

README: INSTRUCTIONS TO USE AREA, PERIMETER, CENTROID PROJECTED/UNPROJECTED

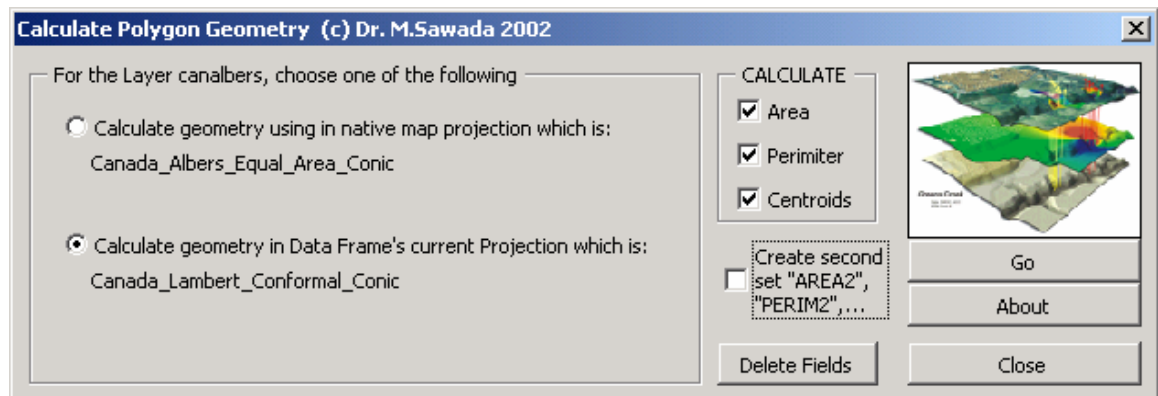
Prof. M. Sawada
Assistant Professor of GIS
Department of Geography
University of Ottawa
TEL: 1-613-562-5800 x1040
Email: msawada@uottawa.ca

Date

UPLOADED APRIL 20, 2002

INTRODUCTION

This program is in Visual Basic for Applications and requires ArcGIS 8.1. Associate the form with a UIButtonControl (see below for example). It allows the calculation of *Area*, *Perimeter* and *Centroids* for polygon layers in either the units of the shapefile source (native) projection or the projection of the current Dataframe in ArcGIS; both of which are displayed for your choice. You can use it to calculate all three geometric properties or any one or other combination therein by choosing only the check-boxes under "Calculate" that you desire. You can delete these fields afterwards or only the selected ones you don't want to retain in the same way. By default the program will replace any fields called AREA2, PERIM2, X-CENTER2 or Y-CENTER2. If you want fields updated that are already called "AREA", "PERIMETER"...etc. then *de-select* the "Create second set..." button:



The output is appended to the layer's table and looks like this:

	AREA	PERIM	X-CENTER	Y-CENTER
▶	1517829811760	15909925.322680	1579257.794154	1724751.1937
	3418045416470	86542855.699651	-260387.122459	3199254.0700
	54909444364.8	3723744.384343	2498532.490608	1179971.9367
	651990142635	3575691.934094	-636419.220742	1613079.6349
	666263918387	3686725.488825	-1151015.183602	1815982.5480
	394494864210	16089501.403956	2297018.057093	2030460.6144
	944615623763	15848692.329273	-1761264.068106	1988063.7672
	72509706414.7	1930202.104084	2215501.391187	1218515.959E
	5717096109.52	866940.684667	2442398.968709	1305027.4710
	481248324033	4158008.168577	-1818690.921470	3159064.7197

Record: 1 Show: All Selected Records (0 out of 12 Selected.) Options

NOTES:

1. The calculated fields may show all zeros if the layer's table is open when the calculation is executed – don't worry, it just hasn't refreshed, so close it and reopen the table and the values will be there.
2. For very large numbers (say the area of the province of Quebec in m²), field values may be rounded (no decimal places will be maintained) to the nearest 10th automatically by ArcGIS – this is a bug with ArcGIS. ArcGIS's double fields will only allow 12 full numbers (e.g., 111111111111) before the decimal place. With a number that large, no decimal places, if there are any, will be retained by the field, and larger integers will be rounded to the nearest 10th (e.g., 11111111111115 becomes 11111111111120 etc.). You may actually see numbers that large with a couple decimal places but as soon as the table is operated on in some fashion the values will be rounded. Most calculations of area or perimeter won't be accurate to that level of precision anyway but if you are working in cm it could be a problem or for some custom coordinate systems with excessively large false eastings or northings. ArcView 3.2 did not have this behavior.
3. This program may not work on ArcInfo Coverages – it may crash your session with ArcGIS if run on coverages.

