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MBA 614 – Spreadsheet Automation

Residential Investment Search

Executive Summary

Owning one's home has always been a part of the American Dream. With the recent recession, that part of the American Dream has been halted for many. Families and individuals are flocking to good rentals in good neighborhoods and rents are rising. Rental properties have become a great source of primary and secondary income for many investors. The problem is finding the right property.

Energy and time are wasted to a large extent on properties that don't fit into your financial model. This Excel VBA Program is built to address this need. An investor can use this program to quickly investigate current homes on the market. Then he/she can plug the information quickly into the financial analysis spreadsheet and see if it really is worth spending some more time looking at that home. It does not definitively suggest that a particular home ought to be purchased as an investment, but it will help guide energy and time.

This program pulls data from a popular real estate website to easily sort and investigate current listings. It also pulls data on local rental properties as comparisons as the rental income is a key factor in the investment decision. This data can be searched and sorted easily. Once you have zeroed in on a property and thought through other key factors, you can easily plug those into the financial analysis and see the resulting IRR and NPV.

Implementation Documentation

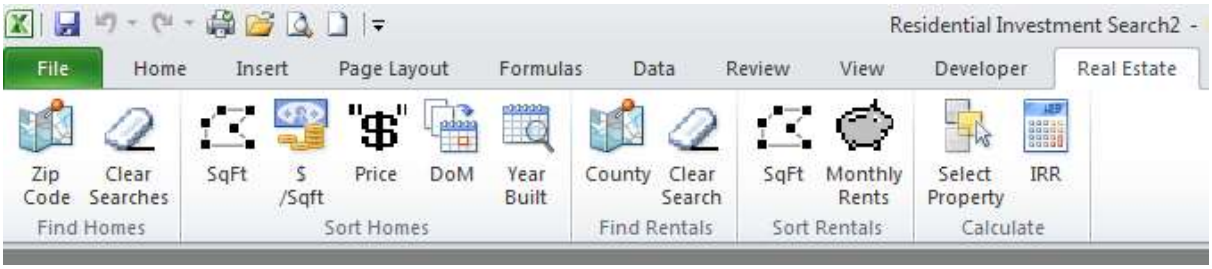
Upon opening the program, you will see the Welcome screen. This screen provides a brief introduction to the best way to approach the search and to arrive at the proper information needed for the financial analysis.

Welcome to Residential Investment Search!

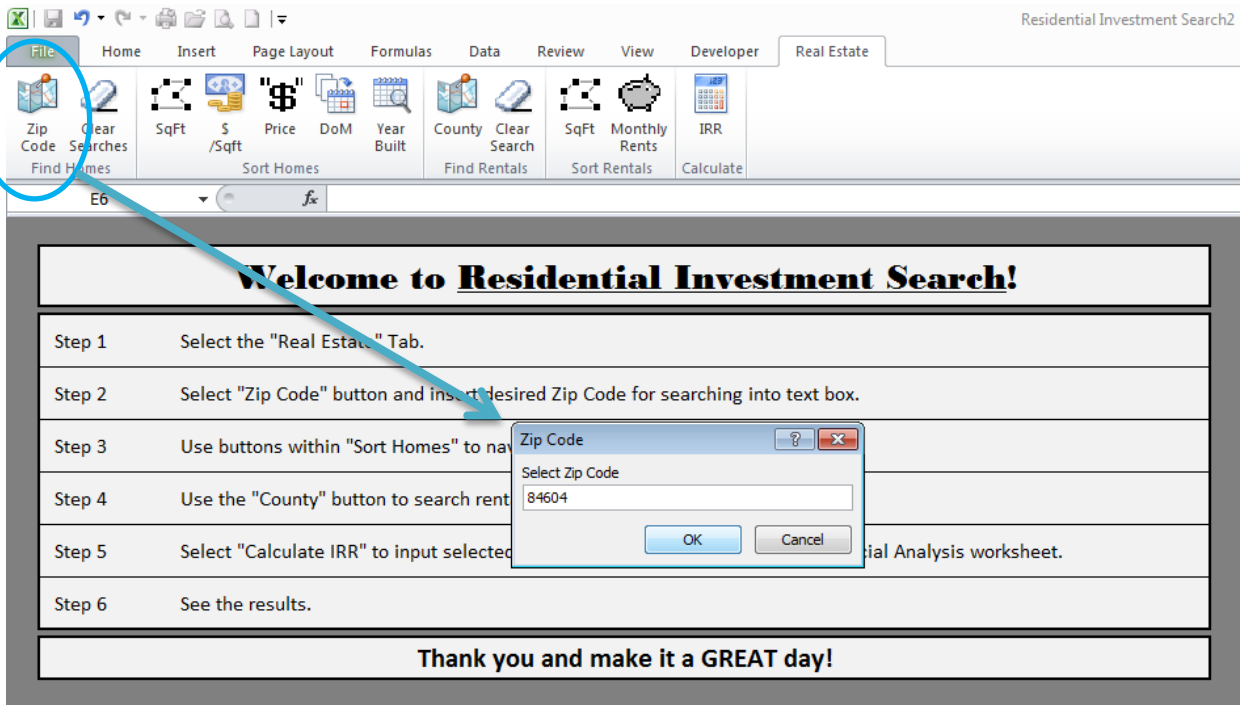
Step 1	Select the "Real Estate" Tab.
Step 2	Select "Zip Code" button and insert desired Zip Code for searching into text box.
Step 3	Use buttons within "Sort Homes" to navigate through the results.
Step 4	Use the "County" button to search rentals within the area.
Step 5	Select the "Select Property" button within the calculate grouping to input selected property data.
Step 6	Select "Calculate IRR" to see the results.

