OOP

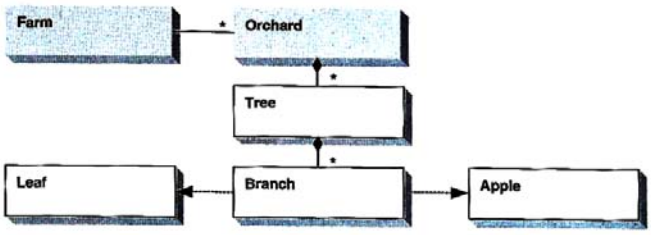
Principles of OOP

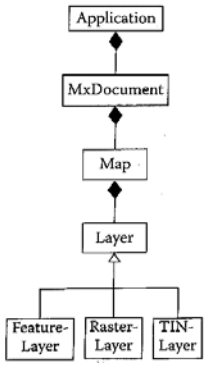
- **Encapsulation** – distinctive boundaries of objects
- **Abstraction** – fitting real-world objects into the defined objects
- **Inheritance** – relationship between objects (association, composition, aggregation, etc)
- **Polymorphism** – contextual behavior of objects

OOP Components

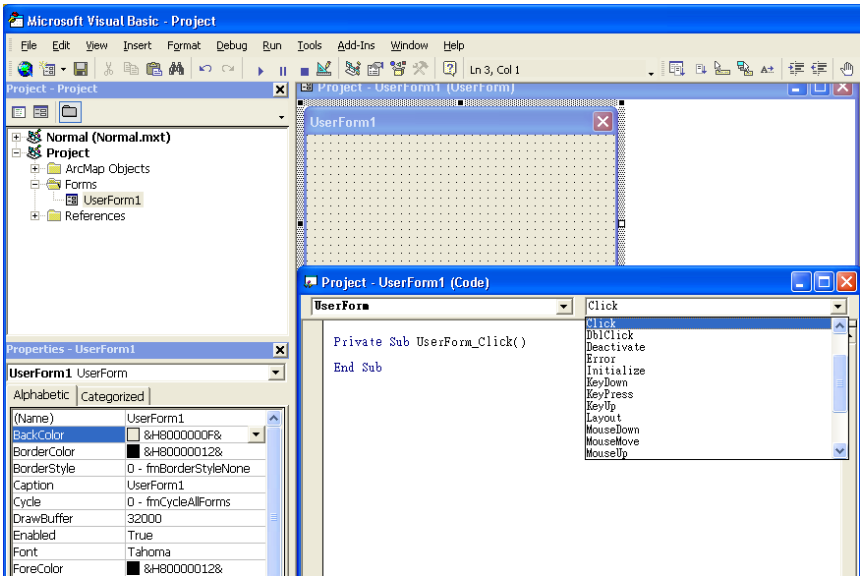
- Class (a collections of similar objects)
  - Events
  - Properties
  - Methods
- Object (created by instantiation)
  - Events (response to triggers)
  - Properties
  - Methods
- Interface (for accessing properties and methods of objects)

Object Model





1 .Orchard is a type of farm (there are many other types of farm). - association
2. An orchard has trees. - composition
3. A tree has branches. - composition
4. A branch can grow fruit. - instantiation
5. A branch can grow leaves. - instantiation
6. An apple tree is a tree. – type inheritence



VB Component

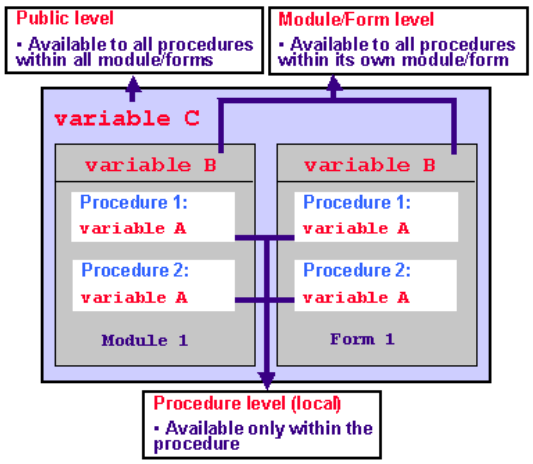
- Project
  - Forms
    - Properties
    - Events
    - Procedures
      - Declarations
      - Events procedures
      - General procedures
    - Controls
      - Properties, events
      - Events
      - Procedures
  - Modules
    - Declarations
    - Subroutines & Functions
  - Class Modules (User defined objects)
    - Methods: sub and functions
    - Properties
      - Property Get
      - Property Let
      - Property Set

Variable Scope

- Scope
  - Public
  - Private

```
Dim B As Integer

Private Sub Sub1()
   Dim A As Integer
End Sub
```



Select Case

```
Dim Number
Number = 8 ' Initialize variable.

Select Case Number ' Evaluate Number.
   Case 1 To 5 ' Number between 1 and 5, inclusive.
     Debug.Print "Between 1 and 5"
   ' The following is the only Case clause that
     evaluates to True.
   Case 6, 7, 8 ' Number between 6 and 8.
     Debug.Print "Between 6 and 8"
   Case 9 To 10 ' Number is 9 or 10.
     Debug.Print "Greater than 8"
   Case Else ' Other values.
     Debug.Print "Not between 1 and 10"
End Select
```

IF… THEN… ELSE

```
Dim Number, Digits, MyString
Number = 53 ' Initialize variable.
If Number < 10 Then
   Digits = 1
ElseIf Number < 100 Then
   ' Condition evaluates to True so the next statement is
   executed.
   Digits = 2
Else
   Digits = 3
End If


'Assign a value using the single-line form of syntax.
If Digits = 1 Then MyString = "One" Else MyString = "More
   than one"
```

FOR… NEXT

```
Dim Words, Chars, MyString
For Words = 10 To 1 Step -1 ' Set up 10 repetitions.
  For Chars = 0 To 9 ' Set up 10 repetitions.
      ' Append number to string.
      MyString = MyString & Chars
  Next Chars ' Increment counter
  MyString = MyString & " " ' Append a space.
Next Words
```

DO WHILE… LOOP

```
Dim Check, Counter
Check = True: Counter = 0 ' Initialize variables.
Do ' Outer loop.
  Do While Counter < 20 ' Inner loop.
      Counter = Counter + 1 ' Increment Counter.
      If Counter = 10 Then ' If condition is True.
         Check = False ' Set value of flag to False.
         Exit Do ' Exit inner loop.
      End If
  Loop
Loop Until Check = False ' Exit outer loop immediately.
```

DO … LOOP WHILE

Do
  [*statements*]
  [**Exit Do**]
  [*statements*]
Loop [{**While** | **Until**} *condition*]

WHILE… WEND

```
Dim Counter
Counter = 0 ' Initialize variable.

While Counter < 20 ' Test value of Counter.
  Counter = Counter + 1 ' Increment Counter.
Wend ' End While loop when Counter > 19.

' Prints 20 in the Immediate window.
Debug.Print Counter
```