Resources

Additional Resources on GIS

You may find some of my course websites useful for introductory material on GIS:

GEG 2320: Introduction to Geographic Information Systems

<http://www.uottawa.ca/academic/arts/geographie/lpcweb/web2320/>

*GEG2302: Introduction to Cartography

<http://www.uottawa.ca/academic/arts/geographie/lpcweb/geg2302/>

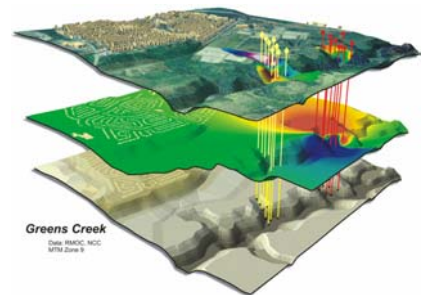
*GEG4120: GIS and Numerical Spatial Analysis

<http://www.uottawa.ca/academic/arts/geographie/lpcweb/web4120/>

GEG6102: Advanced Geomatics

<http://www.uottawa.ca/academic/arts/geographie/lpcweb/web6102/>

*Requires Macromedia Flash plugin for browser.

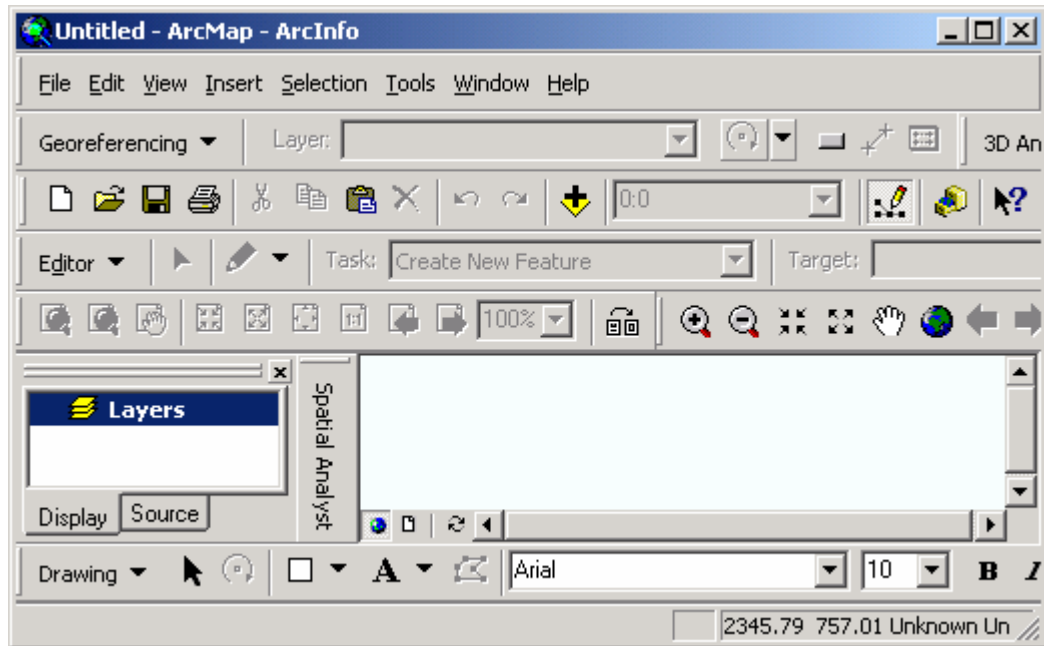


ADDING CUSTOM CONTROLS REFERENCED TO VBA MACROS TO THE ARCGIS INTERFACE

NOTE: This document shows how to load a form called frmLayerInfo. Wherever you see frmLayerInfo you need to substitute frmAreaPerimCentroid.

Many programs written in Visual Basic for Applications will come in the form of VB Forms (the form you interact with by clicking or entering information). These forms can be associated with buttons on the the ArcGIS GUI (Graphical User Interface). By associating a VB Form containing some custom program

with a new button, you will have access to its custom functionality in any ArcGIS session. Everytime you open ArcGIS you are opening the "Normal.mxt" document. This document is called a '**template**' and contains the information necessary for ArcGIS to reconstruct the standard user environment (all the buttons and menu items you see everytime you start the program).



It is in this "Normal" template that you will import a custom VB Form and associate that form with a custom button on the GUI. Once saved, it will be available to you each time you start ArcGIS.

