

```
1
2 '1.] The interest rate percentage (%) is not hardcoded, thus if needed to be  ➤
   changed it can be done so by re-writting the text of the textbox (before  ➤
   running the App).
3 '2.] Form1 is allocated as the "Split screen" of the App // form2 is the  ➤
   "input/welcome/main" page // form3 is the "result/restart" page
4
5
6
7 Public Class Form2
8
9     'Declaring variables globally so that all subs can access it
10
11     Dim decAnnualSalary As Decimal      'This is the annual salary
12     Dim decLoanAmount As Decimal        'This is the Loan amount
13     Dim intMaxTermYrs As Integer        'This is the maximum term of the loan in ➤
        years
14     Dim intMaxTermMonths As Integer     'This is the maximum term of the loan in ➤
        months
15     Dim decInterestrte As Decimal       'This is the interest rate of the loan  ➤
        during the term period
16     Dim intThreshold As Integer         'This is the repayment Threshold of the  ➤
        loan
17     Dim decRepPercent As Decimal        'This is the Rpayment percentage the  ➤
        user will have to pay
18     Dim decRefund As Decimal            'The refund the user will get (if  ➤
        needed)
19
20     '===== ➤
21     '# All the actions taking place after clicking the "Calculate" button ➤
22
23     '===== ➤
24     Private Sub Calculatebtn_Click(sender As Object, e As EventArgs) Handles ➤
        Calculatebtn.Click
25
26     '===== ➤
27     =
28     '# Validating all the input text Boxes to make sure we have the wanted ➤
        inputs
29
30     '===== ➤
31     =
32     '#> Ceate individual Lock booleans for the validations to ensure Form3 ➤
        wont appear and the error messages will show , if there is an input ➤
        error
33
34     '----- ➤
35     -----
36
37     Dim Lock1 As Boolean
```

```
34 Dim Lock2 As Boolean
35 Dim Lock3 As Boolean
36 Dim Lock4 As Boolean
37 Dim Lock5 As Boolean
38 Dim Lock6 As Boolean
39
40
41 'Validating term for numeric values and non-negative values and non-  ↗
   blank boxes
42 If (IsNumeric(txtboxMaxTerms.Text) AndAlso (txtboxMaxTerms.Text > 0)  ↗
   AndAlso IsNothing(txtboxMaxTerms.Text) = False) Then
43     'Assign the Term value if it is numeric and grater than 0
44     intMaxTermYrs = Val(txtboxMaxTerms.Text)
45     intMaxTermMonths = intMaxTermYrs * 12
46
47     Lock1 = True
48 Else
49     'Show a message box to the user with the appropriate message
50     MsgBox("The *Term* value is invalid", MsgBoxStyle.Exclamation,  ↗
        "Error")
51
52     Lock1 = False
53
54 End If
55
56
57 'Validating loan amount for numeric value and non-negative values and  ↗
   non-blank boxes
58 If (IsNumeric(txtboxLoanAmount.Text) AndAlso (txtboxLoanAmount.Text >  ↗
   0) AndAlso IsNothing(txtboxLoanAmount.Text) = False) Then
59     'Assign the Loan value if it is numeric and grater than 0
60     decLoanAmount = Val(txtboxLoanAmount.Text)
61
62     Lock2 = True
63
64 Else
65     'Show a message box to the user with the appropriate message
66     MsgBox("The *Loan Amount* value is invalid",  ↗
        MsgBoxStyle.Exclamation, "Error")
67
68     Lock2 = False
69
70 End If
71
72
73 'Validating Annual salary amount for numeric value and non-negative  ↗
   values and non-blank boxes'
74 If (IsNumeric(txtboxSalary.Text) AndAlso (txtboxSalary.Text > 0)  ↗
   AndAlso IsNothing(txtboxSalary.Text) = False) Then
75     'Assign the salary value if it is numeric and grater than 0 '
76     decAnnualSalary = Val(txtboxSalary.Text)
77
78     Lock3 = True
79
80 Else
81     'Show a message box to the user with the appropriate message'
```

```
82         MsgBox("The *Salary* value is invalid", MsgBoxStyle.Exclamation, 7
            "Error")
83
84         Lock3 = False
85
86     End If
87
88
89     'Validating interest rate for numeric values and non-negative values 7
        and non-blank boxes'
90     If (IsNumeric(txtboxInterestRate.Text) AndAlso 7
        (txtboxInterestRate.Text > 0) AndAlso IsNothing 7
        (txtboxInterestRate.Text) = False) Then
91         'Assign the Term value if it is numeric and greater than 0 '
92         decInterestRate = Val(txtboxInterestRate.Text)
93
94         Lock4 = True
95
96     Else
97         'Show a message box to the user with the appropriate message'
98         MsgBox("The *Interest rate* value is invalid", 7
            MsgBoxStyle.Exclamation, "Error")
99
100        Lock4 = False
101
102    End If
103
104    'Validating Repayment Threshold for numeric values and non-negative 7
        values and non-blank boxes'
105    If (IsNumeric(txtboxThreshold.Text) AndAlso (txtboxThreshold.Text > 0) 7
        AndAlso IsNothing(txtboxThreshold.Text) = False) Then
