



## Sample: Visual Basic - Calculating Final Grade

```
Imports System.Threading

Public Class MainForm
    Private SplashThread As Thread 'Create new Thread for Splash
    Structure Student
        Public firstname As String
        Public middlename As String
        Public lastname As String
        Public SSnumber As String
        Public exams() As Double
        Public quizzes() As Double
        Public assignments() As Double
        Public semesterProject As Double
        Public attendance As Integer
        Public numericgrade As Double
        Public alphabeticgrade As Char
    End Structure
    Private selectedStudent As Integer = -1
    Private listofStudent As New List(Of Student)
    Private Sub MainForm_Load(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles MyBase.Load
        SplashThread = New Thread(AddressOf ShowSplashForm) ' Create new Thread
        SplashThread.Start() ' New Thread Start
        Thread.Sleep(3000)
        SplashThread.Abort()
    End Sub

    ''' <summary>
    ''' Function show Splash from
    ''' </summary>
    ''' <remarks></remarks>
    Private Sub ShowSplashForm()
        Dim newSplashForm = New formSplashScreen()
        newSplashForm.ShowDialog()
        newSplashForm.Dispose()
    End Sub

    Private Sub QuitToolStripMenuItem_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles QuitToolStripMenuItem.Click
        Me.Close()
    End Sub
    ''' <summary>
    ''' Exit button click
    ''' </summary>
    ''' <param name="sender"></param>
    ''' <param name="e"></param>
    ''' <remarks></remarks>
    Private Sub btnExit_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles btnExit.Click
        Me.Close()
    End Sub
    ''' <summary>
    ''' InputData button click
    ''' </summary>
    ''' <param name="sender"></param>
    ''' <param name="e"></param>
    ''' <remarks></remarks>
```



```
Private Sub btnInputData_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles btnInputData.Click
    Try
        Dim password As String = InputBox("Enter password")
        If password = "1234" Then
            ClearAll()
            Dim rand As New Random()
            Dim newStudent As New Student()
            ReDim newStudent.exams(2)
            ReDim newStudent.quizzes(4)
            ReDim newStudent.assignments(6)

            newStudent.firstname = InputBox("Enter first name:")
            newStudent.middlename = InputBox("Enter middle name:")
            newStudent.lastname = InputBox("Enter last name:")
            newStudent.SSnumber = newStudent.firstname(0).ToString() +
newStudent.middlename(0).ToString() + newStudent.lastname(0).ToString() +
(rand.Next(1000) + 100).ToString()

            Dim attendance As Integer = -1
            While (attendance < 0 Or attendance > 19)
                attendance = Integer.Parse(InputBox("Enter attendance grade ranges
(0-19):"))
            End While
            newStudent.attendance = attendance

            Dim semesterProject As Double = -1
            While (semesterProject < 0 Or semesterProject > 100)
                semesterProject = Double.Parse(InputBox("Enter points for semester
Project grade ranges (0-100):"))
            End While
            newStudent.semesterProject = semesterProject

            Dim exam As Double = -1
            While (exam < 0 Or exam > 100)
                exam = Double.Parse(InputBox("Enter points for exam 1 grade ranges
(0-100):"))
            End While
            newStudent.exams(0) = exam
            exam = -1
            While (exam < 0 Or exam > 100)
                exam = Double.Parse(InputBox("Enter points for exam 2 grade ranges
(0-100):"))
            End While
            newStudent.exams(1) = exam
            Dim assignments As Double
            For i As Integer = 0 To 5
                assignments = -1
                While (assignments < 0 Or assignments > 100)
                    assignments = Double.Parse(InputBox("Enter points for assignment
" + (i + 1).ToString() + " grade ranges (0-100): "))
                End While
                newStudent.assignments(i) = assignments
            Next

            Dim quizz As Double
```



```
        For i As Integer = 0 To 3
            quizz = -1
            While (quizz < 0 Or quizz > 100)
                quizz = Double.Parse(TextBox("Enter points for quizz " + (i +
1).ToString() + " grade ranges (0-100): "))
            End While
            newStudent.quizzes(i) = quizz
        Next
        listofStudent.Add(newStudent)
        studentsListBox.Items.Clear()
        For i As Integer = 0 To listofStudent.Count - 1
            studentsListBox.Items.Add(listofStudent(i).lastname + " " +
listofStudent(i).firstname + " " + listofStudent(i).middlename + " " +
listofStudent(i).SSnumber)
        Next
        selectedStudent = listofStudent.Count - 1
        ShowInformation(listofStudent(selectedStudent))
    Else
        MessageBox.Show("Incorrect password", "Password", MessageBoxButtons.OK,
MessageBoxIcon.Error)
    End If

    Catch ex As Exception

    End Try
End Sub
Private Sub Udata(ByVal index As Integer)
    Dim editStudent As New Student
    ReDim editStudent.exams(2)