Step 1

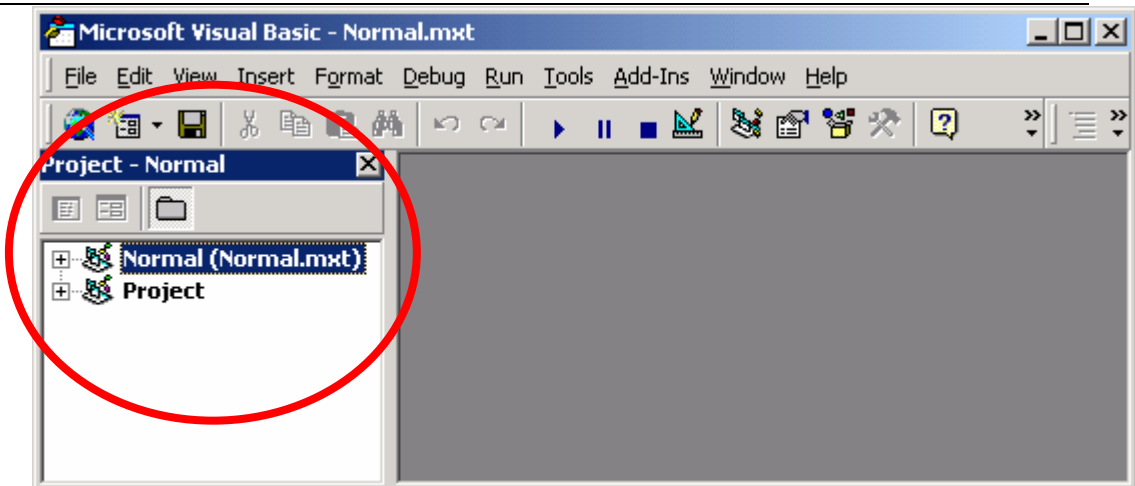
Step 1: Finding the Normal.mxt

The *Normal.mxt* is found within the Visual Basic for Applications (VBA) Editor:

1. Click on Tools->Macros->Visual Basic Editor in the menubar:

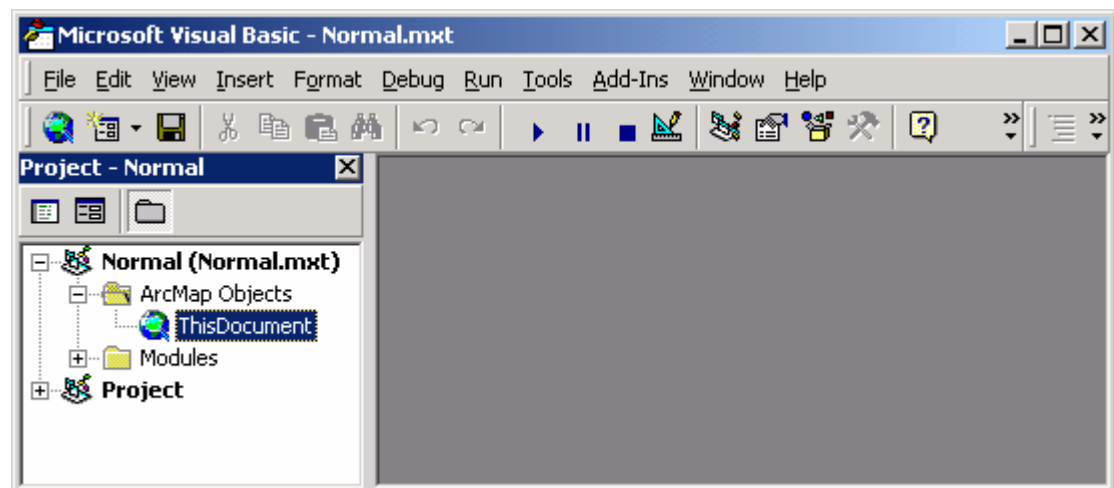


2. Next you will see the visual basic editor



On the left side is the Project Explorer and in here you will see the *Normal.mxt* template as the first item.

3. Click on the "+" sign to expand it, and then expand the folder called "ArcMap Objects".



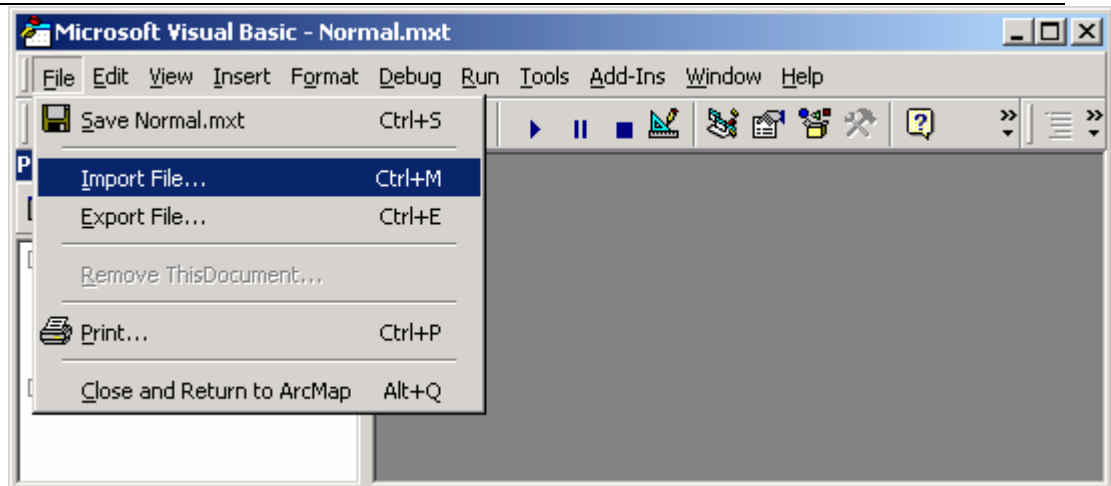
4. We will come back to this later. The item under "ArcMap Objects" called "ThisDocument" will eventually contain two lines of code that will load our custom user form by clicking on a button within the ArcGIS GUI.

