

# 520 Final Project

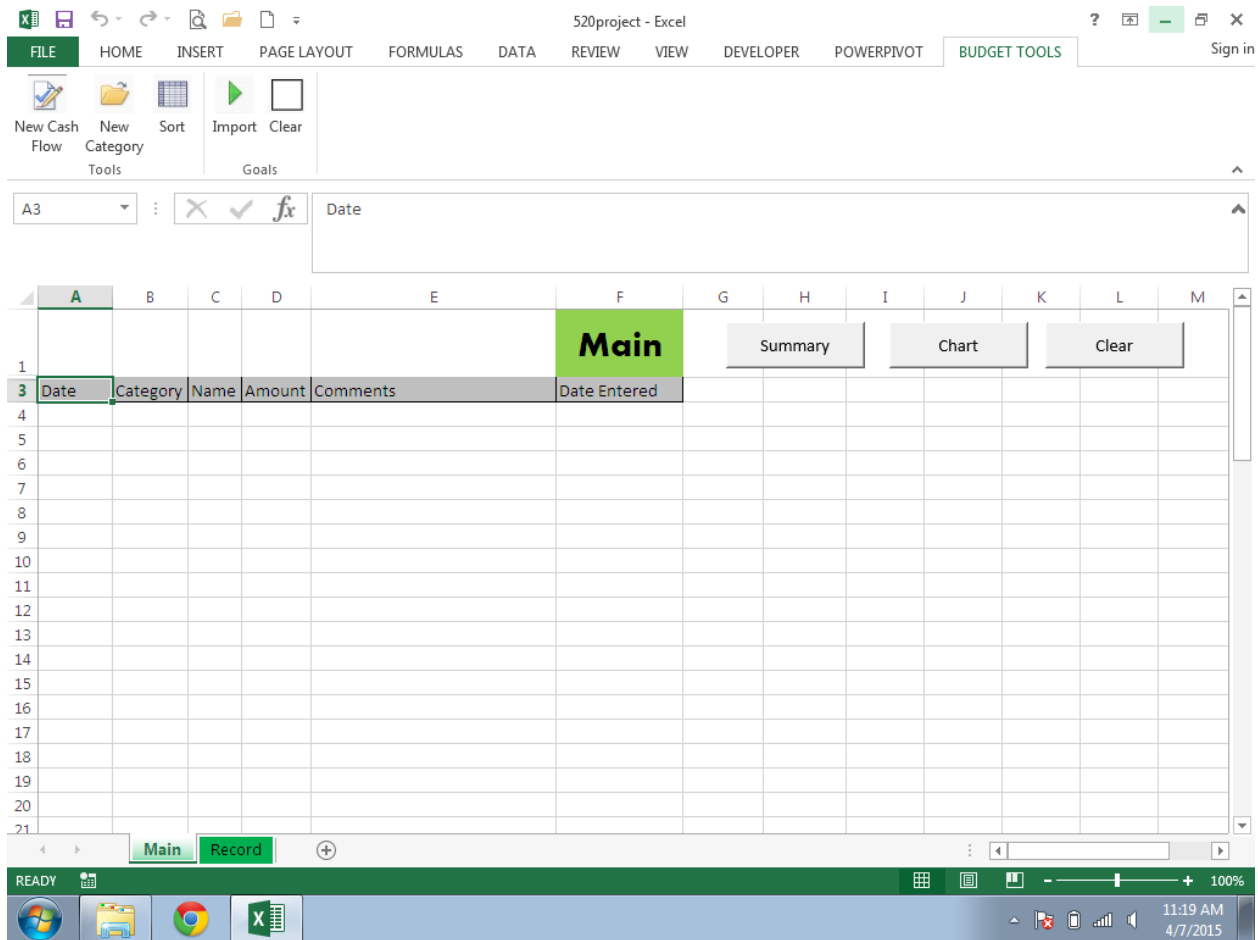
Cassidy Misbach

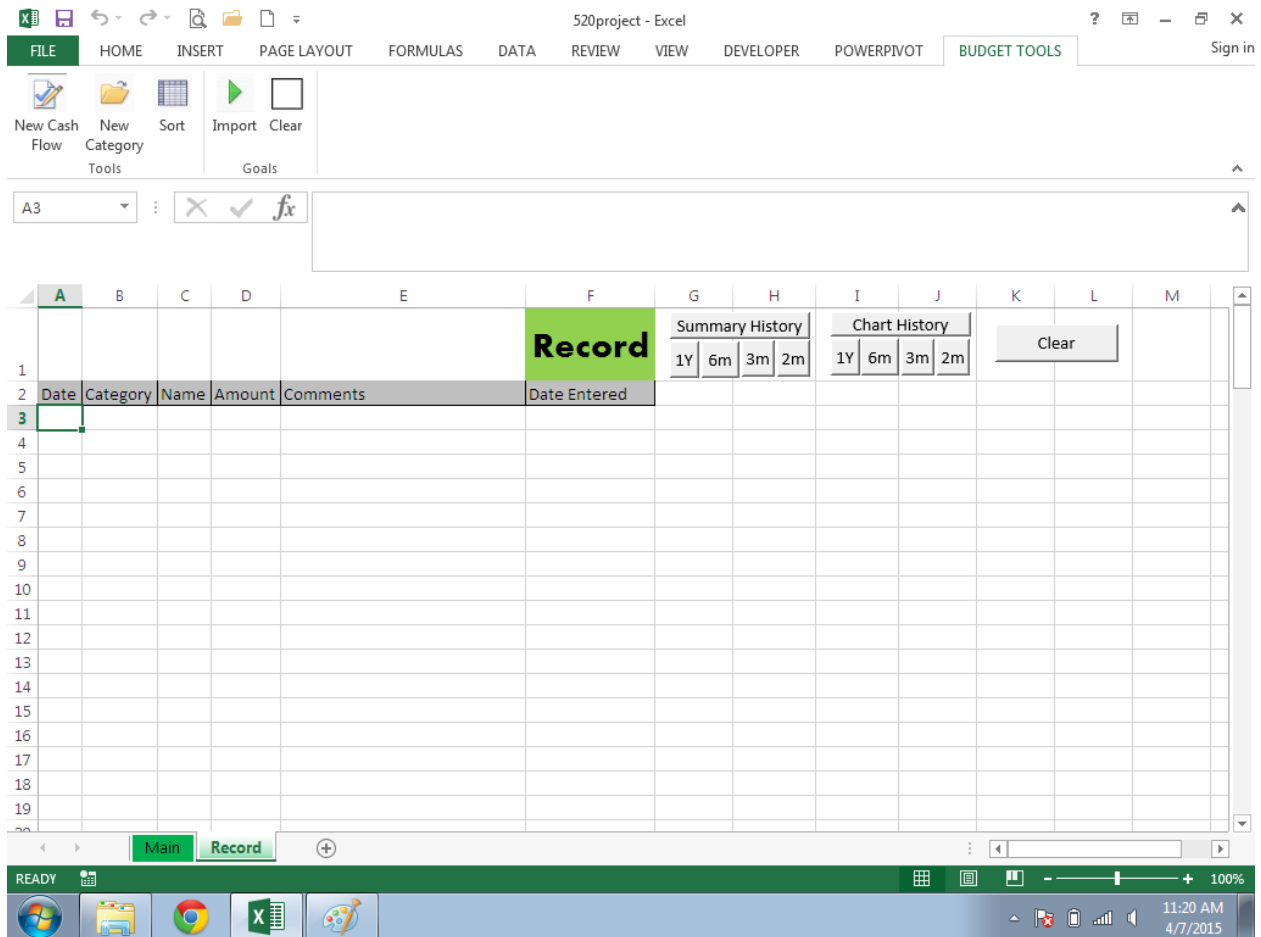
## Executive Summary:

My project is a tool to help manage finances. This can be used by an individual to manage their own expenses and savings, but could easily be adapted to manage/keep track of the finances for a company or business. My project records and organizes cash flows based on user-defined categories. Using my project, the user can set goals for budgeting and summarize and analyze their cash flows to gain a better understanding of their finances.

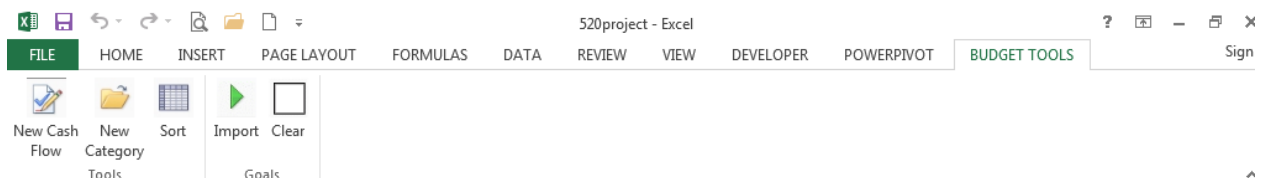
## Implementation documentation:

When you open the workbook for the first time there are already two sheets created called "Main" and "Record" these are the summary sheets for the cash flows that the user enters. These tabs are colored green to distinguish them from the categories that the user will create.