    ReDim editStudent.quizzes(4)
    ReDim editStudent.assignments(6)
    Dim password As String = TextBox("Enter password")
    If password = "1234" Then
        Dim rand As New Random()
        editStudent.firstname = TextBox("Enter first name:")
        editStudent.middlename = TextBox("Enter middle name:")
        editStudent.lastname = TextBox("Enter last name:")
        editStudent.SSnumber = editStudent.firstname(0).ToString() +
editStudent.middlename(0).ToString() + editStudent.lastname(0).ToString() +
(rand.Next(1000) + 100).ToString()

        Dim attendance As Integer = -1
        While (attendance < 0 Or attendance > 19)
            attendance = Integer.Parse(TextBox("Enter attendance grade ranges (0-
19):"))
        End While
        editStudent.attendance = attendance

        Dim semesterProject As Double = -1
        While (semesterProject < 0 Or semesterProject > 100)
            semesterProject = Double.Parse(TextBox("Enter points for semester
Project grade ranges (0-100):"))
        End While
        editStudent.semesterProject = semesterProject

        Dim exam As Double = -1
        While (exam < 0 Or exam > 100)
```



```
        exam = Double.Parse(TextBox("Enter points for exam 1 grade ranges (0-
100):"))
    End While
    editStudent.exams(0) = exam
    exam = -1
    While (exam < 0 Or exam > 100)
        exam = Double.Parse(TextBox("Enter points for exam 2 grade ranges (0-
100):"))
    End While
    editStudent.exams(1) = exam
    Dim assignments As Double
    For i As Integer = 0 To 5
        assignments = -1
        While (assignments < 0 Or assignments > 100)
            assignments = Double.Parse(TextBox("Enter points for assignment " +
(i + 1).ToString() + " grade ranges (0-100): "))
        End While
        editStudent.assignments(i) = assignments
    Next

    Dim quizz As Double
    For i As Integer = 0 To 3
        quizz = -1
        While (quizz < 0 Or quizz > 100)
            quizz = Double.Parse(TextBox("Enter points for quizz " + (i +
1).ToString() + " grade ranges (0-100): "))
        End While
        editStudent.quizzes(i) = quizz
    Next
    listofStudent(index) = editStudent
    studentsListBox.Items.Clear()
    For i As Integer = 0 To listofStudent.Count - 1
        studentsListBox.Items.Add(listofStudent(i).lastname + " " +
listofStudent(i).firstname + " " + listofStudent(i).middlename + " " +
listofStudent(i).SSnumber)
    Next
Else
    MessageBox.Show("Incorrect password", "Password", MessageBoxButtons.OK,
MessageBoxIcon.Error)
End If
End Sub
Private Sub ShowInformation(ByVal _student As Student)
    txtFirstName.Text = _student.firstname
    txtMiddleName.Text = _student.middlename
    txtLastName.Text = _student.lastname
    txtSS.Text = _student.SSnumber
    txtAttendance.Text = _student.attendance.ToString()
    txtSemesterProject.Text = _student.semesterProject.ToString()

    lblAss1.Text = _student.assignments(0).ToString()
    lblAss2.Text = _student.assignments(1).ToString()
    lblAss3.Text = _student.assignments(2).ToString()
    lblAss4.Text = _student.assignments(3).ToString()
    lblAss5.Text = _student.assignments(4).ToString()
    lblAss6.Text = _student.assignments(5).ToString()

    lblExam1.Text = _student.exams(0).ToString()
```



```
        lblExam2.Text = _student.exams(1).ToString()

        lblQuestion1.Text = _student.quizzes(0).ToString()
        lblQuestion2.Text = _student.quizzes(1).ToString()
        lblQuestion3.Text = _student.quizzes(2).ToString()
        lblQuestion4.Text = _student.quizzes(3).ToString()
    End Sub
    ''' <summary>
    ''' Clear All Fields
    ''' </summary>
    ''' <remarks></remarks>
    Private Sub ClearAll()
        txtFirstName.Text = ""
        txtMiddleName.Text = ""
        txtLastName.Text = ""
        txtSS.Text = ""
        txtAttendance.Text = ""
        txtSemesterProject.Text = ""

        lblAss1.Text = ""
        lblAss2.Text = ""
        lblAss3.Text = ""
        lblAss4.Text = ""
        lblAss5.Text = ""
        lblAss6.Text = ""

        lblExam1.Text = ""
        lblExam2.Text = ""

        lblQuestion1.Text = ""
        lblQuestion2.Text = ""
        lblQuestion3.Text = ""
        lblQuestion4.Text = ""

        lblNumericgrade.Text = ""
        lblAlphabeticgrade.Text = ""
    End Sub

    ''' <summary>
    ''' calculate Percentages
    ''' </summary>
    ''' <param name="inputData"></param>
    ''' <param name="n"></param>
    ''' <returns></returns>
    ''' <remarks></remarks>
    Private Function calculatePercentages(ByVal inputData() As Double, ByVal n As
Integer) As Double
        Dim total As Double = 0
        Dim globaltotal As Double = 0
        For i As Integer = 0 To n
            globaltotal += 100
            total += inputData(i)
        Next
        Dim percentage As Double = total / globaltotal
        Return percentage
    End Function
```



```
''' <summary>
''' Find Grade
''' </summary>
''' <param name="numericgrade"></param>
''' <returns></returns>
''' <remarks></remarks>
Public Function FindGrade(ByVal numericgrade As Double) As Char
    Dim grade As Char

    If numericgrade > 89 Then
        grade = "A"
        lblGradeMessage.Text = "Excellent!"