Step 2

Step 2: Importing the custom form into the Normal.mxt document template

We now need to load the custom userform called **frmLayerInfo** into the "Normal.mxt" document:

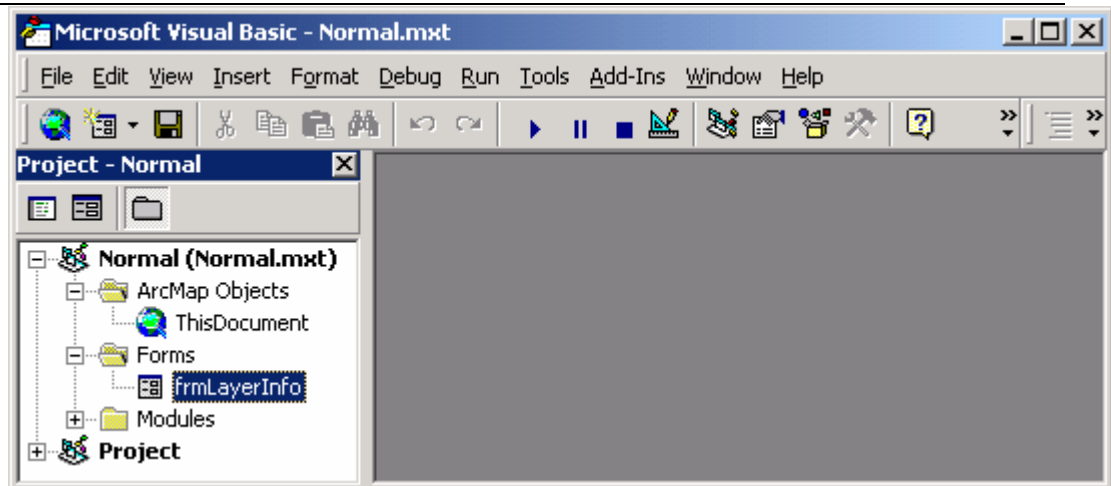
1. Click on File->Import File in the VB Editor menubar:



2. Navigate to where you have saved the files **frmLayerInfo.frm** and **frmLayerInfo.frx**:

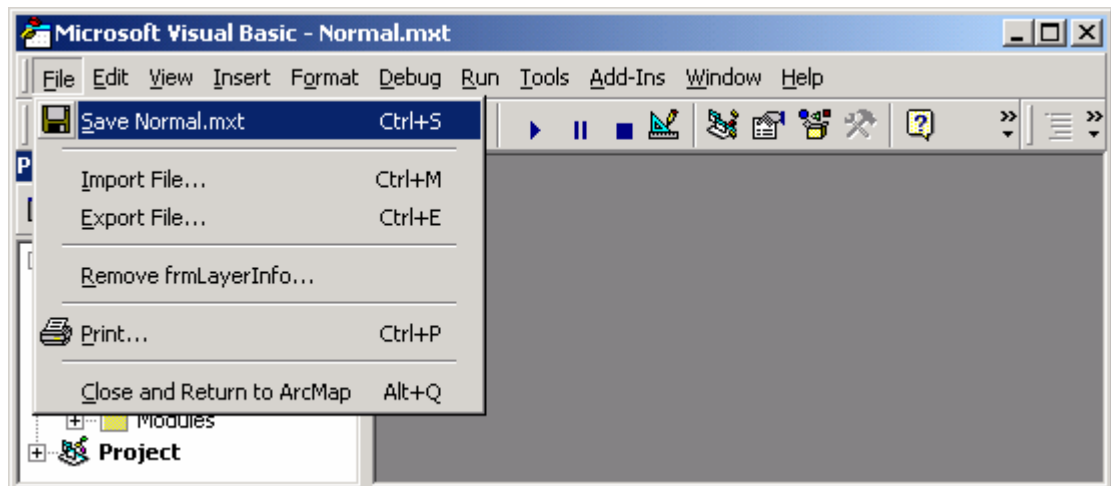


3. If you look now at your Project Explorer you will see a new folder called "Forms" underneath the folder called "ArcMap Objects". Click on the "+" sign and you will see the **frmLayerInfo** form item within the folder:



You have now loaded the custom userform called **frmLayerInfo** into the *Normal.mxt* document template.