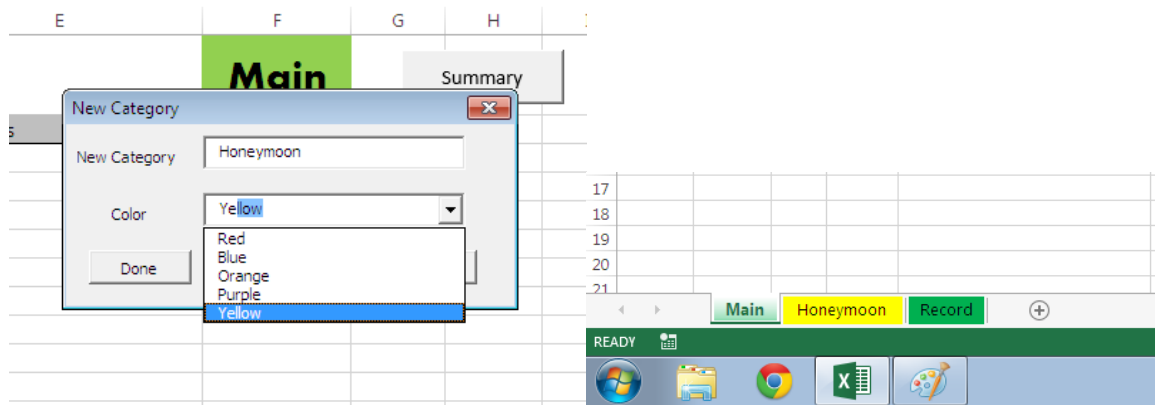




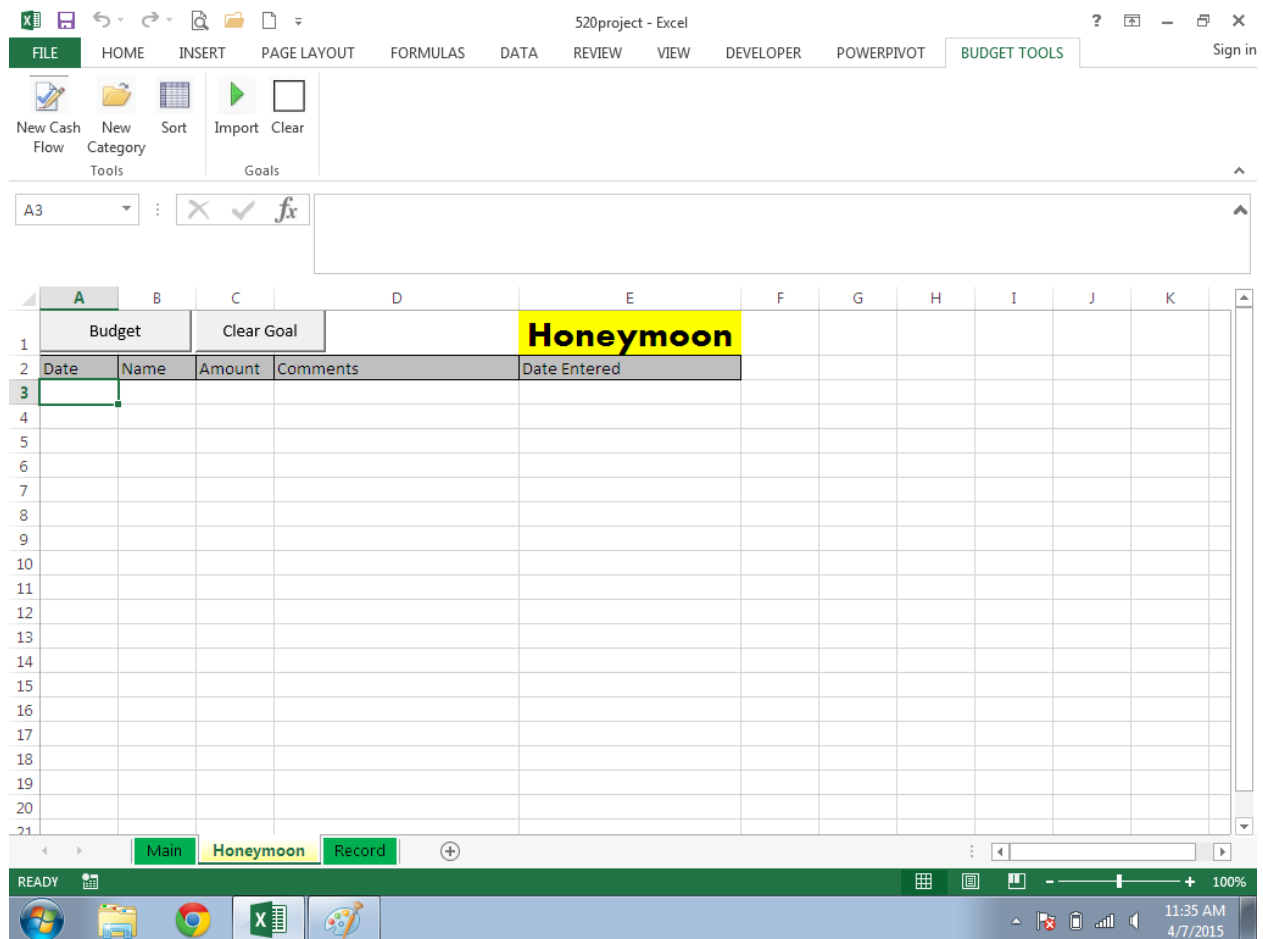
There is also a ribbon called “Budget Tools” that contains buttons used by the user to enter in their cash flows, organize their cash flows, and organize the goals they set for budgeting.



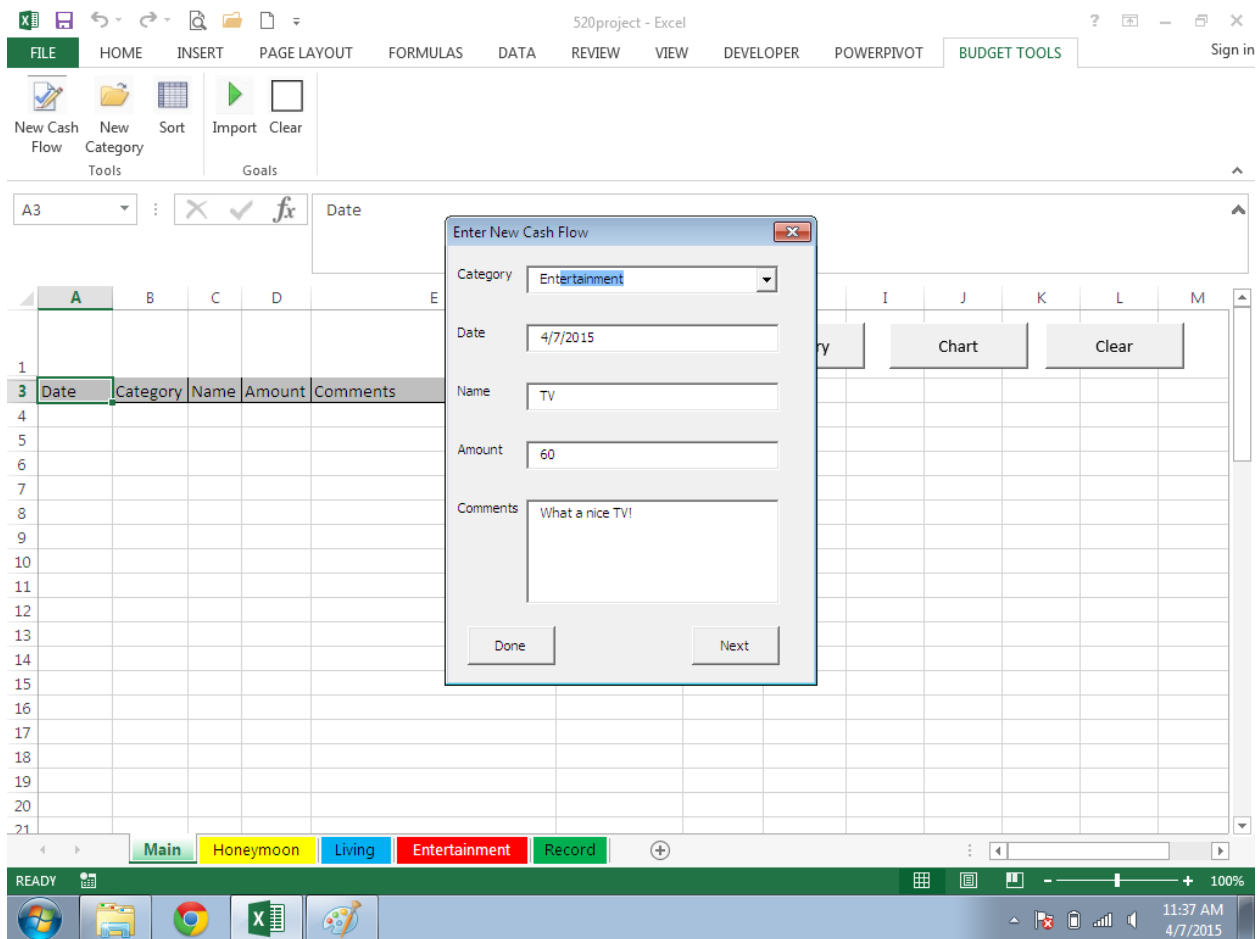
The user would first press the “New Category” button in the ribbon which will bring up a userform asking for the name of the new category and what color they would like the new category to be. They can choose from 5 different colors. They do not have to choose a color but the colors can be used to indicate certain groupings of categories (e.g. all blue color categories would indicate “savings” categories). They can either press “Next” and the userform will empty and they can create another category, or they can press “Done” and the category/categories will be added as a new sheet(s) with the tab colored the color that was indicated by the user.