Thank you and make it a GREAT day!

Headings and formula bars have been hidden on this screen to allow clean viewing of the steps and process. At the top of the screen, the first step is to select the Real Estate tab in the ribbon. This contains all of the needed tools to successfully create new searches and to then navigate that data prior to inserting the key info into the financial analysis spreadsheet. A description of the buttons follows.



Within the “Find Homes” group, the first step is to select the Zip Code Button. This will open an input box and give you the opportunity to choose what Zip Code you wish to search through. (If you have created previous searches of the same zip code then it is imperative that you first click “Clear Searches” in the same group.) The input box will appear on whatever worksheet you are currently viewing (probably the Welcome Screen). For the use of this tutorial, we will use screenshots of the zip code 84604.

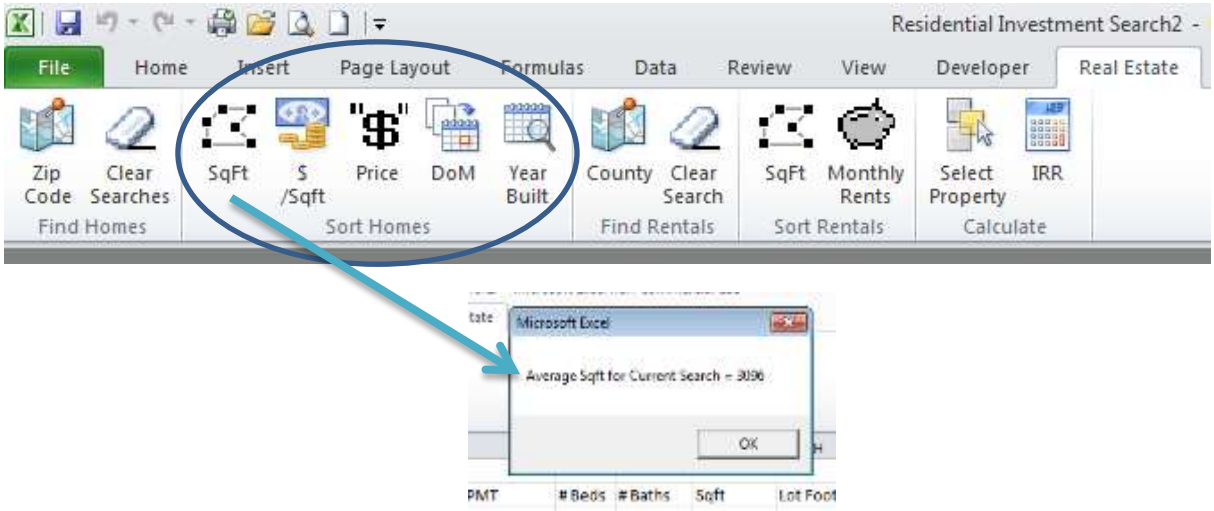


The following code shows what will then occur behind the scenes. The selected zip code will be used to find the appropriate search within Zillow. It will then pull the data from Zillow, page by page and transpose the key information on every home within that zip code, currently listed on Zillow, into a new spreadsheet where the sorting and further investigation can take place.

```
Option Explicit
Dim zipCode As String
Dim a As Integer
Dim County As String
Dim intersectRate As Integer

'Callback for ZipCode onAction
Sub Macro1(control As IRibbonControl)

zipCode = Application.InputBox("Select Zip Code", "Zip Code")
Sheets.Add.Name = zipCode & " search"
Range("A1").Value = zipCode
Range("A1").Select
Sheets("WebQuery").Select
Range("A1").Value = zipCode
Application.CutCopyMode = False
Range("A2").Select

'Query for each page within the chosen zipcode
'For a = 1 To 15
    With Selection.QueryTable
        .Connection = "URL;http://www.zillow.com/homes/for_sale/" & zipCode & "/fsba_lt/0
        .WebSelectionType = xlEntirePage
        .WebFormatting = xlWebFormattingNone
        .WebPreFormattedTextToColumns = True
        .WebConsecutiveDelimitersAsOne = True
