300.00	$300.00	$300.00	$300.00	$300.00	$300.00	$300.00	$300.00
Income 2 (after tax)	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00	$200.00
Income 3 (after tax)	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00
Monthly allowance	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00
Total cash inflows	**$700.00**	**$700.00**	**$700.00**	**$700.00**	**$700.00**	**$700.00**	**$700.00**	**$700.00**	**$700.00**	**$700.00**	**$700.00**	**$700.00**	**$700.00**
Expenses													
Groceries	$150.00	$150.00	$150.00	$150.00	$150.00	$150.00	$150.00	$150.00	$150.00	$150.00	$150.00	$150.00	$150.00
Gas	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00
Entertainment	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00
Medical/Pharmacy	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00
Public Transit	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00
Tithing	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00	$70.00
Phone	$30.00	$30.00	$30.00	$30.00	$30.00	$30.00	$30.00	$30.00	$30.00	$30.00	$30.00	$30.00	$30.00
Insurance	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Loan Payments	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00	$50.00
Laundry soap	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00
Misc	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00
Total Expenses	**$640.00**	**$640.00**	**$640.00**	**$640.00**	**$640.00**	**$640.00**	**$640.00**	**$640.00**	**$640.00**	**$640.00**	**$640.00**	**$640.00**	**$640.00**
Net Cash for Month	**$60.00**	**$60.00**	**$60.00**	**$60.00**	**$60.00**	**$60.00**	**$60.00**	**$60.00**	**$60.00**	**$60.00**	**$60.00**	**$60.00**	**$60.00**

Cash inflow (outflow) for Period	Projected Cash Balance - Period end
$780.00	$11,280.00

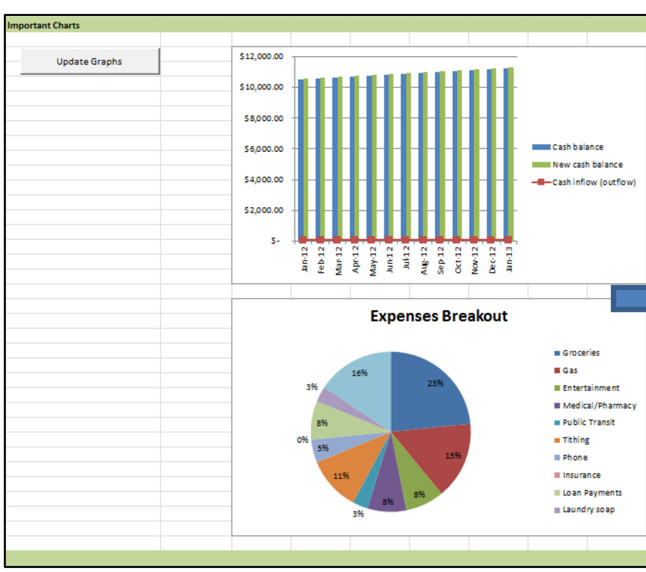
Working With Forecasted Data

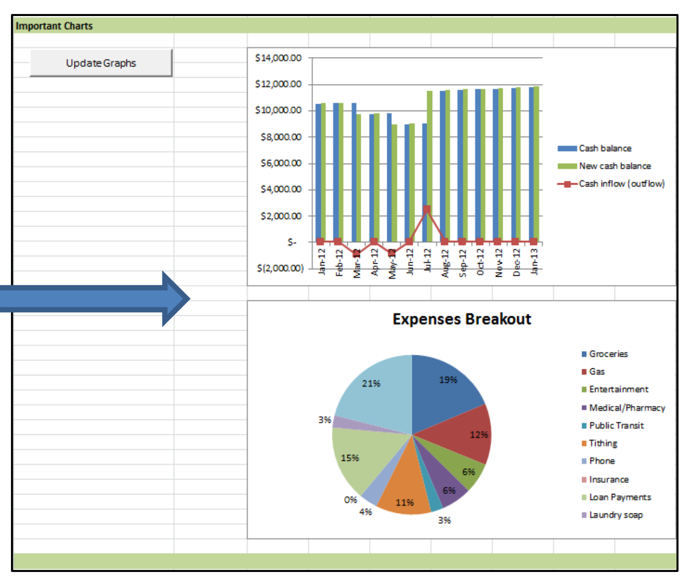
Once the user has forecast the budget, they can then edit any of their projected numbers (except those containing formulas, like mentioned in the instructions). As seen in the screenshot above, once the user submits budget data two graphs appear, one showing total cash balances and cash inflow/outflow, and the other showing breakups of expenses for the entire period. Once the user manually updates data in the budget it will be necessary to press the "Update Graphs" button to re-populate the graphs.

To demonstrate this, we will add a loan payment of $1,000 on 3/10/12 and a Misc. payment of $1,000 on 5/11/12. We will also increase our income to $3,000 on 7/12/2012 (shown to the right). The screenshots below show the graphs before and after the user presses the update button.