4. Now save the normal template by clicking on File->Save *Normal.mxt* in the menubar.

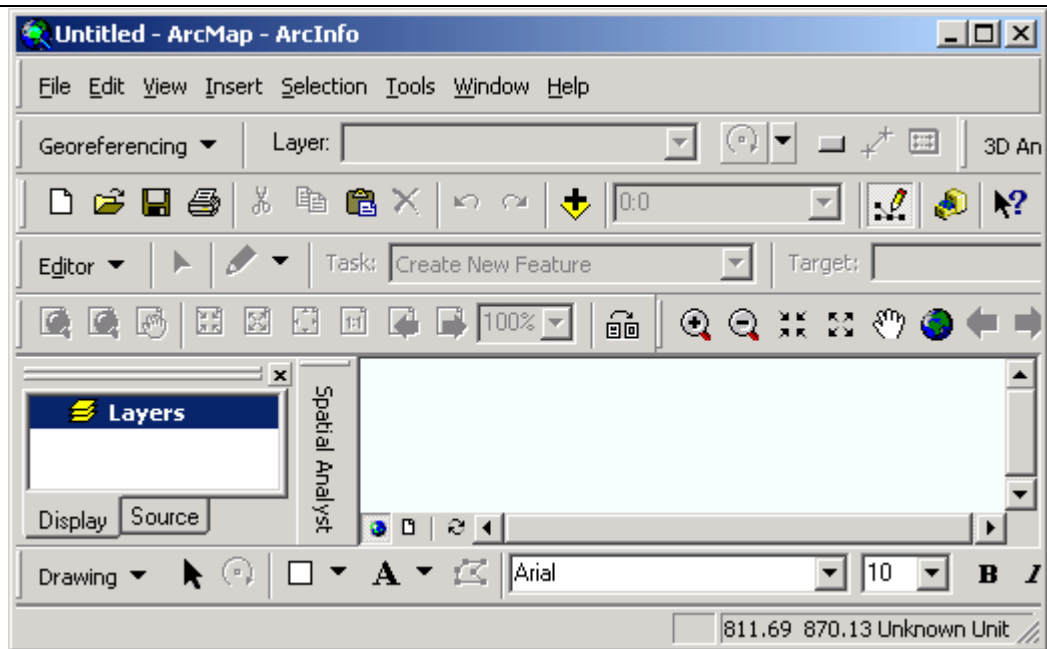


Step 3

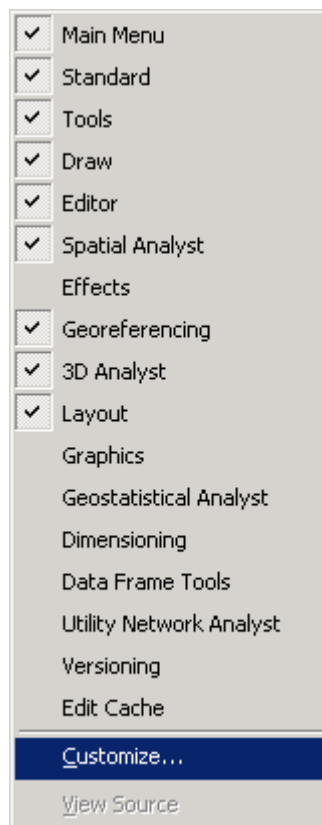
Step 3: Creating a custom UIControlButton in ArcGIS GUI

Now that we have the custom form called **frmLayerInfo** within the ArcGIS *Normal.mxt* document template we next need to put a button on the button bar in ArcGIS that will load the form when we want to use its functionality within the GIS program.