        .WebSingleBlockTextImport = False
        .WebDisableDateRecognition = False
        .WebDisableRedirections = False
        .Refresh BackgroundQuery:=False
    End With

Range("A2").Select

Do Until ActiveCell = "" And ActiveCell.Offset(24, 0) = ""
    ' Find the next " House For Sale"
        Cells.Find("House For Sale", After:=ActiveCell, LookIn:=xlFormulas, _
            LookAt:=xlWhole, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
            MatchCase:=False).Activate
    'copy into the zipCode & "search" worksheet
        Range(ActiveCell.Offset(-2, 0).Select, ActiveCell.Offset(13, 0).Select).Select
        Application.CutCopyMode = False
        Selection.Copy
        Sheets("84604 search").Select
        Selection.PasteSpecial Paste:=xlPasteAll, Operation:=xlNone, SkipBlanks:= _
            False, Transpose:=True
        Sheets(zipCode & " search").Select
        ActiveCell.Offset(1, 0).Range("A1").Select
        ActiveSheet.Paste
```

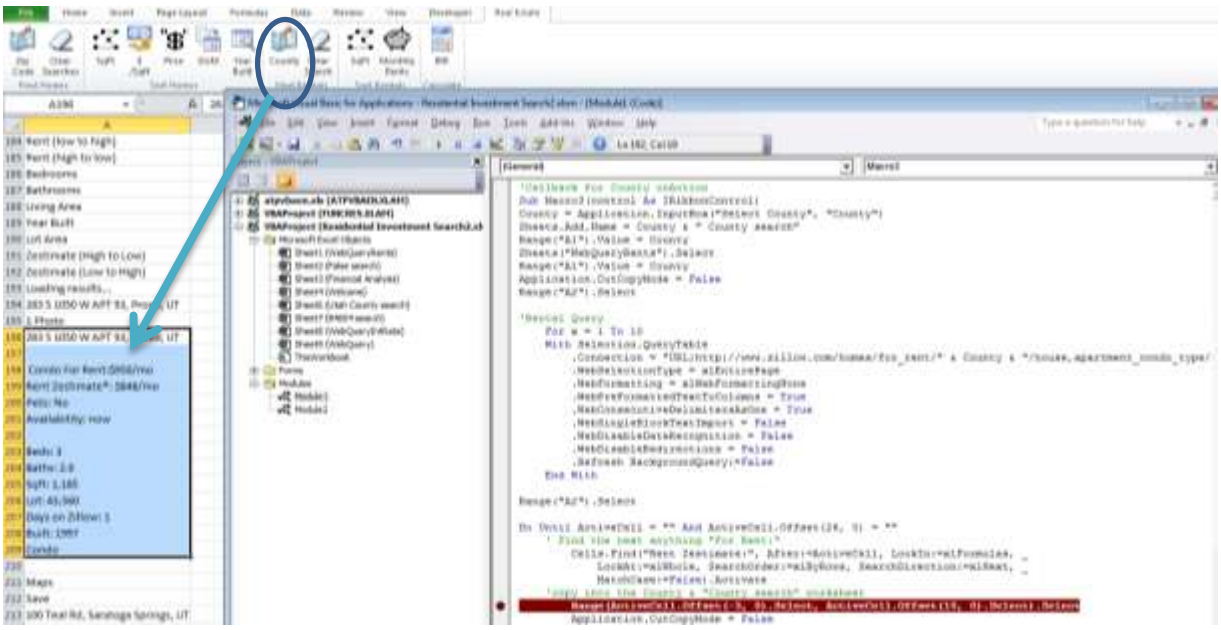
	A	B	C	D	E	F	G	H	I	J	K
1	84604										
2	Address	Asking Price	Zestimate	Est. Mortgage PMT	# Beds	# Baths	Sqft	Lot Footage	Days on Market	Year Built	Type
3	2208 N 800 W, Provo, UT	$194,900	Zestimate®: $165,049	Est. Mortgage: $843/mo	Beds: 4	Baths: 2.0	Sqft: 1,978	Lot: 12,632	Days on Zillow: 7	Built: 1981	Single Family
4	669 W 1850 N, Provo, UT	$168,000	Zestimate®: $173,094	Est. Mortgage: $726/mo	Beds: 4	Baths: 2.0	Sqft: 1,957	Lot: 7,840	Days on Zillow: 22	Built: 1956	Single Family
5	1012 Waterford Ln, Provo, UT	$629,000	Zestimate®: $456,174	Est. Mortgage: $2,720/mo	Beds: 3	Baths: 3.5	Sqft: 3,769	Lot: 3,049	Days on Zillow: 24	Built: 2006	Single Family
6	2954 E Meadows Dr, Sundance, UT	$579,000	Zestimate®: $276,696	Est. Mortgage: $2,503/mo	Beds: --	Baths: --	Sqft: --	Lot: 53,143	Days on Zillow: 24	Built: --	Single Family
7	780 E 2730 N, Provo, UT	$279,900	Zestimate®: $200,944	Est. Mortgage: $1,210/mo	Beds: 5	Baths: 3.0	Sqft: 2,688	Lot: --	Days on Zillow: 27	Built: 1968	Single Family
8	340 E 2020 N, Provo, UT	$158,000	Zestimate®: $140,806	Est. Mortgage: $683/mo	Beds: 3	Baths: 1.0	Sqft: 2,064	Lot: --	Days on Zillow: 32	Built: 1938	Single Family

