

frmSort - 1

Option Explicit

Dim numarray() As Long

Dim items As Long

Private Sub DisplayResults(span As Single)

Dim i, j, k As Long

'Display results of sort in a listview object.

j = 1

k = 2

For i = 1 To items

If i = 1 Then

lvDisplay.ListItems(i).Text = "Seconds"

lvDisplay.ListItems(i).SubItems(1) = span

End If

If j <= 2 And i <= items Then

lvDisplay.ListItems(k).SubItems(j) = numarray(i)

j = j + 1

Else

lvDisplay.ListItems(k).SubItems(j) = numarray(i)

j = 1

k = k + 1

End If

Next i

End Sub

Private Sub Qsort(first As Long, last As Long)

Dim pivot As Long 'pivot element for sort routine

Dim temp As Long 'variable for switching numbers

Dim j As Long 'scanning position

Dim i As Long 'scanning position

'Perform quick sort on the array.

i = first

j = last

pivot = numarray((i + j) / 2)

Do While i < j

Do While numarray(i) < pivot

i = i + 1

Loop

Do While numarray(j) > pivot

j = j - 1

Loop

If i <= j Then

temp = numarray(i)

numarray(i) = numarray(j)

numarray(j) = temp

i = i + 1

j = j - 1

End If

Loop

If first < j Then

Call Qsort(first, j)

End If

If i < last Then

Call Qsort(i, last)

End If

End Sub

Private Sub cmdSelectionSort_Click()

Dim i, j, temp As Long

Dim t As Single

ProgressBar1.Visible = True

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t = Timer
For i = 1 To items - 1
    For j = i + 1 To items
        If numarray(i) > numarray(j) Then
            temp = numarray(i)
            numarray(i) = numarray(j)
            numarray(j) = temp
        End If
    Next j
    ProgressBar1.Value = i / (items - 1) * 100
Next i
Call DisplayResults(Timer - t)
End Sub

Private Sub cmdExit_Click()
    End
End Sub

Private Sub cmdFromFile_Click()
    Dim i, j, k As Long
    ProgressBar1.Visible = False
    ReDim numarray(items) As Long
    Open App.Path & "\numbers.txt" For Input As #1
    i = 1
    Do While Not EOF(1)
        Input #1, numarray(i)
        i = i + 1
    Loop
    Close #1
    j = 1
    k = 2
    For i = 1 To items
        If i = 1 Then
            lvDisplay.ListItems(i).Text = ""
            lvDisplay.ListItems(i).SubItems(1) = ""
        End If
        If j <= 2 And i <= items Then
            lvDisplay.ListItems(k).SubItems(j) = numarray(i)
            j = j + 1
        Else
            lvDisplay.ListItems(k).SubItems(j) = numarray(i)
            j = 1
            k = k + 1
        End If
    Next i
    cmdSelectionSort.Visible = True
    cmdShellSort.Visible = True
    cmdQuickSort.Visible = True
End Sub

Private Sub cmdQuickSort_Click()
    Dim i, num As Integer
    Dim t As Single
    t = Timer
    Call Qsort(1, items)
    Call DisplayResults(Timer - t)
End Sub

Private Sub cmdShellSort_Click()
    Dim i, j, temp, gap As Long
    Dim t As Single
```

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Dim switch, done As Boolean
gap = Int(items / 2)
t = Timer
Do While gap >= 1
    Do
        done = True
        For i = 1 To items - gap
            If numarray(i) > numarray(i + gap) Then
                temp = numarray(i)
                numarray(i) = numarray(i + gap)
                numarray(i + gap) = temp
                done = False           'switch made so keep same gap
            End If
        Next i
        Loop Until done
        gap = Int(gap / 2)
    Loop
    Call DisplayResults(Timer - t)
End Sub
```

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Private Sub Form_Load()
    Dim i, num As Integer
    items = 0
    cmdSelectionSort.Visible = False
    cmdShellSort.Visible = False
    cmdQuickSort.Visible = False
    ProgressBar1.Visible = False
    If Dir(App.Path & "\numbers.txt") <> "" Then
        Open App.Path & "\numbers.txt" For Input As #1
    Else
        MsgBox "Numbers file does not exist!", vbOKOnly, "File Error!"
        cmdFromFile.Visible = False
        Exit Sub
    End If
    Do While Not EOF(1)
        Input #1, num
        items = items + 1
    Loop
    Close #1
    lvDisplay.ColumnHeaders.Add , , , lvDisplay.Width / 5
    For i = 1 To 3
        lvDisplay.ColumnHeaders.Add , , , lvDisplay.Width / 5, 1
    Next i
    For i = 1 To items / 3 + 5
        lvDisplay.ListItems.Add
    Next i
End Sub
```