Overview (1):
- Before We Begin
  - Some administrative details
  - Some questions to consider
- Programming with Visual Basic 6.0
  - Anatomy of a VB project
  - Running the project
  - Controls
  - Live Demo

Before We Begin
Administrative Details (1):
- Lab Exercise 2-3
  - From your textbook
  - Due Monday, January 16 2006 before noon
  - Place in the assignment drop-box located on the 1st floor of the CSE building just by the elevator and CSE undergraduate offices

Some Questions to Consider (1):
- What is a class?
- What is an object?
- What are properties?
- What are the benefits of OOP?
- What is a form?
- What is a control?

Programming with MS Visual Basic 6.0
Anatomy of a VB Project (1):

- **Overview**
  - VB programs are generally designed to respond to events initiated by the user via a GUI
  - User may click on a button, choose an option from the pull-down menu, write text in a text box etc.
  - The GUI objects have properties that can be set → can thus control their size, position & other features
  - Properties can be set in two ways
    - Design-time → by the programmer creating GUI
    - Run-time → by the program as it executes

Anatomy of a VB Project (2):

- **Overview (cont.)**
  - Code (instructions) associated with each interface object
    - Defines what should happen when the user interacts with the object (e.g., when they press a button or move mouse over an area on the GUI)
  - Review from first week
    - Such interactions are called events
    - Event programming → the act of defining what should happen in response to an event

Running the Project (1):

- **Two Environment Modes**
  - **Design mode**
    - This is where you are developing (designing) your GUI-based application
    - The program is not running

COSC 1530 Winter 2006
Bill Kapralos
Running the Project (2):

- **Two Environment Modes (cont.)**
  - **Run mode**
    - The computer executes the program you designed
    - The program is now running as a separate process and accepting user interaction via the GUI
    - What happens in Run mode depends on your application and what you have programmed!
    - To place in Run mode: "Menu → Run → Start"
    - To stop the program running: "Menu → Run → End" or click on the "x" on the window's top right corner

Controls (1):

- **Adding Controls to a Form**
  - The toolbox contains many objects that can be placed on the form (e.g., control buttons, menu items etc.)
  - These objects are called controls → they form the GUI for the computer program through which the user is able to control the program's activities
  - To add control to form → select the desired control and drag it to the region within the GUI you wish to place it
  - You can also resize the control to any desired size you wish

Controls (2):

- **Certain Properties Associated With Every Control Object**
  - Properties control the appearance of the control
  - Recall → each control is an object of some class type
    - The class defines certain properties that each object of that class will contain
    - Any particular instance of the class (e.g., any object of the class) will have specific values for those properties → recall shape/square class → two objects of type square (sq1 and sq2) each have a length and width property but the actual values for length and width of each square may differ!
Controls (3):

- **Certain Properties Associated With Every Control Object (cont.)**
  - Example → "Label" control object (used to display text in within the GUI) includes properties such as:
    - Name → name of the control
    - Caption → text associated with the control and displayed on the GUI
    - Font → font type and size of the displayed text
    - Height → height of the control (size)
  - Control object properties can be set/changed via the "Properties window"

Controls (4):

- **Certain Properties Associated With Every Control Object (cont.)**
  - Example → "Label" control object & its properties

Controls (3):

- **How do we Access/Specify Control Properties within the Code?**
  - "Standard" convention → Control_Name.Property
    - Control_Name → the name of the control (e.g., "Label1")
    - . → period
    - Property → the desired property (e.g., "Caption")
  - Example
    - Label1.Caption → refers to the Caption property of the control called "Label1"
    - Can assign it a value → Label1.Caption = "Hello"
Controls (5):
- Control Event Handling
  - Controls also have a mechanism for handling the many different types of possible user events
  - Example → control button can be pressed, mouse can be placed over it, can be activated with a particular key press
  - It is up to you to write the code (instructions) for handling each specific event you want to handle → although there are potentially many events a control can respond to, you don't have to define all of them only the ones you are interested in

Controls (6):
- Control Event Handling (cont.)
  - Basically, for each possible event, we have a separate method (function or sub-program) that will get called when the event on that control occurs
  - It is your responsibility to write these methods since the action to be performed in response to the event is program specific!
  - However, VB makes the task very easy for you → each of the potential events has a method signature and its simply a matter of you filling in the missing code

Controls (7):
- Control Event Handling
  - So how do we access/write event handler code?
  - Double-click on the control object → code window will appear

COSC 1530 Winter 2006
Bill Kapralos
Controls (8):
- Control Event Handling
  - Other available event handlers for control buttons

“Live Demo” (1):
- Live Demonstration of the Concepts Just Described Will Now be Given