Once the data is collected within the new spreadsheet, you can sort by using the buttons within the "Sort Homes" group on the Real Estate tab. Upon selecting one of these buttons, not only will the data be sorted, but a message box will pop up, providing the average for that category. This is invaluable when reviewing the financial data (and rental info) as a benchmark for that zip code.

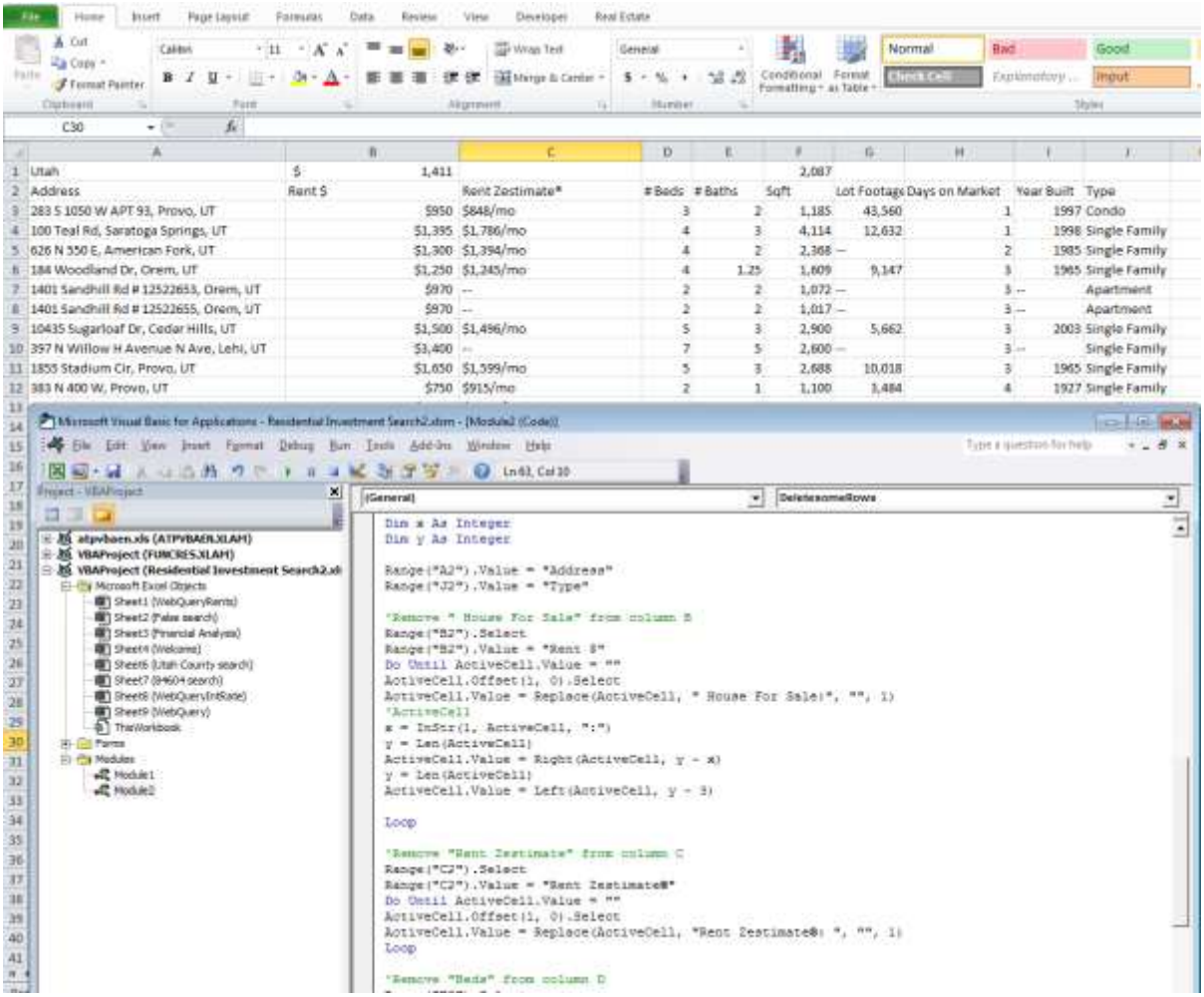


After reviewing the data, using the sort features, and selecting a potential property, it would be beneficial to understand the potential rental rates for that property. It is of great benefit to do this before visiting any properties. It will save a lot of driving and wasted time if you were to only visit properties that truly fit your budget.