The individual sheets will have titles at the top of the sheet corresponding to the category which will also be colored the same color as the tab. There will be a list of headers that will be used to organize the cash flows for that category as well as two buttons in the upper left hand corner labeled “Budget” and “Clear Goal” which I will discuss later. The tabs of these new categories will always be entered in right before the “Record” tab, the user can then change the order of their tabs as they like between the “Main” and “Record” tabs.



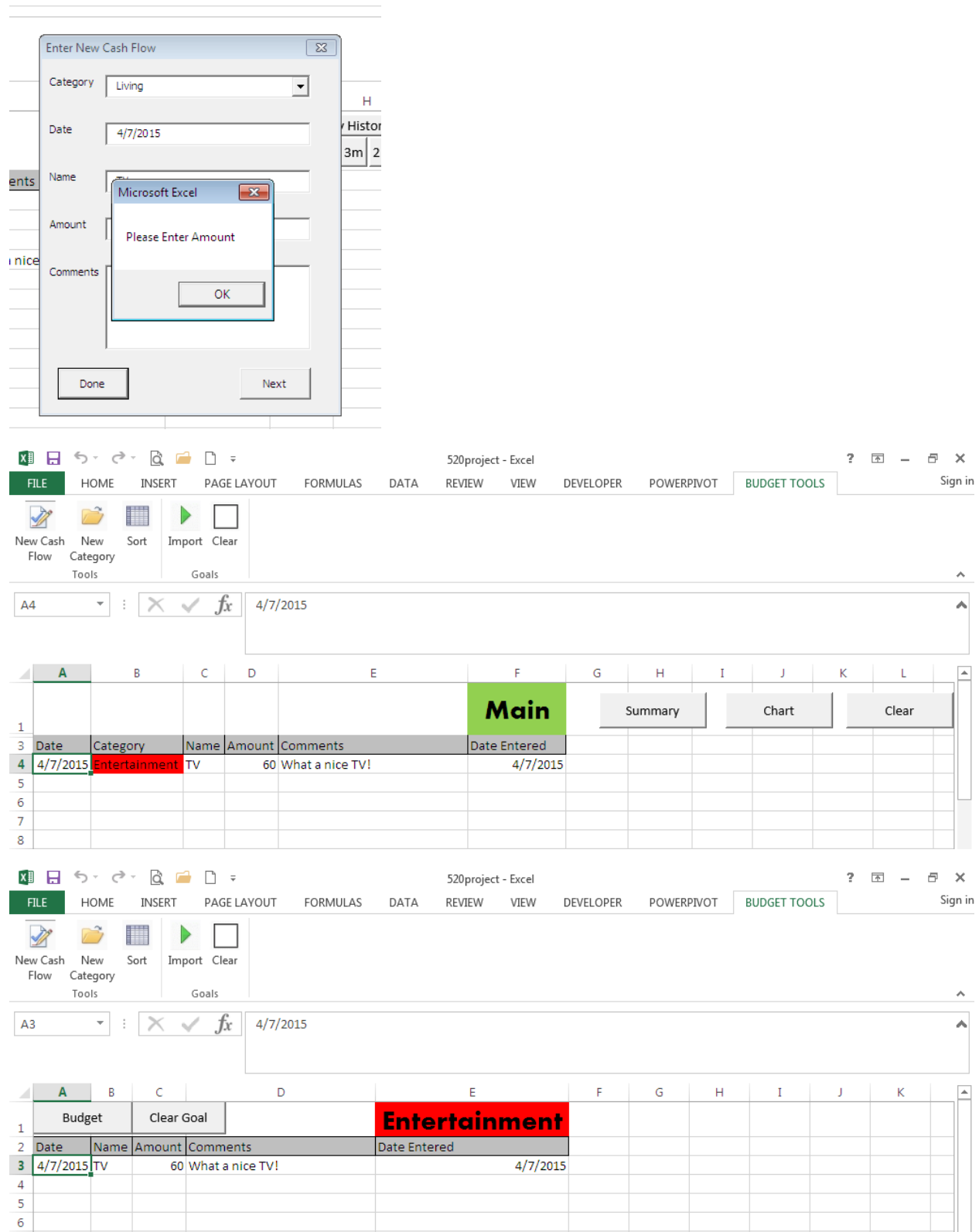
After creating all of the categories that the user would like, the user would then press the “New Cash Flow” button which will bring up another userform prompting the user to enter the category of the new cash flow, the date of the cash flow (default is the current date), the name, the amount, and any additional comments. The category value is a list populated by the categories the user has already created.