106        'Assign the Term value if it is numeric and greater than 0 '
107        intThreshold = Val(txtboxThreshold.Text)
108
109        Lock5 = True
110
111    Else
112        'Show a message box to the user with the appropriate message'
113        MsgBox("The *Repayment Threshold* value is invalid", 7
            MsgBoxStyle.Exclamation, "Error")
114
115        Lock5 = False
116
117    End If
118
119    'Validating Repayment Threshold for numeric values and non-negative 7
        values and non-blank boxes'
120    If (IsNumeric(txtboxThreshold.Text) AndAlso (txtboxThreshold.Text > 0) 7
        AndAlso IsNothing(txtboxThreshold.Text) = False) Then
121        'Assign the Term value if it is numeric and greater than 0 '
122        decRepPercent = Val(txtboxRepaymentPrcent.Text)
123        Lock6 = True
124
125    Else
126        'Show a message box to the user with the appropriate message'
127        MsgBox("The *Repayment Percentage* value is invalid", 7
```

```

        MsgBoxStyle.Exclamation, "Error")
128
129     Lock6 = False
130
131 End If
132
133 If (Lock1 = True And Lock2 = True And Lock3 = True And Lock4 = True  ➤
    And Lock5 = True And Lock6 = True) Then
134
135     Form3.Show()
136     Me.Hide()
137
138 Else
139     'We erase all the previous results (if this was the second+ ➤
        attempt) in order to not effect further calculations
140     Form3.txtboxLoanConfirm.Clear()
141     Form3.txtboxAnnualRepayment.Clear()
142     Form3.txtboxMonthlyRepayment.Clear()
143     Form3.txtboxMonths.Clear()
144     Form3.txtboxYears.Clear()
145     Form3.txtboxTotalinterestPayed.Clear()
146     Form3.txtboxTotalPayment.Clear()
147     Form3.lstBoxInfo.Items.Clear()
148
149     'Program skips ahead to the location of "exitpoint", which is at ➤
        the "End Sub", thus ending the "Calculation Button" actions.
150     GoTo exitpoint1
151
152 End If
153
154
155 '===== ➤
    ===
156     '# Calculation Section ➤
157
158 '===== ➤
    ===
158
159     'Local variable decleration for our calculations
160
161     Dim decBalanceNow As Decimal
162     Dim decClosingBalance As Decimal
163     Dim decAnnualRepayment As Decimal
164     Dim decMonthlyRepayment As Decimal
165     Dim decAnnualInterest As Decimal
166     Dim decMonthlyInterest As Decimal
167     Dim decTotalInterest As Decimal
168
169     '# IMPORTANT : decAnnualInterest/decMonthlyInterest => Refer to the ➤
        ammount of money(£) of that interest /// decInterestrates => refers ➤
        to the percentage(%) of interest . NOT money.
170
171     '-----
172     'Find and dislay annual and monlthly repayment ( step 1 )

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173 '-----
174
175 If (decAnnualSalary < intThreshold) Then
176     'MsgBox(" The *Annual Salary* can't be lower than the *Repayment  ↗
177         Threshold* ")
178     lblCalculationConfirm.Text = " The *Annual Salary* can't be lower  ↗
179         than the *Repayment Threshold* "
180     'We ensure that in the case of an insufficient Salary , form3  ↗
181         won't be shown (calculations will be skipped because of the  ↗
182         "Goto" statement)
183     Me.Show()
184     Form3.Hide()
185     GoTo exitpoint1
186     'We clarify that if the above "if" statement is correct, the  ↗
187         program will skip all the below calculations and go straight to  ↗
188         "end sub".
189 '-----
190
191 Else
192     lblCalculationConfirm.Text = " "
193     decAnnualRepayment = (decAnnualSalary - intThreshold) *  ↗
194         (decRepPercent / 100)
195     decMonthlyRepayment = decAnnualRepayment / 12
196     'Rounding up the results
197     '-----
198     decMonthlyRepayment = Math.Round(decMonthlyRepayment, 2)
199     decAnnualRepayment = Math.Round(decAnnualRepayment, 2)
200
201     'Displaying the results
202     '-----
203     Form3.txtboxAnnualRepayment.Text = decAnnualRepayment
204     Form3.txtboxMonthlyRepayment.Text = decMonthlyRepayment
205
206
207
208
209 End If
210 '-----
211
212 'Find and show the opening/closing balance and interest for each  ↗
213     month ( step 2 )
214 '-----
215
216 'Make counter
```

```
215
216     Dim intCounter As Integer
217     intCounter = 0
218
219     Dim BalanceRepaid As Boolean
220     BalanceRepaid = False
221
222     Dim decRepaymentMade As Decimal
223     Dim decBalance As Decimal
224     decBalance = decLoanAmount
225
226     decTotalInterest = 0
227     decRepaymentMade = 0
228
229
230     'FORM 3 LIST B0
231     '-----
232
233     Form3.lstBoxInfo.Items.Clear()
234
235     ' The "Try" statement protects the programe from errors. The statement
236     ' catches the errors and improuves the user experience.