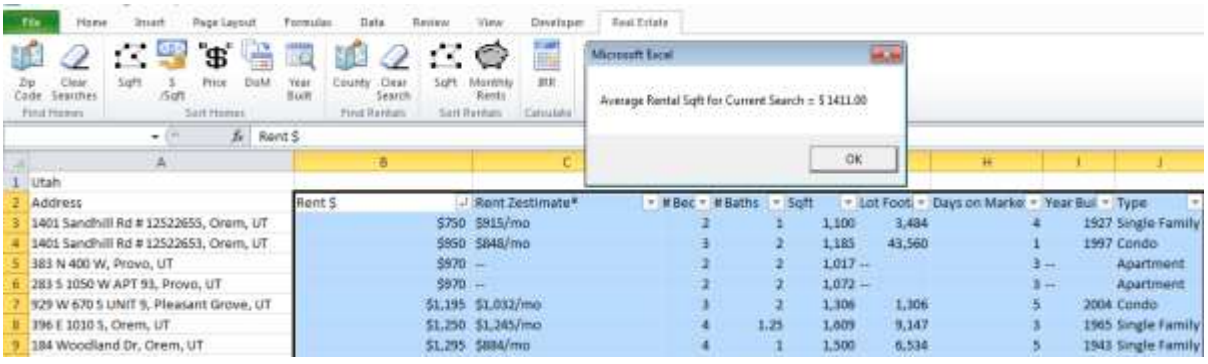
The rental search feature is based on the County you insert into the input box which will pop up when you select the Rental Search County button. This is similar to the process associated with the zip code search described previously.

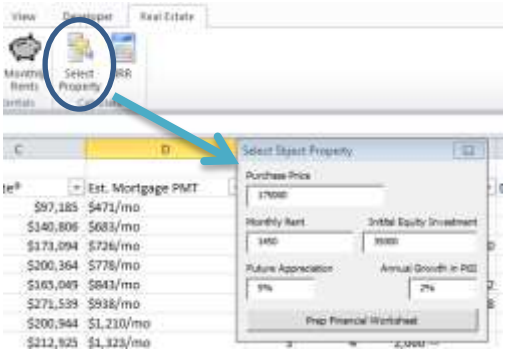


The data will be copied to a Rental search tab entitled in this case “Utah County Search”. (Utah wold be switched to whatever county is inserted into the “County” input box.



The buttons for sorting square foot and monthly rents can then be used to sort and investigate the data similar to what was suggested for the homes.