The user then can either press “Next” to enter in another cash flow (the information they just entered in will still be populating the userform) or they can press “Done” and the information the user entered in will be placed at the top of the appropriate columns in the tables on the “Main” and “Record” tabs as well as the tab of the appropriate category. If the user has not entered an “Amount”, “Category”, or “Date” an error message will appear prompting the user to enter the appropriate information.

The “Category” value on the “Main” and “Record” tabs will be colored the appropriate color corresponding to the category (adding some visual organization). The “Main” tab contains all expenses/savings for the past 30 days, whereas the “Record” tab contains all expenses/savings ever entered into the workbook. By pressing the “Sort” button on the ribbon the “Main” sheet and “Record” sheet will be sorted, placing the most recent expenses/savings based on the “Date” value (not the “Date Entered” value) at the top; any expenses/savings older than 30

days (again based on the “Date” value) will be deleted from the “Main” tab. Whenever the workbook is opened the “Main” and “Record” tabs will be “Sorted.”



The screenshot displays an Excel spreadsheet titled "520project - Excel" with the "BUDGET TOOLS" ribbon active. The "Enter New Cash Flow" dialog box is open, showing the following fields:

- Category: Living
- Date: 4/7/2015
- Name: (empty)
- Amount: (empty)
- Comments: (empty)

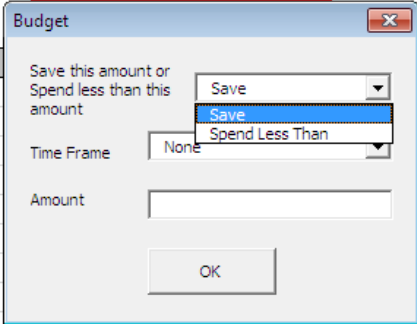
A smaller "Please Enter Amount" dialog box is also open, prompting the user to enter the amount. The spreadsheet shows a table with the following data:

Date	Category	Name	Amount	Comments	Date Entered
4/7/2015	Entertainment	TV	60	What a nice TV!	4/7/2015

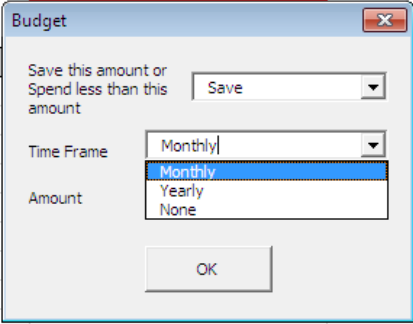
The "Main" tab is selected, and the "Budget" tab is also visible. The "Budget" tab shows a table with the following data:

Date	Name	Amount	Comments	Date Entered
4/7/2015	TV	60	What a nice TV!	4/7/2015

The user can also create budgeting goals for each category. By going to the tab for a given category the user can press the “Budget” button which will bring up a userform prompting the user to identify if their goal is to “Save” a certain amount or “Spend Less Than” a certain amount (depending on if the category is tracking savings or expenses), whether this is a monthly or yearly goal or if there is no time limit, and what amount they are trying to save or spend less than. If they do not enter an amount the same error message appears that will appear by not entering an amount into the “New Cash Flow” userform.



The screenshot shows a 'Budget' dialog box with a title bar containing a close button (X). The dialog has three main input areas: a dropdown menu for 'Save this amount or Spend less than this amount' with 'Save' selected and its menu open showing 'Save' and 'Spend Less Than'; a 'Time Frame' dropdown menu with 'None' selected; and an 'Amount' text input field. An 'OK' button is at the bottom.



The screenshot shows the 'Budget' dialog box with the 'Time Frame' dropdown menu open, showing 'Monthly' selected, 'Yearly', and 'None'. The 'Save this amount or Spend less than this amount' dropdown is set to 'Save' and the 'Amount' field is empty. The 'OK' button is at the bottom.

When the user presses “OK” the budgeting goal information will be entered into the top right hand corner of the sheet stating the “Goal” amount, the “Actual” amount, and the “Time Frame” of the goal. If the “Time Frame” for the goal is monthly, the “Actual” amount will be the sum of all expenses or savings incurred in the current month. If the “Time Frame” is yearly, the “Actual” sum would be all the expenses or savings in the current year. If the “Time Frame” is none, the “Actual” sum would be all expenses or savings on the sheet. If the user entered “Save” in the userform then the “Actual” amount will be highlight green when the sum is greater than the “Goal” amount, and if they user entered “Spend Less Than” in the userform then the “Actual” amount will be highlighted red when the sum is greater than the “Goal” amount.

520project - Excel

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW DEVELOPER POWERPIVOT BUDGET TOOLS Sign in