3/10/2012	4/10/2012	5/11/2012	6/11/2012	7/12/2012
$300.00	$300.00	$300.00	$300.00	$3,000.00
$200.00	$200.00	$200.00	$200.00	$200.00
$100.00	$100.00	$100.00	$100.00	$100.00
$100.00	$100.00	$100.00	$100.00	$100.00
$700.00	**$700.00**	**$700.00**	**$700.00**	**$3,400.00**
$150.00	$150.00	$150.00	$150.00	$150.00
$100.00	$100.00	$100.00	$100.00	$100.00
$50.00	$50.00	$50.00	$50.00	$50.00
$50.00	$50.00	$50.00	$50.00	$50.00
$20.00	$20.00	$20.00	$20.00	$20.00
$70.00	$70.00	$70.00	$70.00	$340.00
$30.00	$30.00	$30.00	$30.00	$30.00
$0.00	$0.00	$0.00	$0.00	$0.00
$1,000.00	$50.00	$50.00	$50.00	$50.00
$20.00	$20.00	$20.00	$20.00	$20.00
$100.00	$100.00	$1,000.00	$100.00	$100.00
$1,590.00	**$640.00**	**$1,540.00**	**$640.00**	**$910.00**
($890.00)	**$60.00**	**($840.00)**	**$60.00**	**$2,490.00**

Cash inflow (outflow) for Period	Projected Ca
$1,360.00	$11

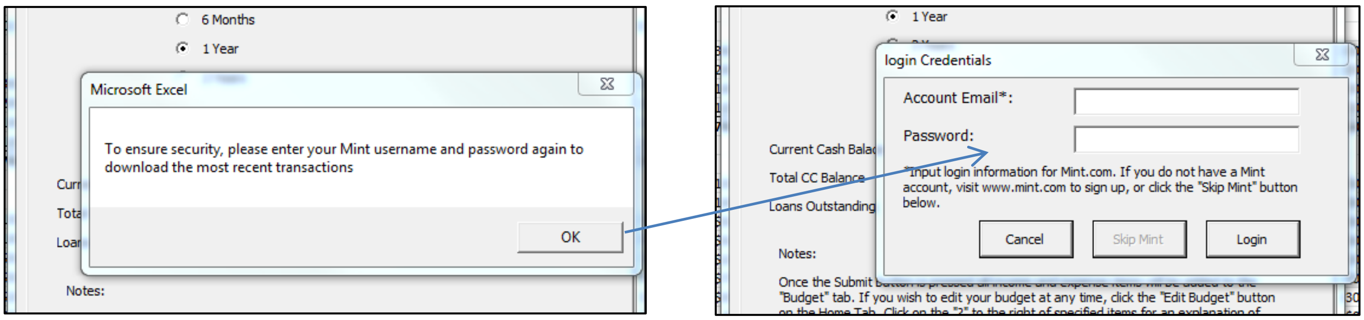




Editing an Existing Budget

The user may edit the existing budget by clicking the "Edit Budget" button on the Home tab. Once this button is clicked the edit budget form will re-appear with the user's original inputs re-populated. The user may edit any field in the budget and click the submit button to re-populate the Budget worksheet.

The only real difference between editing the budget and originally filling in the budget is that the user will be asked for their Mint username and password again if they choose to download their most recent transactions again (screenshots shown below). You will notice that the "Skip Mint" button has been deactivated since it does not apply in this step.



Refreshing & Deleting Current Budget

The current budget can be refreshed by pushing the "Refresh Budget" button, and deleted by pushing the "Delete Budget" button, both found on the Home tab. In order to refresh the budget data, the user will again be prompted to re-enter their username and password information.

Learning & Conceptual Difficulties

I ran into many difficulties when writing the code for this worksheet. The following paragraphs analyze problems I encountered throughout this project and what I learned as a result of the problem.

- **Problem:** *Inserting custom buttons.* I had watched in class when custom buttons were inserted to the ribbon, but never really attempted doing it myself until making this worksheet. Thus said, I ran into a few syntax errors, and had to experiment a little bit before get the right type and size of buttons.

  What I learned: I learned how to insert custom buttons of different sizes, and how to choose the tab that I wanted to insert these buttons on. After searching online for a little bit, I also learned how to add caption and titles to each box, that way the user can get a brief description of what the button does by scrolling over it.

- **Problem:** *Getting Mint to Log in.* I spent a good amount of time going over Mint's login page HTML code to figure out how to get my code to log in. The "Click" action wasn't working and I was so stumped I had to go see the professor.

  What I learned: I learned that there is a "Submit" function built into the class module for automating explorer. I also learned how to search for the form title that we were trying to submit in the HTML code.

- **Problem:** *I don't have any loans.* This isn't necessarily a problem for my financial position, but it was a problem for my code because I wanted my form to be adaptable for multiple users, some of which may have loans.

  What I learned: Because the code I was using was based off of my Mint login, I had to find some way around this. I ended up having the spreadsheet pull in the total loan balance (instead of line-by-line like cash and credit cards), that way the user would at least know their total loan balance when using the spreadsheet.

- **Problem:** *The user can insert rows for custom income and expense items, making it difficult to make the "sum" formulas for total income and expenses.*

  What I learned: This problem took a little thinking. I needed my "total income" and "total expenses" to be formulas, but I needed these formulas to be variable based on the number of income and expense items the user added. What I ended up having to do was to use R1C1 methodology (which I had never worked with before) to insert the variable sum formulas. It took a little researching to figure out how this methodology worked, but I can see it being very helpful for the future.

- **Problem:** *Inserting charts with a variable location that could be updated.*

  What I learned: This problem is similar to the one just mentioned. I needed the chart locations to change based on the number of income and expenses items added. I ended up using relative references based on the location of certain titles in on the Budget worksheet. I also learned the code needed to change the names of the charts when they were created, and then use these names to move the charts to their desired location.

- **Problem:** *Only allowing numbers to be entered into text boxes and input boxes.*

  What I learned: This problem took a lot of searching online, and I was able to learn about a very helpful sequence of code lines that only allows text to be entered into text boxes on a user form. I was also able to learn about the different "types" of input boxes, and how these can be set to only accept certain types of data (before I had no knowledge of this functionality in an input box).