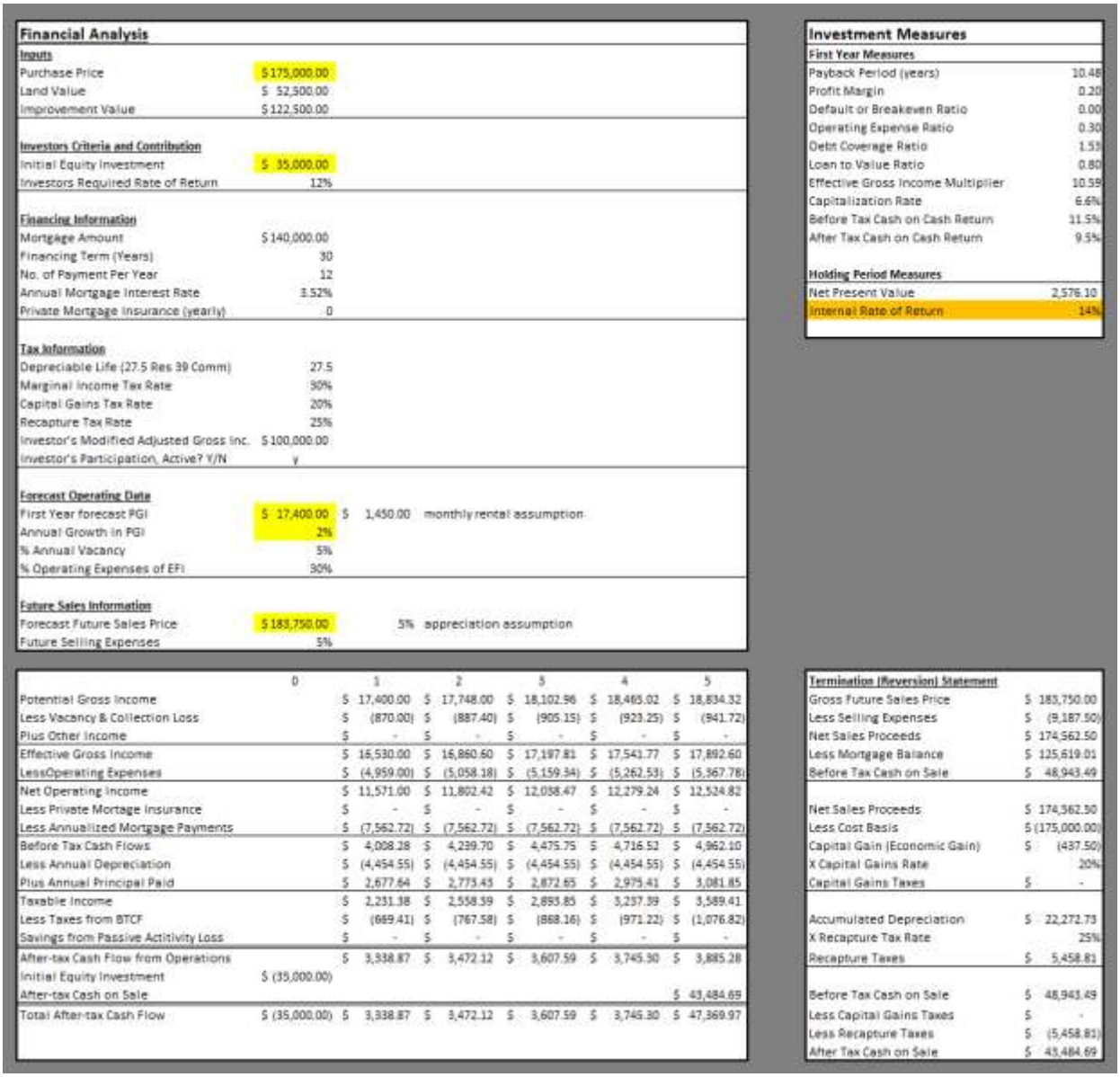


The next step is to collect the information of the prospective property into the financial analysis worksheet. To more simply accomplish this, press the “Select Property” button within the “Calculator” group on the Real Estate ribbon. This will bring up a user form within which to input the data you have found. It will pop up within whatever worksheet you are currently viewing to allow easy input while seeing the data on the page.