New Cash Flow Tools New Category Sort Import Clear Goals

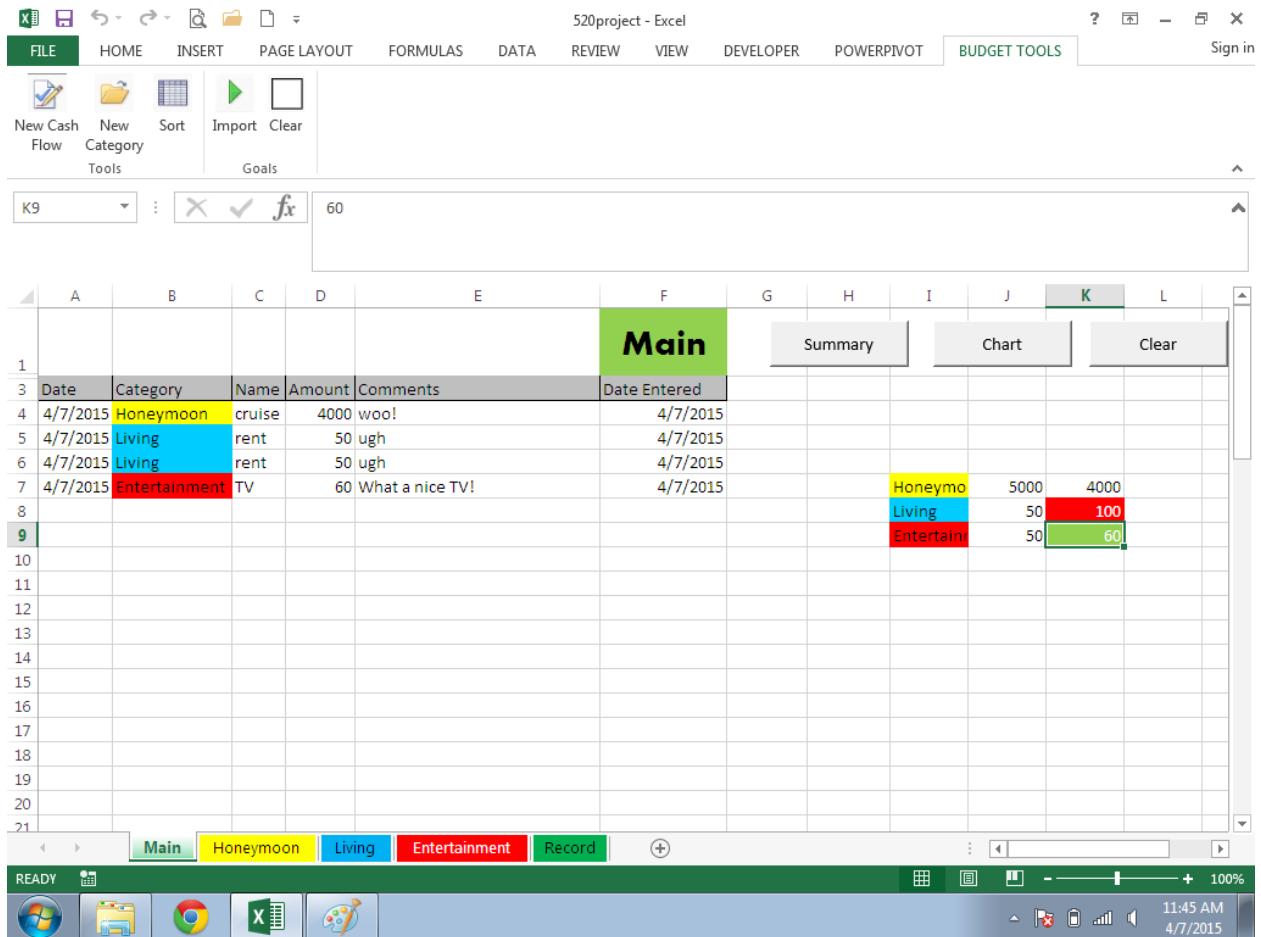
J2 :

	A	B	C	D	E	F	G	H	I	J	K
1	Budget		Clear Goal		Entertainment				Time Frame = Monthly		
2	Date	Name	Amount	Comments	Date Entered		Goal	50	Actual	60	
3	4/7/2015	TV	60	What a nice TV!	4/7/2015						
4											
5											
6											
7											
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10											
11											
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Main Honeymoon Living Entertainment Record

READY 11:42 AM 4/7/2015

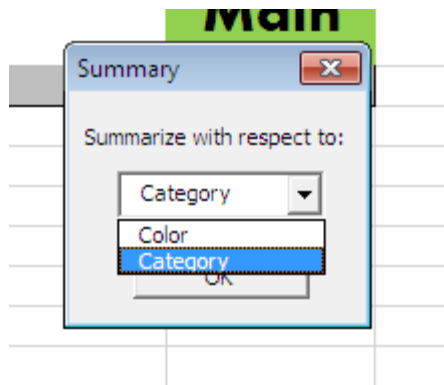
The user can then press the “Import” button in the “Goals” section of the ribbon. This will bring the budgeting goal information for each category onto the “Main” sheet. This way the user can see in a snapshot how they are doing with their goals. The category of the goal, followed by the “Goal” amount, followed by the “Actual” amount will be entered into three consecutive columns on the mid right of the “Main” sheet. The “Actual” amount will have the same formatting (green, red, or no highlighting) as it does on the individual category sheet. The category value will be highlighted the color of the category. By pressing the “Clear” button on the ribbon the goal information will be cleared from the “Main” sheet. By pressing the “Clear Goal” button on any of the individual category sheets it will clear the goal information from that sheet.



Finally, the user can summarize their cash flows in a summary table or in charts based on the categories themselves or the colors they have assigned to the categories. These analyses can be done based on a time frame of 30 days, 60 days, 90 days, half a year, a full year, or for every expense/savings entered into the workbook. If the user wants to summarize or chart for the past 30 days they can press the “Summary” button or the “Chart” button on the “Main” sheet. For any other timeframe they would use the “Record” tab. The process is the same for every summary/chart so I will show the process for the summary and chart on the “Main” tab. There must be cash flows for at least two categories in order to use the “Summary” and “Chart” buttons.