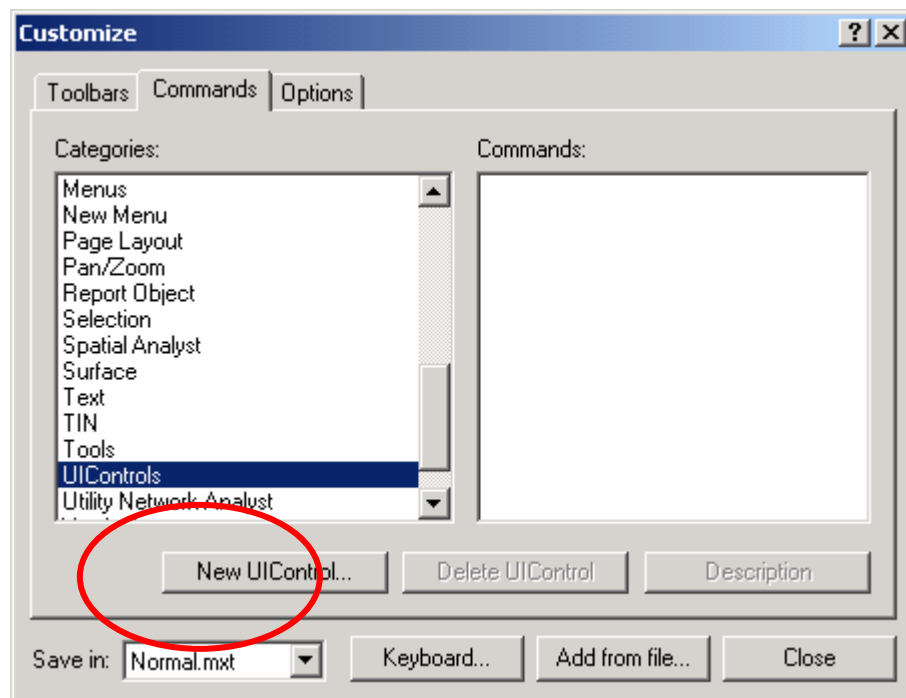
1. Return to the ArcGIS program



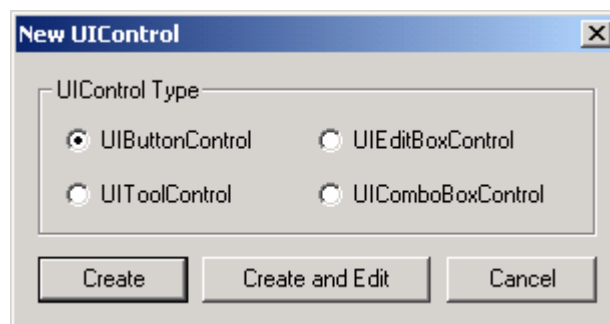
2. Right-click on any grey area of the Menubar and you will see the Customize Menu Appear. Choose the Customize... item at the bottom.



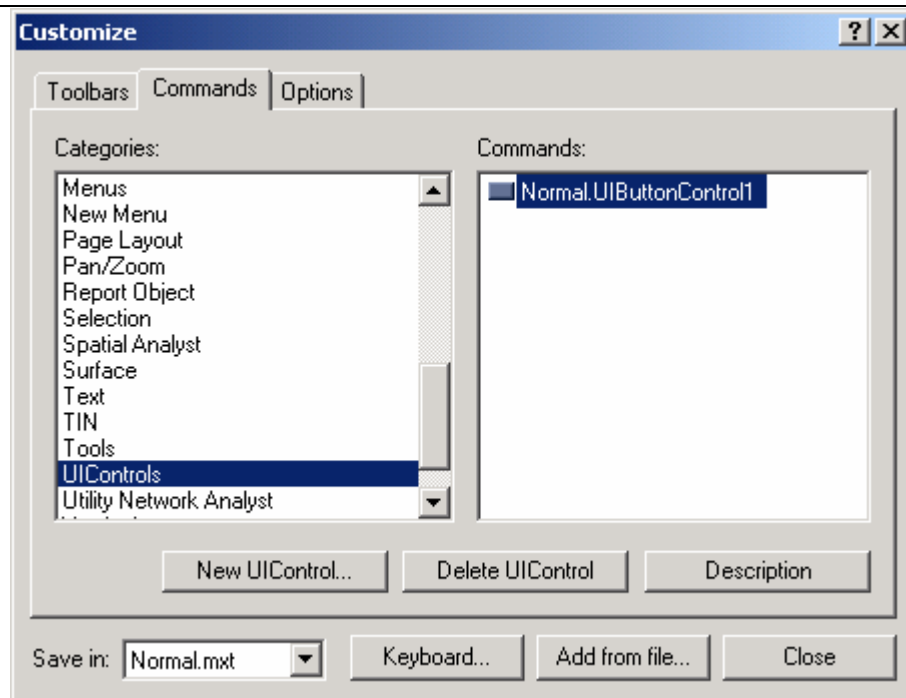
3. Now the Customize Dialog box is showing. Click on the Commands Tab at the top of the Customize dialog box and scroll down until you find the item called "UIControls":



4. Click on the button called NewUIControl...
5. Now the New UIControl dialogbox comes up and you want to create a new UIButtonControl (a button that eventually you can press and when you press it will load the user form called **frmLayerInfo**)



6. The Customize dialog box will now show a new **Normal.UIButtonControl1** in the Commands: window pane on the left hand side:



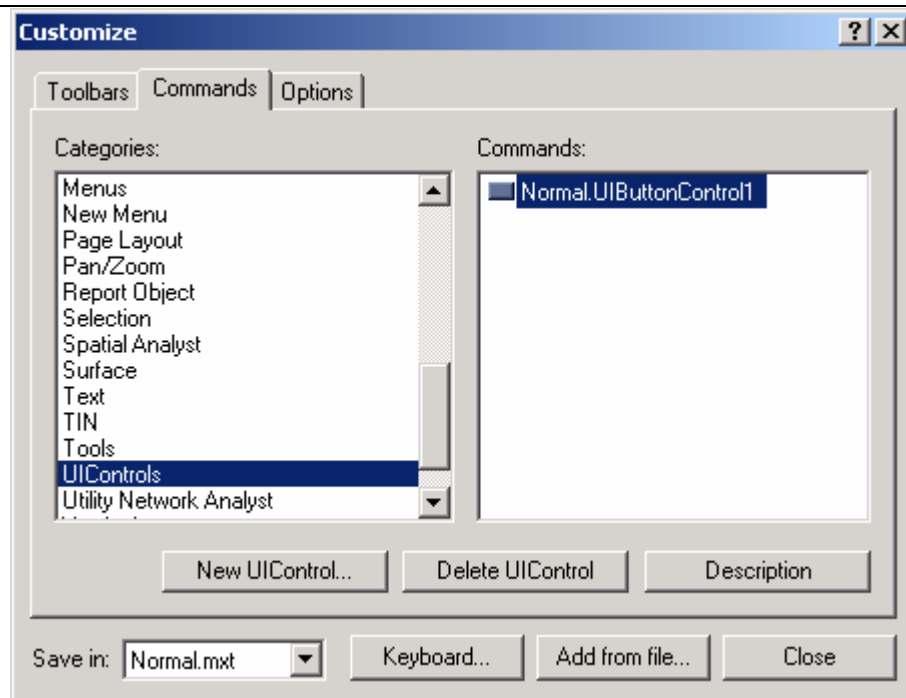
This **Normal.UIButtonControl1** references the "Normal.mxt" document, hence the prefix "Normal" in front of the UIButtonControl. This button will now be associated with the user form so that when it is clicked it will load the userform and provide us with the necessary functionality to run the custom program.

Step 4

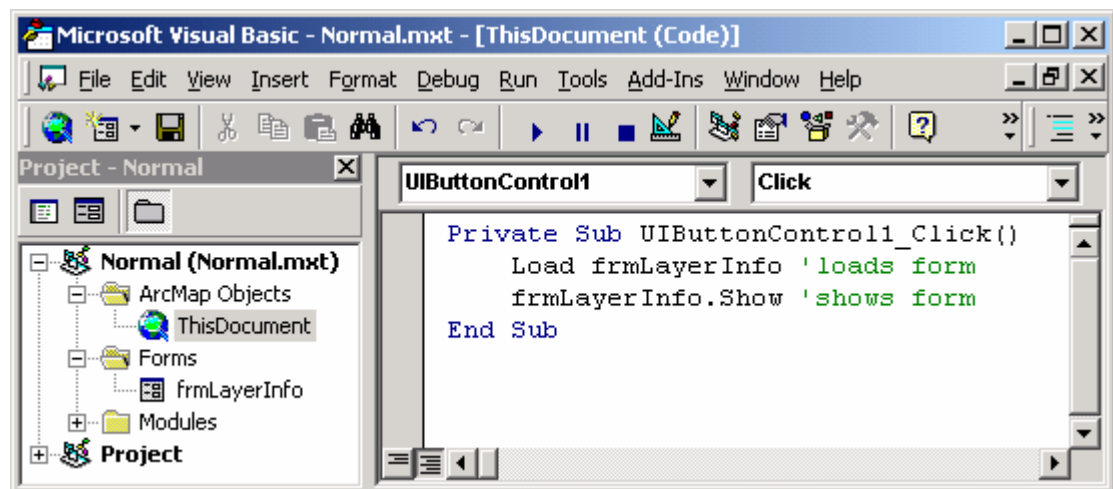
Step 4: Associating the new UIButtonControl with the frmLayerInfo within the Normal.mxt template

This is the semi-final step to giving a custom macro universal functionality within ArcGIS.