        Return grade
    End If
    If numericgrade > 79 Then
        grade = "B"
        lblGradeMessage.Text = "Very good!"
        Return grade
    End If
    If numericgrade > 69 Then
        grade = "C"
        lblGradeMessage.Text = "Good!"
        Return grade
    End If
    If numericgrade > 59 Then
        grade = "D"
        lblGradeMessage.Text = "Poor!"
        Return grade
    End If
    If numericgrade <= 59 Then
        grade = "F"
        lblGradeMessage.Text = "Fail!"
        Return grade
    End If
    Return grade
End Function

Private Sub CalculateGrades(ByVal _Student As Student)
    'Assignments 20 %
    Dim assignmentPercentage As Double = calculatePercentages(_Student.assignments,
5) * 20
    '4 Quizzes 15 %
    Dim quizPercentage As Double = calculatePercentages(_Student.quizzes, 3) * 15
    '2 Exams 30 %
    Dim examPercentage As Double = calculatePercentages(_Student.exams, 1) * 30
    'Semester Project 25 %
    Dim semesterprojectPercentage As Double = _Student.semesterProject * 25 / 100
    'Attendance 10 % (19 classes = 100 % attendance)
    Dim attendancePercentage As Double = _Student.attendance * 10 / 19
    _Student.numericgrade = assignmentPercentage + quizPercentage + examPercentage
+ semesterprojectPercentage + attendancePercentage
    lblNumericgrade.Text = Decimal.Round(_Student.numericgrade, 1,
MidpointRounding.AwayFromZero).ToString()
    lblAlphabeticgrade.Text = FindGrade(_Student.numericgrade).ToString()
End Sub
''' <summary>
''' Button Calculate Grade click
```



```
''' </summary>
''' <param name="sender"></param>
''' <param name="e"></param>
''' <remarks></remarks>
Private Sub btnCalculateGrade_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles btnCalculateGrade.Click
    If (selectedStudent <> -1) Then
        CalculateGrades(listofStudent(selectedStudent))
    End If
End Sub

Private Sub mainForm_FormClosing(ByVal sender As System.Object, ByVal e As
System.Windows.Forms.FormClosingEventArgs) Handles MyBase.FormClosing
    Select Case MessageBox.Show("Are you sure you want to exit?", "Confirm",
MessageBoxButtons.YesNo, MessageBoxIcon.Question)
        Case Windows.Forms.DialogResult.Yes
            'nothing to do here the form is already closing
        Case Windows.Forms.DialogResult.No
            e.Cancel = True 'cancel the form closing event
    End Select
End Sub

Private Sub studentsListBox_SelectedIndexChanged(ByVal sender As System.Object, ByVal
e As System.EventArgs) Handles studentsListBox.SelectedIndexChanged
    Try
        selectedStudent = studentsListBox.SelectedIndex
        ShowInformation(listofStudent(selectedStudent))
    Catch ex As Exception

    End Try

End Sub
''' <summary>
''' Edit Student click
''' </summary>
''' <param name="sender"></param>
''' <param name="e"></param>
''' <remarks></remarks>
Private Sub btnEditStudent_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles btnEditStudent.Click
    Try
        selectedStudent = studentsListBox.SelectedIndex
        Update(selectedStudent)
        ShowInformation(listofStudent(selectedStudent))
    Catch ex As Exception
        MessageBox.Show(ex.ToString())
    End Try
End Sub
End Class
```



```
Public Class formSplashScreen
```

```
    Private Sub formSplashScreen_Load(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles MyBase.Load
```

```
        lblDate.Text = "Date: " + DateTime.Now.ToString("d")
```

```
        lblTime.Text = "Time: " + DateTime.Now.ToString("HHH:mm:ss")
```

```
    End Sub
```

```
End Class
```