# Object-Oriented Programming

## Example of a Class Definition - Account

Public Class Account

Private AccSurname As String

Private AccForename As String

Private AccNo As String

Private AccBal As Integer

Public Property Surname() As String

Get

Return AccSurname

End Get

Set(ByVal value As String)

AccSurname = value

End Set

End Property

Public Property Forename() As String

Get

Return AccForename

End Get

Set(ByVal value As String)

AccForename = value

End Set

End Property

Public Property Account() As String

Get

Return AccNo

End Get

Set(ByVal value As String)

AccNo = value

End Set

End Property

Public Property Balance()

Get

Return AccBal

End Get

Set(ByVal value)

AccBal = value

End Set

End Property

Public Sub OpenAccount(ByVal ANo As String, ByVal AForename As String, ByVal ASurname As String)

AccSurname = ASurname

AccForename = AForename

AccNo = ANo

AccBal = 0

End Sub

Public Sub AmendBalance(ByVal TValue As Single)

AccBal = AccBal + TValue

End Sub

End Class

## Example of the use of a Class Definition - Account

Public Class frmAccounts

Dim Acc1 As New Account

Dim Acc2 As New Account

Dim Acc3 As New Account

Dim Acc(0 To 2) As Account

Dim Counter As Integer = 0

Private Sub cmdAccounts\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles cmdAccounts.Click

Call Acc1.OpenAccount("0001", "Phil", "Harker")

Call Acc2.OpenAccount("0002", "Geoff", "Friar")

Call Acc3.OpenAccount("0003", "Jennifer", "Holt")

Acc(0) = Acc1

Acc(1) = Acc2

Acc(2) = Acc3

MsgBox("Accounts Opened", MsgBoxStyle.OkOnly, "OOP")

cmdViewAccounts.Enabled = True

End Sub

Private Sub cmdViewAccounts\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles cmdViewAccounts.Click

If Counter = 3 Then Counter = 0

txtAccNo.Text = Acc(Counter).Account

txtForename.Text = Acc(Counter).Forename

txtSurname.Text = Acc(Counter).Surname

txtBalance.Text = Acc(Counter).Balance

If Counter = 2 Then

Counter = 0

Else

Counter = Counter + 1

End If

End Sub

Private Sub cmdAmendBal\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles cmdAmendBal.Click

Dim AmendAmount As Integer

Dim AmendAccNo As String

Dim C As Integer

Dim Found As Boolean

AmendAccNo = InputBox("Enter Account Number")

AmendAmount = InputBox("Enter Amount")

Found = False

For C = 0 To 2

If Acc(C).Account = AmendAccNo Then

Acc(C).AmendBalance(AmendAmount)

Found = True

End If

Next C

If Found Then

MsgBox("Account " & AmendAccNo & " Balances Update", MsgBoxStyle.OkOnly, "OOP")

Else

MsgBox("Account Not Found", MsgBoxStyle.Information, "OOP")

End If

End Sub

End Class

## Example of Inheritance in Class Definition - Account

Public Class Account

Private AccSurname As String

Private AccForename As String

Private AccNo As String

Public Shared AccBal As Single

Public Property Surname() As String

Get

Return AccSurname

End Get

Set(ByVal value As String)

AccSurname = value

End Set

End Property

Public Property Forename() As String

Get

Return AccForename

End Get

Set(ByVal value As String)

AccForename = value

End Set

End Property

Public Property Account() As String

Get

Return AccNo

End Get

Set(ByVal value As String)

AccNo = value

End Set

End Property

Public Property Balance()

Get

Return AccBal

End Get

Set(ByVal value)

AccBal = value

End Set

End Property

Public Sub OpenAccount(ByVal ANo As String, ByVal AForename As String, ByVal ASurname As String)

AccSurname = ASurname

AccForename = AForename

AccNo = ANo

AccBal = 0

End Sub

Public Sub AmendBalance(ByVal TValue As Single)

AccBal = AccBal + TValue

End Sub

End Class

Public Class Savings

Inherits Account

Private AccInterest As Single

Public Property Interest()

Get

Return AccInterest

End Get

Set(ByVal value)

AccInterest = value

End Set

End Property

Public Sub AddInterest(ByVal Rate As Single)

AccInterest = AccBal \* Rate

End Sub

End Class

## Example of the use of a Class Definition containing Inheritance

Public Class frmAccounts

Dim SAcc As New Savings

Dim CAcc As New Account

Private Sub btnCAccount\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles btnCAccount.Click

Call CAcc.OpenAccount("1001", "Tim", "Smith")

Call CAcc.AmendBalance(100)

txtAccNo.Text = CAcc.Account

txtForename.Text = CAcc.Forename

txtSurname.Text = CAcc.Surname

txtBalance.Text = CAcc.Balance

txtInterest.Text = "No Interest Paid"

End Sub

Private Sub btnSavings\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles btnSavings.Click

Call SAcc.OpenAccount("1002", "Deborah", "Green")

Call SAcc.AmendBalance(1500)

Call SAcc.AddInterest(0.06)

txtAccNo.Text = SAcc.Account

txtForename.Text = SAcc.Forename

txtSurname.Text = SAcc.Surname

txtBalance.Text = SAcc.Balance

txtInterest.Text = SAcc.Interest

End Sub

End Class

## Example of Polymorphism in Class Definition

Public Class Employee

'This is an example of Polymorphism

Private ESurname As String

Private EForename As String

Private EType As String

Public Property Surname() As String

Get

Return ESurname

End Get

Set(ByVal value As String)

ESurname = value

End Set

End Property

Public Property Forename() As String

Get

Return EForename

End Get

Set(ByVal value As String)

EForename = value

End Set

End Property

Public Property Type() As String

Get

Return EType

End Get

Set(ByVal value As String)

EType = value

End Set

End Property

Overridable Function Pay(ByVal Hours As Integer) As Single

Return Hours \* 5.7

End Function

End Class

Public Class Junior

Inherits Employee

Private JGuardian As String

Public Property Guardian() As String

Get

Return JGuardian

End Get

Set(ByVal value As String)

JGuardian = value

End Set

End Property

Public Overrides Function Pay(ByVal Hours As Integer) As Single

Return Hours \* 4.78

End Function

End Class

## Example of the use of a Class Definition containing Inheritance

Public Class frmEmployee

Dim Emp1 As New Employee

Dim Emp2 As New Junior

Private Sub cmdAdult\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles cmdAdult.Click

Dim HoursWorked As Integer

Emp1.Forename = InputBox("Enter Forename", "Payrole")

Emp1.Surname = InputBox("Enter Surname", "Payrole")

Emp1.Type = "Adult"

HoursWorked = InputBox("Enter Hours Worked", "Payrole")

txtForename.Text = Emp1.Forename

txtSurname.Text = Emp1.Surname

txtType.Text = Emp1.Type

txtPay.Text = Emp1.Pay(HoursWorked)

txtGuardian.Visible = False

End Sub

Private Sub cmdJunior\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles cmdJunior.Click

Dim HoursWorked As Integer

Emp2.Forename = InputBox("Enter Forename", "Payrole")

Emp2.Surname = InputBox("Enter Surname", "Payrole")

Emp2.Guardian = InputBox("Enter Guardian", "Payrole")

Emp2.Type = "Junior"

HoursWorked = InputBox("Enter Hours Worked", "Payrole")

txtForename.Text = Emp2.Forename

txtSurname.Text = Emp2.Surname

txtType.Text = Emp2.Type

txtPay.Text = Emp2.Pay(HoursWorked)

txtGuardian.Visible = True

txtGuardian.Text = Emp2.Guardian

End Sub

End Class