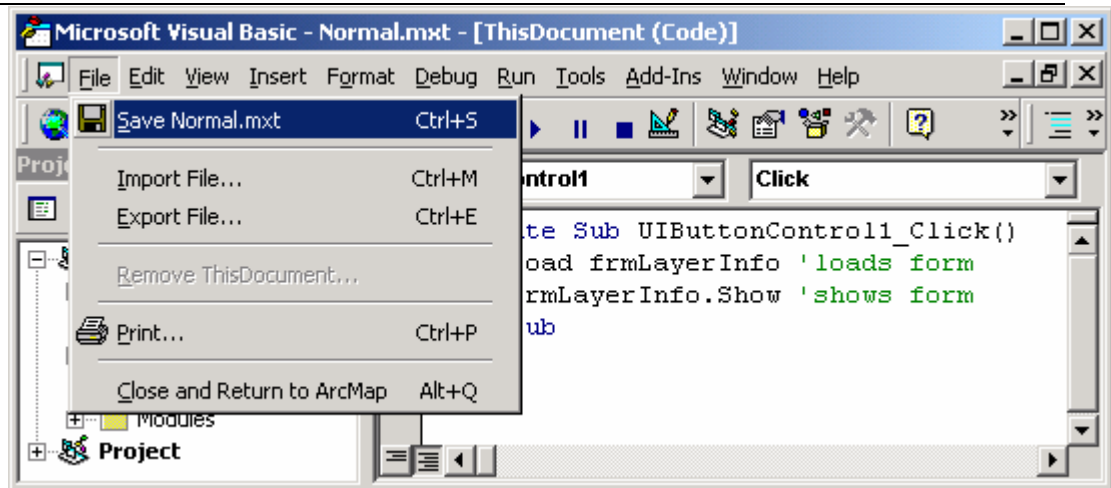
1. Double click on the item **Normal.UIButtonControl1**



2. This will "Jump" you over to the Visual Basic Editor and the ThisDocument item under the ArcMap Objects folder within the *Normal.mxt* template. Now type in the following:



3. Now click the File->Save *Normal.mxt* in the menubar and you are almost finished.

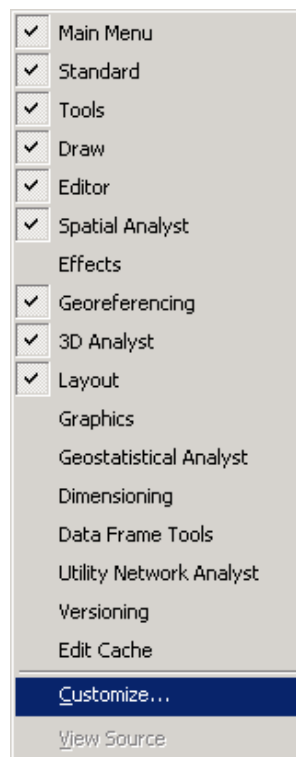


Step 5

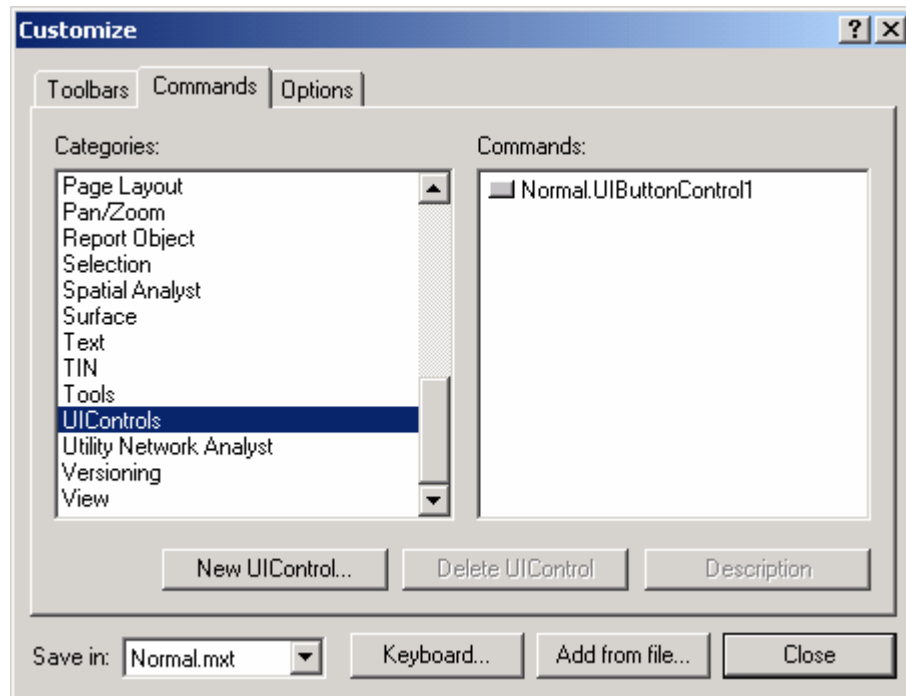
Step 5: Placing the new UIButtonControl onto the ArcGIS Interface

This is an easy step. It involves dragging the new button onto one of the button bars of ArcGIS.

1. Right-click on any grey area of the Menubar and you will see the Customize Menu Appear. Choose the Customize... item at the bottom.



-
2. Goback to the Commands Tab and scroll down to the UIControls and you will see your **Normal.UIButtonControl11**



4. Click and drag this button onto one of the button bars within ArcGIS.