The final step in the financial analysis phase is to find the current interest rate and calculate the IRR and the NPV. It is critical that the NPV be positive and that IRR be above 12% for a preliminary analysis like this. The current interest rate for a 30 year mortgage is drawn from an accurate website and plugged directly into the spreadsheet.

```
End Sub

'Callback for IRR onAction
Sub Macro11(control As IRibbonControl)

FindInterestRate

If Sheets("Financial Analysis").Range("H16").Value > 0.0001 And Sheets("Financial

End Sub

Sub FindInterestRate()

Sheets("WebQueryIntRate").Select
Application.CutCopyMode = False
Range("A2").Select
'Query
'    For a = 1 To 1
    With Selection.QueryTable
        .Connection = "URL;http://www.bankrate.com/finance/mortgages/current-inte
        .WebSelectionType = xlEntirePage
        .WebFormatting = xlWebFormattingNone
        .WebPreFormattedTextToColumns = True
        .WebConsecutiveDelimitersAsOne = True
        .WebSingleBlockTextImport = False
        .WebDisableDateRecognition = False
        .WebDisableRedirections = False
        .Refresh BackgroundQuery:=False
    End With

' Find the Interest Rate
    Cells.Find(What:="30 yr fixed", After:=ActiveCell, LookIn:=xlFormulas, _
        LookAt:=xlWhole, SearchOrder:=xlByRows, SearchDirection:=xlNext, _
        MatchCase:=True, SearchFormat:=False).Activate
    ActiveCell.Offset(1, 0).Select
    Selection.Copy
    Sheets("Financial Analysis").Select
    Range("D14").Select
    ActiveSheet.Paste
    Sheets("Welcome").Select

End Sub
```

The Financial Analysis spreadsheet is easy to view and manipulate seperately from the program as needed. The cells highlighted in yellow are the key input cells for the purpose of this program. The sheet is ready to print as necessary as well.



Financial Analysis

Inputs	
Purchase Price	$175,000.00
Land Value	$ 52,500.00
Improvement Value	$122,500.00
Investors Criteria and Contribution	
Initial Equity Investment	$ 35,000.00
Investors Required Rate of Return	12%
Financing Information	
Mortgage Amount	$140,000.00
Financing Term (Years)	30
No. of Payment Per Year	12
Annual Mortgage Interest Rate	3.52%
Private Mortgage Insurance (yearly)	0
Tax Information	
Depreciable Life (27.5 Res 39 Comm)	27.5
Marginal Income Tax Rate	30%
Capital Gains Tax Rate	20%
Recapture Tax Rate	25%
Investor's Modified Adjusted Gross Inc.	$100,000.00
Investor's Participation, Active? Y/N	y
Forecast Operating Data	
First Year forecast PGI	$ 17,400.00 $ 1,450.00 monthly rental assumption
Annual Growth in PGI	2%
% Annual Vacancy	5%
% Operating Expenses of EFI	30%
Future Sales Information	
Forecast Future Sales Price	$183,750.00 5% appreciation assumption
Future Selling Expenses	5%

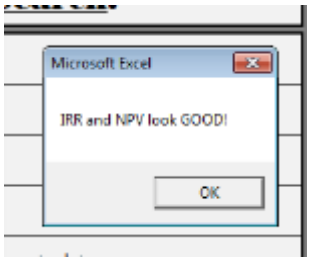
Investment Measures

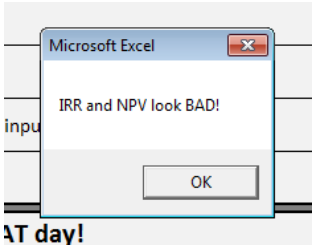
First Year Measures	
Payback Period (years)	10.48
Profit Margin	0.20
Default or Breakeven Ratio	0.00
Operating Expense Ratio	0.30
Debt Coverage Ratio	1.53
Loan to Value Ratio	0.80
Effective Gross Income Multiplier	10.59
Capitalization Rate	6.6%
Before Tax Cash on Cash Return	11.5%
After Tax Cash on Cash Return	9.5%
Holding Period Measures	
Net Present Value	2,576.10
Internal Rate of Return	14%