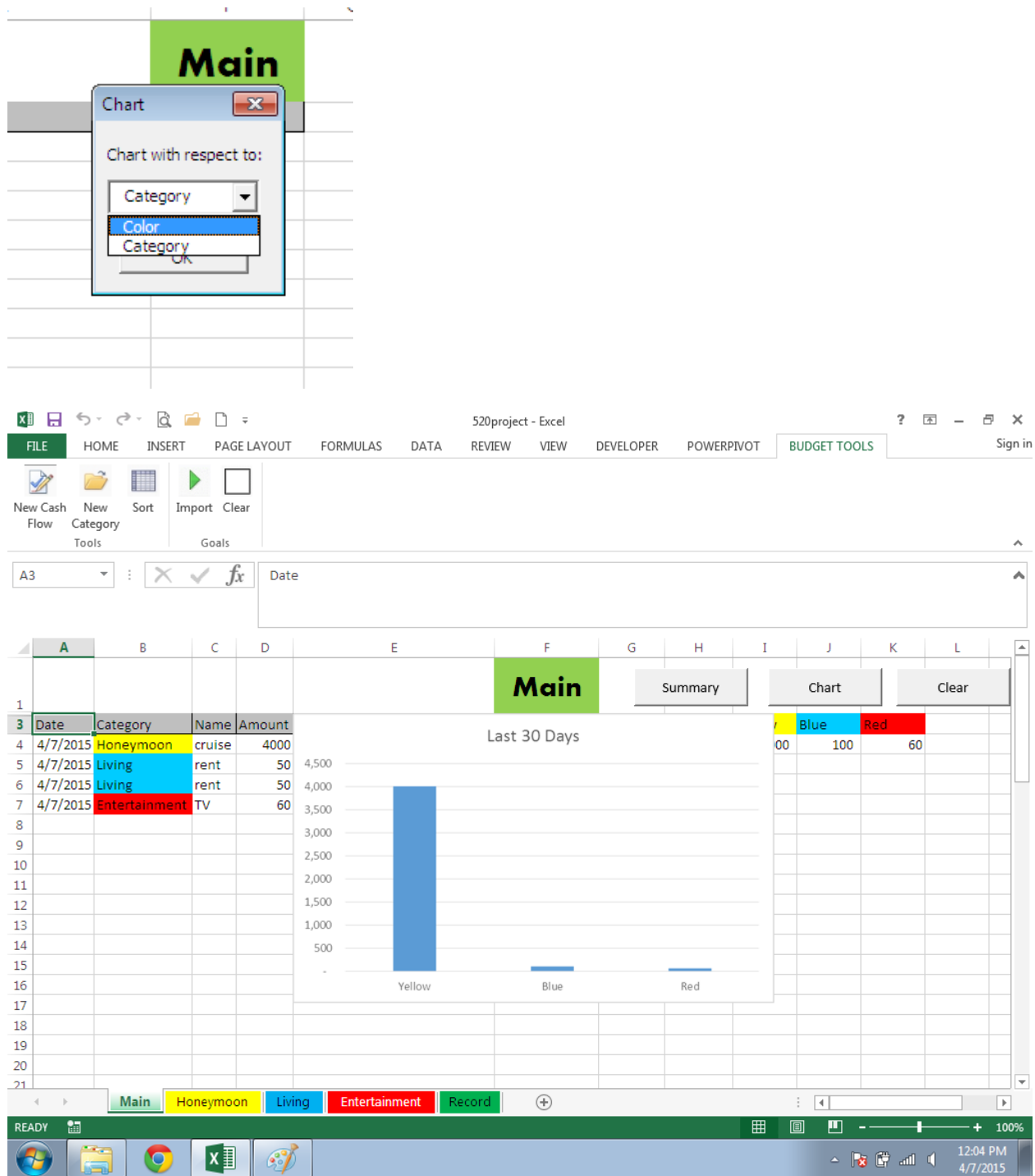
When the user presses the “Summary” button a userform will appear prompting the user to choose to summarize by either “Color” or “Category”. When the user presses “OK,” Based on what the user enters, a table will show up in the upper right hand of the sheet with a table totaling all expenses/savings based on color or category for the past 30 days. This same process happens if the user presses any of the summary buttons on the “Record” tab the only difference being that the totals would be based on the time frame corresponding to the value of the button that the user pressed.





	Date	Category	Name	Amount	Comments	Date Entered	Honeymoon	Living	Entertainment
4	4/7/2015	Honeymoon	cruise	4000	woo!	4/7/2015	4,000	100	60
5	4/7/2015	Living	rent	50	ugh	4/7/2015			
6	4/7/2015	Living	rent	50	ugh	4/7/2015			
7	4/7/2015	Entertainment	TV	60	What a nice TV!	4/7/2015			

When the user presses the “Chart” button a userform asking if the user wants to chart with respect to “Color” or “Category” will appear. When the user presses “OK” the same table that would have been created with the “Summary” button will appear, but there will also be a chart corresponding to that table that appears in the middle of the screen. Again, the same process happens by pressing any of the “Chart” buttons on the “Record” tab, just with varying time frames. The titles of each chart correspond to the time frame being charted. Multiple charts for comparison can be created by repeating the process and the table can be cleared without affecting the chart.