237     Try
238         Do
239             ' Inserting counter
240             intCounter = intCounter + 1
241
242             'Calculations part which will be displayed in the listbox.
243             decAnnualInterest = decBalance * (decInterestrates / 100)
244             decMonthlyInterest = decAnnualInterest / 12
245             decMonthlyInterest = Math.Round(decMonthlyInterest, 2)
246
247             decBalanceNow = decBalance + decMonthlyInterest
248             decClosingBalance = decBalanceNow - decMonthlyRepayment
249
250             decBalance = decClosingBalance
251             decRepaymentMade = decRepaymentMade + decMonthlyRepayment
252             decTotalInterest = decTotalInterest + decMonthlyInterest
253
254             'Ensuring there are no extra charges at the end of the
255             ' repayment period, and the closing balance does not reach
256             ' negative value.
257             If (decClosingBalance < 0) Then
258                 decRepaymentMade = decRepaymentMade - (decMonthlyRepayment
259                 - decClosingBalance)
260                 decClosingBalance = 0
261                 decRefund = decMonthlyRepayment - decClosingBalance
262                 'Displaying to the user the amount of refund he got / the
263                 ' refund will be the amount of money we removed from the
264                 ' total Payment made as shown above.
265                 Form3.lblRefund.Text = "You got a refund of : £"
266                 Form3.lblRefundPrice.Text = decRefund
267             End If
268         
```

```

265
266         'LIST B0  results from FORM 3
267         '-----
268
269         Form3.lstBoxInfo.Items.Add("Repayment for month: "      ↗
270             intCounter)
271         Form3.lstBoxInfo.Items.Add("Closing balance is : £"      ↗
272             decClosingBalance)
273         Form3.lstBoxInfo.Items.Add("Interest payed is : £"      ↗
274             decMonthlyInterest)
275         Form3.lstBoxInfo.Items.Add("") ' Leaving an empty space  ↗
276             between months to make it easier for the user to read.
277
278         '=====
279         'Showing the core results of the application (Step 3)
280         '=====
281
282         If (intCounter = intMaxTermMonths Or decClosingBalance = 0) ↗
283             Then
284                 BalanceRepaid = True
285
286                 'TE T B0 ES FROM FORM 3 // Total Repayment and Interest ↗
287                 payed through the period
288
289                 '-----
290
291                 Form3.txtboxTotalPayment.Text = decRepaymentMade
292                 Form3.txtboxTotalInterestPaid.Text = decTotalInterest
293
294             End If
295
296             Loop Until intCounter = intMaxTermMonths Or BalanceRepaid = True
297
298         Catch ex As Exception
299
300         End Try
301
302         Dim decCounterYrs As Decimal 'creating a variable to show the total ↗
303             years taken to repay the loan
304         Form3.txtboxLoanConfirm.Text = decLoanAmount
305         Form3.txtboxMonths.Text = intCounter
306         decCounterYrs = intCounter / 12
307         decCounterYrs = Math.Round(decCounterYrs, 1) 'round-up the yearly ↗
308             counter up to 1 decimal number since we reffer to years so anything ↗
309             more than that is insignificant
310         Form3.txtboxYears.Text = decCounterYrs
311
312     exitpoint1: End Sub

```

```
306
307 '=====
308 'Actions after clicking the "Exit" and "=>" ( Arrow ) buttons
309 '=====
310
311
312 'This is the " uit" button.When clicked , form 2 closes and there should
    be no program forms shown.
313 '-----
314
315 Private Sub uitbtn_Click(sender As Object, e As EventArgs) Handles
    uitbtn.Click
316
317     Dim Response As DialogResult
318     Response = MessageBox.Show("Would you like to exit ", "",
319     MessageBoxButtons.YesNo, MessageBoxIcon.Question)
320
321     If Response = DialogResult.Yes Then
322
323         Application.Exit()
324
325     End If
326
327 End Sub
328
329 'The use of "Arrow" button is to give freedom to the user to view both
    the inputs and the outputs after a successful calculation process
330 '=====
331 Private Sub Button3_Click(sender As Object, e As EventArgs) Handles
    Button3.Click
332
333     Hide()
334     Form3.Show()
335
336 End Sub
337
338 End Class
```