	0	1	2	3	4	5
Potential Gross Income		$ 17,400.00	$ 17,748.00	$ 18,102.96	$ 18,465.02	$ 18,834.32
Less Vacancy & Collection Loss		$ (870.00)	$ (887.40)	$ (905.15)	$ (923.25)	$ (941.72)
Plus Other Income		$ -	$ -	$ -	$ -	$ -
Effective Gross Income		$ 16,530.00	$ 16,860.60	$ 17,197.81	$ 17,541.77	$ 17,892.60
LessOperating Expenses		$ (4,959.00)	$ (5,058.18)	$ (5,159.34)	$ (5,262.53)	$ (5,367.78)
Net Operating Income		$ 11,571.00	$ 11,802.42	$ 12,038.47	$ 12,279.24	$ 12,524.82
Less Private Mortage Insurance		$ -	$ -	$ -	$ -	$ -
Less Annualized Mortgage Payments		$ (7,562.72)	$ (7,562.72)	$ (7,562.72)	$ (7,562.72)	$ (7,562.72)
Before Tax Cash Flows		$ 4,008.28	$ 4,239.70	$ 4,475.75	$ 4,716.52	$ 4,962.10
Less Annual Depreciation		$ (4,454.55)	$ (4,454.55)	$ (4,454.55)	$ (4,454.55)	$ (4,454.55)
Plus Annual Principal Paid		$ 2,677.64	$ 2,773.43	$ 2,872.65	$ 2,975.41	$ 3,081.85
Taxable Income		$ 2,231.38	$ 2,558.59	$ 2,893.85	$ 3,237.39	$ 3,589.41
Less Taxes from BTCF		$ (669.41)	$ (767.58)	$ (868.16)	$ (971.22)	$ (1,076.82)
Savings from Passive Actitivity Loss		$ -	$ -	$ -	$ -	$ -
After-tax Cash Flow from Operations		$ 3,338.87	$ 3,472.12	$ 3,607.59	$ 3,745.30	$ 3,885.28
Initial Equity Investment	$ (35,000.00)					
After-tax Cash on Sale						$ 43,484.69
Total After-tax Cash Flow	$ (35,000.00)	$ 3,338.87	$ 3,472.12	$ 3,607.59	$ 3,745.30	$ 47,369.97

Termination (Reversion) Statement	
Gross Future Sales Price	$ 183,750.00
Less Selling Expenses	$ (9,187.50)
Net Sales Proceeds	$ 174,562.50
Less Mortgage Balance	$ 125,619.01
Before Tax Cash on Sale	$ 48,943.49
Net Sales Proceeds	$ 174,562.50
Less Cost Basis	$ (175,000.00)
Capital Gain (Economic Gain)	$ (437.50)
X Capital Gains Rate	20%
Capital Gains Taxes	$ -
Accumulated Depreciation	$ 22,272.73
X Recapture Tax Rate	25%
Recapture Taxes	$ 5,458.81
Before Tax Cash on Sale	$ 48,943.49
Less Capital Gains Taxes	$ -
Less Recapture Taxes	$ (5,458.81)
After Tax Cash on Sale	$ 43,484.69

If the IRR is above 12% and the NPV is positive then a message box appears complementing your property selection. If the property does not qualify then a somewhat disheartening message appears.





And 'Voila' you have done it. If you want to look at another property within the search and modify the financial statement, simply press the "Select Property" button again. You can change the input or not. If you do not change a specific input then the financial analysis will run with

the same inputs as previously selected. This facilitates the running of various scenarios on new or the same properties to see if you should invest more or less money (increase or decrease leverage) in this situation.

Learning and conceptual difficulties encountered

Being new to the programming world, this project presented many issues for me.

1. At first, I started right into the programming and soon realized I wasn't completely sure what I was building and what functionality I really wanted it to have. I therefore wasted a few hours until I realized I needed to map out what I wanted to do and could see the steps in my mind and on paper. It was then much easier to proceed.

2. I did what I knew how to do from class augmented with some special things. I love the ribbon addition and was pleased with how that turned out. I would love to do more with the ribbon in the future. I spent a lot of time searching things on the internet and I think I finally figured out the right lingo to use when searching for new code.

3. I had intended to pull info from other sites in addition to Zillow, but when I started to work on those web queries (Coldwell, Prudential), I could not consistently get what I needed from the site both for the correct zip code and the home data. It was very inconsistent. As it stands, the web query for Zillow is not consistent. It works and then for whatever reason it stops working again. I assume it has something to do with the website.

4. The last thing I discovered as I toyed with using this program in real life situations (searching properties) is that now that I know some programming and at least know the vast potential of VBA, I think I will have trouble not tinkering with this program to get it to do every last thing I want it to do. I can already see a need for more search and sort capability, but I could invest 100's of hours in it which I currently don't have.

Assistance

I did not receive any additional assistance from any living and breathing human. I used the internet a lot, the book, and code embedded in past projects as well.