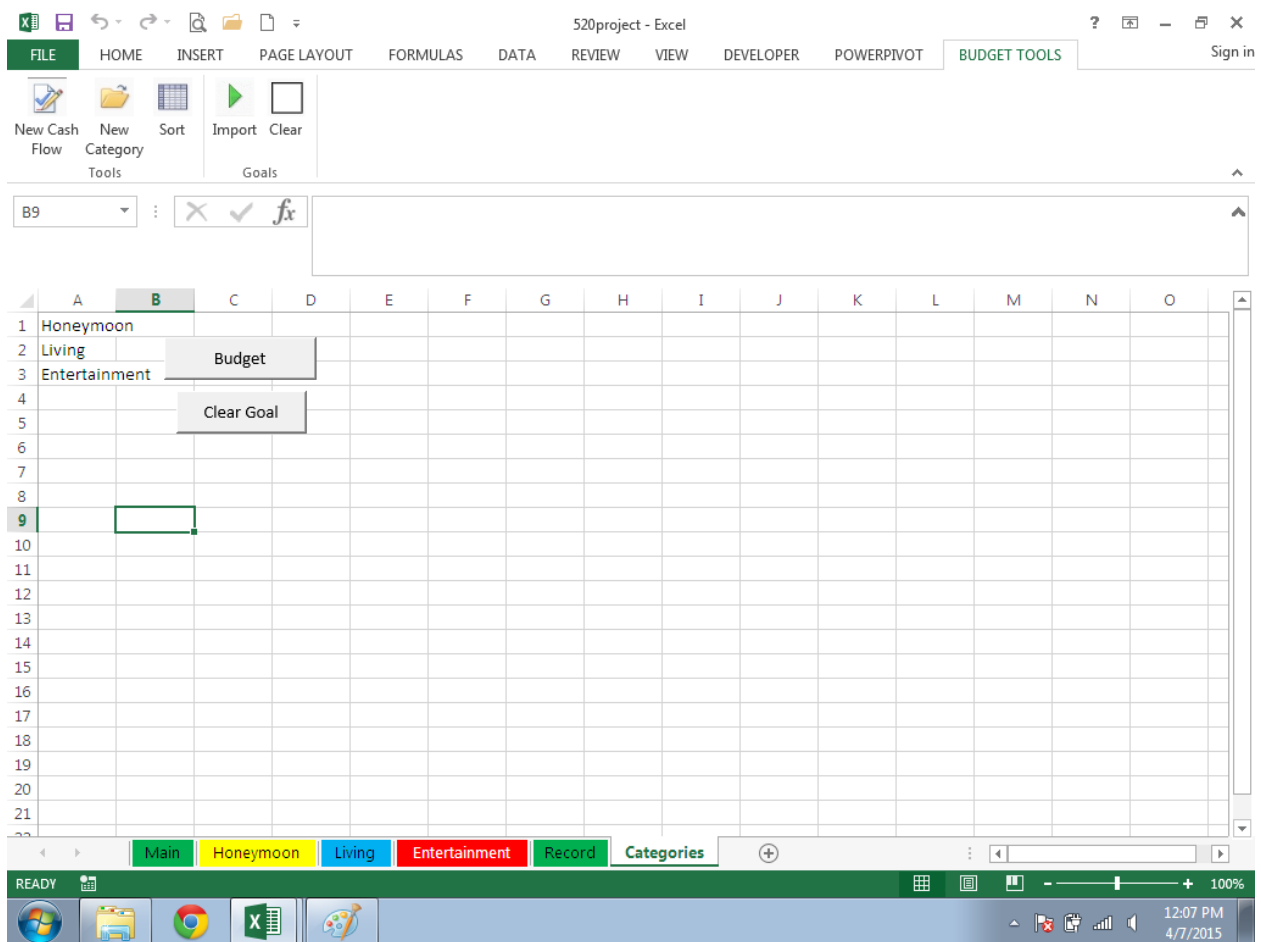


By pressing the “Clear” button on either the “Main” tab or “Record” tab, the table created by the “Summary” button or “Chart” button will be cleared away.

### Discussion of learning and conceptual difficulties encountered:

This was an incredibly time-consuming project. I spent at least 3 to 4 times as long on this project than I did on all of previous project combined. The idea of summarizing all of the different techniques I used to solve problems feels extremely overwhelming, so I will just be brief.

One technique that helped with quite a few aspects of the project was creating a “very hidden” sheet called “Categories”. This sheet is used for populating the list for the “Category” value of the “New Cash Flow” userform, in the code used to make sure that the “Main” tab and “Record” tab are always the first and last tab respectively, and also was crucial in being able to create the “Budget” and “Clear Goal” buttons on each new category sheet.



Another chunk of code was very useful in being able to enter information correctly. I used different forms of this code many times:

```

If s.Range("A3").Value <> "" Then
s.Activate
s.Cells(1048576, 1).Select
Selection.End(xlUp).Select
Row1 = ActiveCell.Row

Range("A3:G" & Row1).Select
Selection.Cut Destination:=Range("A4:G" & Row1 + 1)
End If

```

This code was crucial in being able to identify how to correctly enter information in on various tabs.

Another piece of code that I was particularly proud of was the code I used to create the list of categories that populates the “Category” list of the “New Cash Flow” userform.

```

Sub Categories()
Dim Categories() As String
Dim x As Integer
Dim y As Integer

Application.ScreenUpdating = False

ReDim Categories(Sheets.Count - 3)

y = Sheets.Count

If Sheets(y).name <> "Categories" Then
Do Until Sheets(y).name = "Categories"
Sheets(y).Move Before:=Sheets("Categories")
Loop
End If

If Sheets(1).name <> "Main" Then
Do Until Sheets(1).name = "Main"
Sheets(1).Move After:=Sheets("Main")
Loop
End If

If Sheets(y - 1).name <> "Record" Then
Do Until Sheets(y - 1).name = "Record"
Sheets(y - 1).Move Before:=Sheets("Record")
Loop
End If

Sheets("Categories").Activate
Columns("A:A").Select
Selection.ClearContents

Sheets("main").Activate

For x = 0 To UBound(Categories) - 1
ActiveSheet.Next.Select
Categories(x) = Application.ActiveSheet.name
Next

For x = 0 To UBound(Categories) - 1
Sheets("Categories").Cells(x + 1, 1).Value = Categories(x)
Next

Sheets("Categories").Visible = 2

Sheets("main").Activate

End Sub

```

I was proud of this code mostly for its use of do loops and arrays.

Thankfully I was able to include every aspect that I wanted to in my project. It took a lot of time, but it's nice to feel like it is really done. I'm hoping to actually use this workbook for my own finances.

What I learned more than anything from this project is how long it takes to error check. I probably spent at least 40% of my time just writing code to account for possible errors that could arise. It's frustrating to error check because it doesn't really add to the functionality of the project, it just makes sure that it works under every weird circumstance. It feels like you did a ton of work, but you don't really have anything to show for it (no new cool chart or sheet or anything).

Additionally I gained a lot of confidence and knowledge in being able to solve problems on my own. Many times I was faced with something that I didn't know how to do, and by using the macro recorder and my previous knowledge I was able to find a solution. The project was very empowering. I feel very confident in my practical knowledge of VBA.

Overall, I really enjoyed doing this project and taking this class. My "mind has been blown" in terms of what you can do with Excel and VBA. I fully intend on using this knowledge in my upcoming profession as well as for future personal use.

Assistance:

I received no help with my project. Honestly, I did the whole thing by myself with an occasional google search here and there.