Conditional sentence (If)

The conditional sentence is considered one of the most important orders that can make decisions and are used in comparison transactions. Orders are executed or not executed based on the validity of the Condition. There are several forms of application of the conditional sentence.
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Formula 1: (If – Then):
IF (the Condition) Then (sentence if the Condition is met)
Example 1:
If g > = 50 Then Text1="Successful"

Formula 2: (If - Then - End If):
General formula:
IF (the Condition) Then
(A sentence or a group of sentences if the Condition is met)
End If
Example 2:
If g >= 50 Then
Text1 ="Congratulations Successful"
End If

Formula 3:(If - Then - Else):
General formula:
If (Condition) Then
(A sentence or a group of sentences if the Condition is met)
Else
(A sentence or a group of sentences if the Condition is not met)
End If
Example 3:
If g >= 50 Then
Text1="successful"
Else
Text2="fail"
End If

Formula 4: (If – Then – ElseIf):
General formula:
If Condition Then
The sentence or group of sentences if the first Condition is met
ElseIf
The sentence or group of sentences if the second Condition is met
ElseIf
The sentence or group of sentences if the third Condition is met
:::
:::
Else
The sentence or group of sentences in the event that all the previous conditions are not met.
End If

Notes:

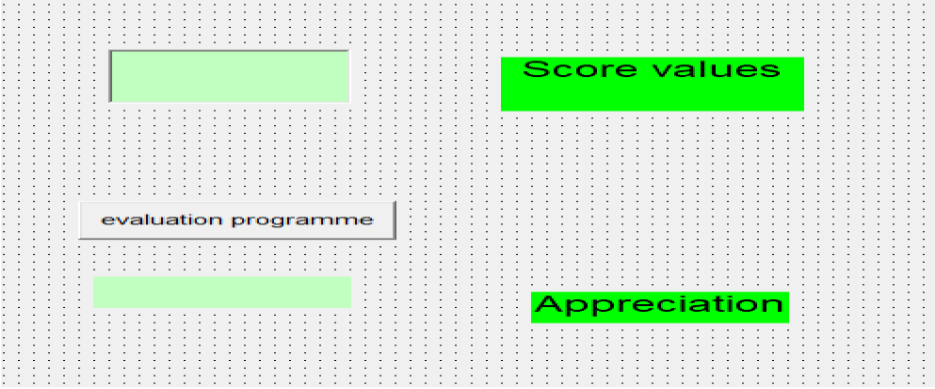
- There is no need to write the command (else if) if it is not needed.
- There is no need to write the command (else) if it is not needed.

Example : Creating a project requires the user to enter his grade in the programming subject, and when entering the grade, the program gives us the evaluation according to the following table: -

Score values	Appreciation
greater than or equal to 90	Excellent
89.999 – 80	very good
79.999 – 70	good
69.999– 60	middle
59.999 – 50	Acceptable
less than 50	Weak

To start designing the form, you will need a text box, a Command button, and three labels. We will arrange the form as follows:

Design:

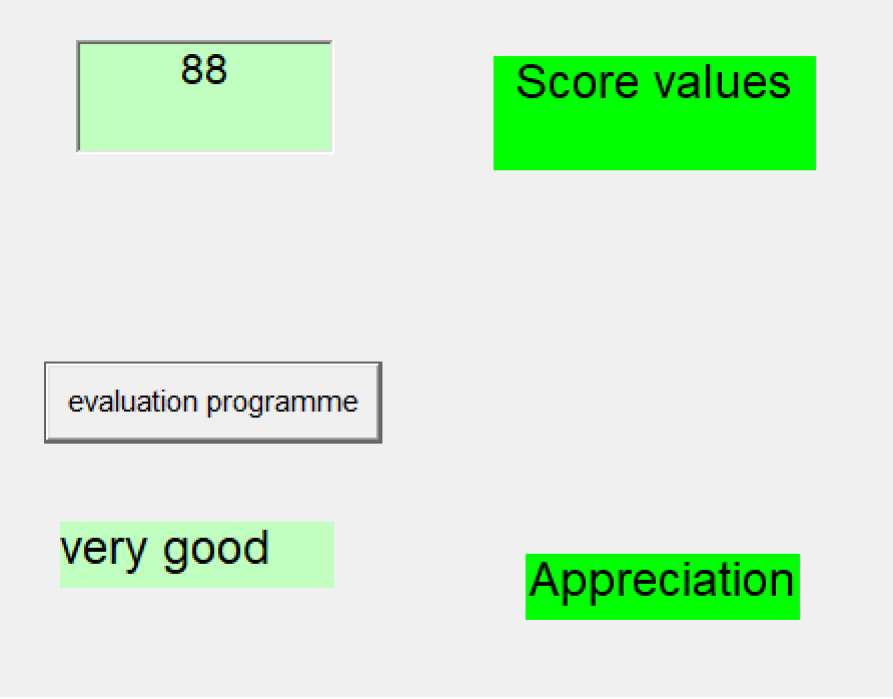


Code:

Then we type the following code commands in the Command key:

```
g=Val (Text1)
If g >= 90 Then
Label3="excellent"
ElseIf g >= 80 Then
Label3 ="very good"
ElseIf g >= 70 Then
Label3="good"
ElseIf g >= 60 Then
Label3="average"
ElseIf g >=50 Then
Label3="acceptable"
Else
Label3 ="fail"
End If
```

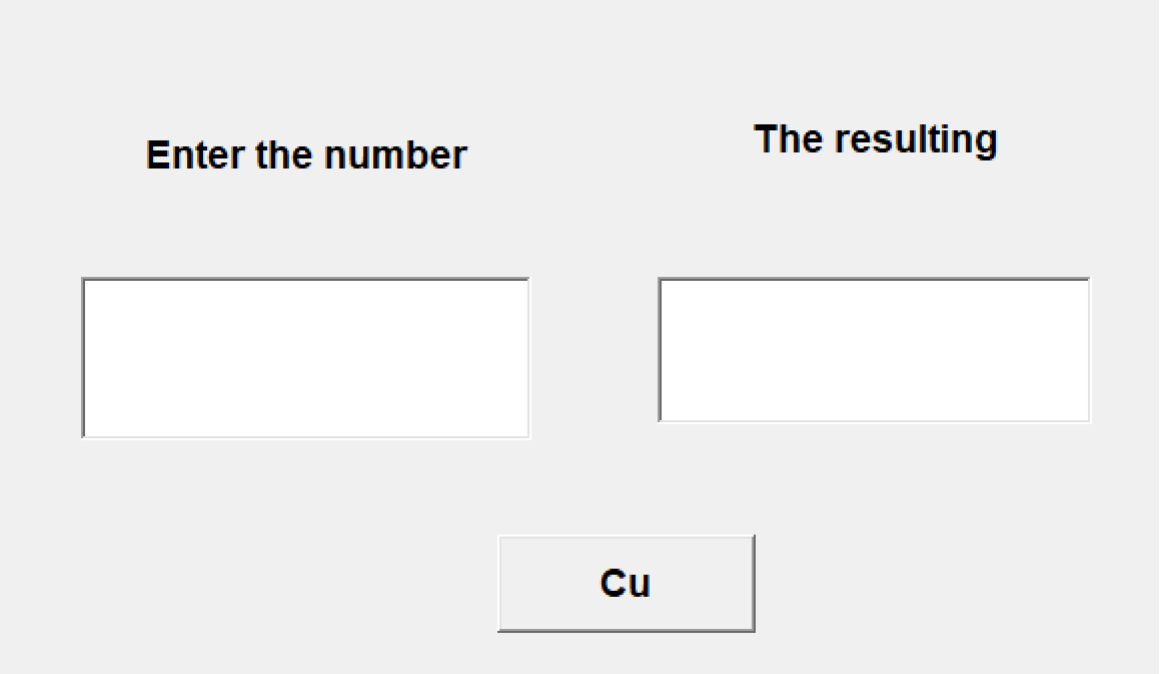
When you run the program and put the degree value, and press the command button, the following happens:



Example : Design a program to implement the following equation

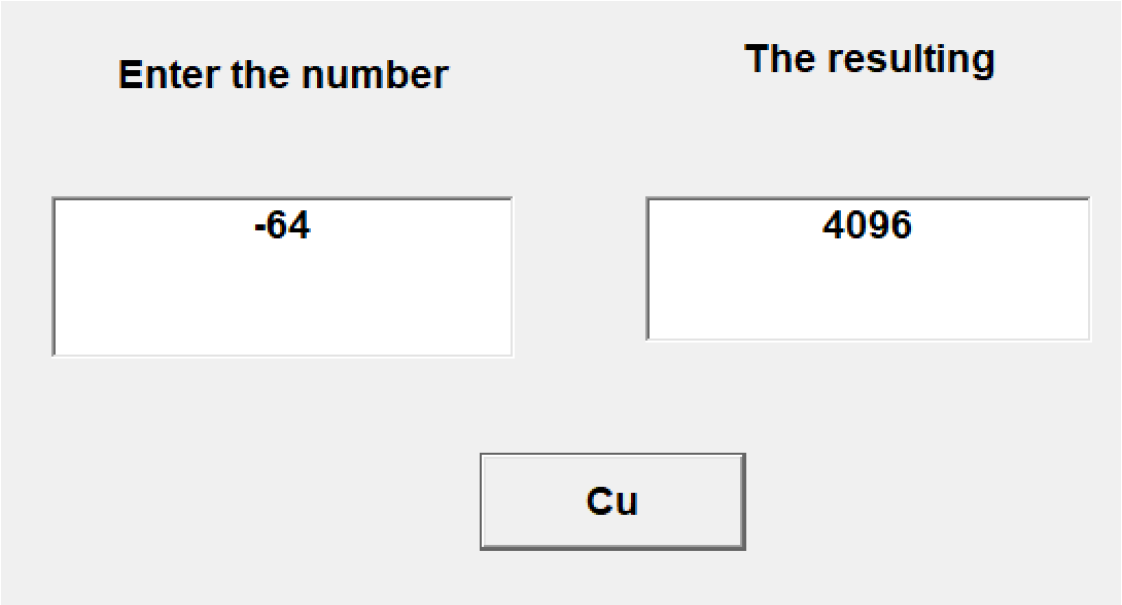
$$Y=\begin{cases} x+1 & x>0 \\ x & x=0 \\ x^2 & x<0 \end{cases}$$

Design:



code

```
Dim x As Long, y As Long
Private Sub Command1_Click()
x = Text1.Text
If x > 0 Then
y = x + 1
ElseIf x = 0 Then
y = x
Else
y = x ^ 2
End If
Text2.Text = y
End Sub
```



Conditional sentence (Select Case)

This conditional sentence works the same as the If – Then – ElseIf conditional sentence, but it is preferable to use it when the Condition has several possibilities.

General formula:

Select Case The expression we want to test
Case is the first possibility
A sentence or group of sentences is executed if the first possibility is fulfilled
Case The second possibility
A sentence or group of sentences is executed if the second possibility is fulfilled
Case The third possibility
A sentence or group of sentences is executed if the third possibility is fulfilled
:::
:::
Case Else
A sentence or group of sentences is executed if none of the above possibilities is met
End Select

Example : Reprogram the previous using the Select Case statement.

```
Select Case Text1
Case 90 to 100
Label3="excellent"
Case 80 to 89,999
Label3 = "Very Good"
Case 70 to 79,999
Label3="good"
Case 60 to 69,999
Label3="average"
Case 50 to 59,999
Label3="acceptable"
Case Else
Label3 ="fail"
End Select
```

The following is a table of conditional operators used with conditional statements:

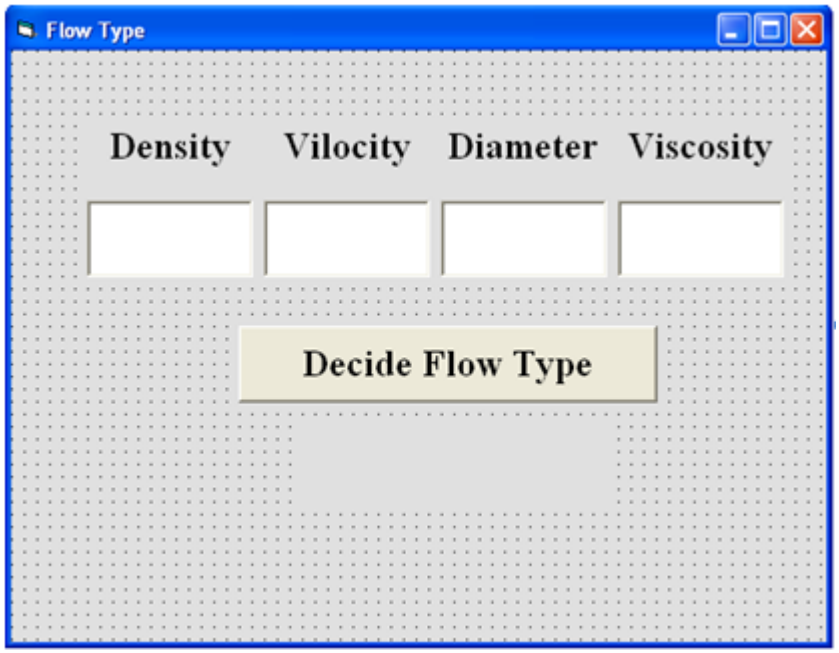
symbol	Operation	meaning
=	equality	If the values are equal
>	less than	If the value on the left is less than the value on the right of the sign
=>	less than equal to	If the value on the left is less than or equal to the value on the right
<	bigger	If the value on the left is greater than the value on the right of the sign
=<	greater than or equal to	If the value on the left is greater than or equal to the value on the right
<>	is not equal	If the two values are not equal

A compound clause (two clauses condition) can contain one of the following expressions:

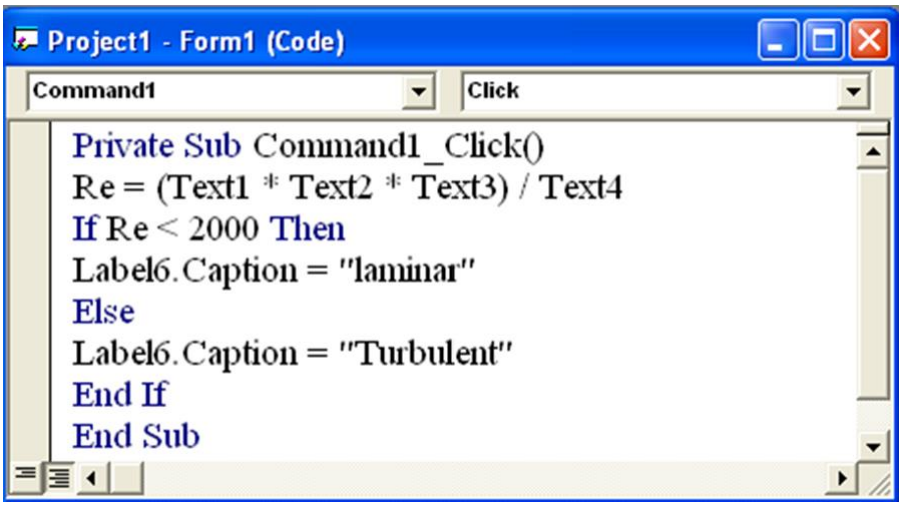
And	When both conditional statements are true, the result is true
Or	When either of the two conditional statements is true, the result is true
Not	When both clauses are false, the result is true
Xor	The result is true when one of the two conditional statements is true. If both conditional statements are true or both conditional statements are false, the result is false

Example : A program is required to calculate the Reynolds number based on entering the density, velocity, diameter and viscosity values. The program gives us the state of flow as follows:
Laminar if Re. No < 2000
Turbulent if Re. No ≥2000
First, create the following window:

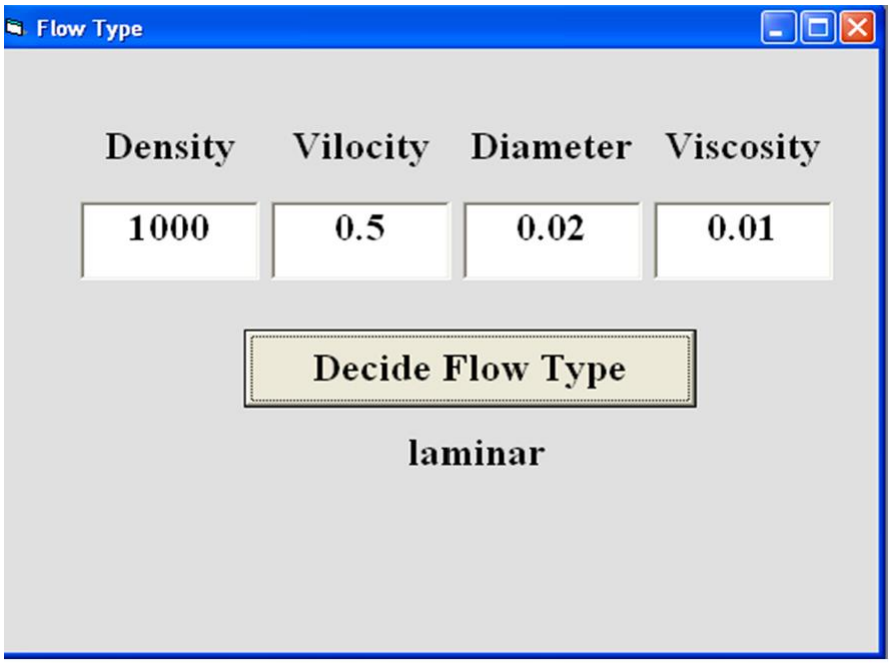
Design:

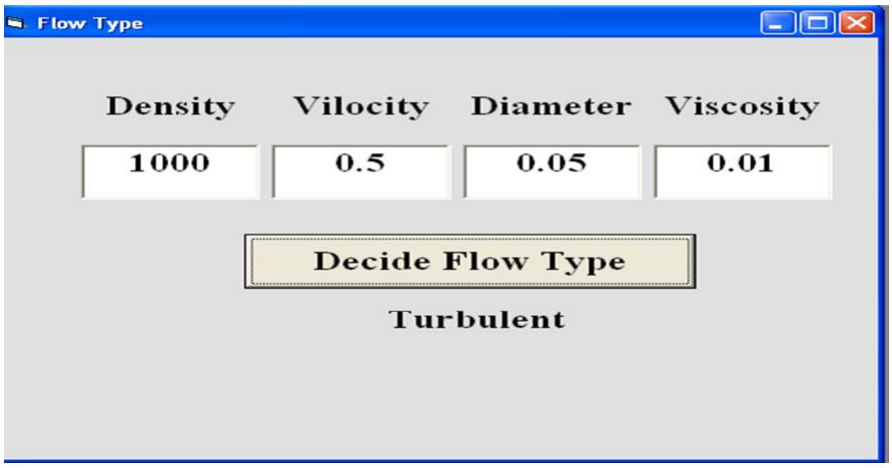


Write the following code to calculate the Reynolds number and find the flow state.



Now enter the values of density, velocity, diameter and viscosity in the fields designated for them and press the command key:


Flow Type
Density
Vilocity
Diameter
Viscosity
1000
0.5
0.02
0.01
Decide Flow Type
laminar


Flow Type
Density
Vilocity
Diameter
Viscosity
1000
0.5
0.05
0.01
Decide Flow Type
Turbulent

moving in (Go to)

There are two types of transmission:

1- Unconditional transition

General formula:

GoTo line

where the line is the number of the line you will go to without a specific restriction.

Example 8:

```
Name="Ahmed"
GoToA
.....
A:
Grade=45
……..
```

2- Conditional transition

General formula:

If Condition Then GoTo line

where the line is the number of lines to go to if the Condition is met.

Example 9:

```
If g >= 50 Then GoTo A
If g < 50 Then GoTo B
A:
Text1="successful"
GoTo C
B:
Text1="fail"
GoTo C
C:
Print Text1
```

Checkbox

This tool is used to select one or more options from a group.
The most important features of this tool are:
Alignment: This property changes the direction of writing from left to right or vice versa.
Value: This property has the following values:

- 0-Unchecked: This means that the Value property of the tool carries a value of 0 in the event that it is not checked in the box.

Check1.value=0 → 

- 1-checked: The value property of the tool holds the value 1 in the case of checking inside the box.

Check1.value=1 → 

Option button

This tool is used to select only one item out of several items, and here unlike the Check box, it is impossible to select more than one item.

The most key features of this tool are:

Alignment: This property changes the direction of writing from left to right or vice versa.

Value: This property has the following values:

- False: The value property of the tool carries the value False in the case of not marking inside the circle.

Ooption1.value=False 

- True: That is, the Value property of the tool carries the value True in the case of marking inside the circle.

Ooption1.value=True 

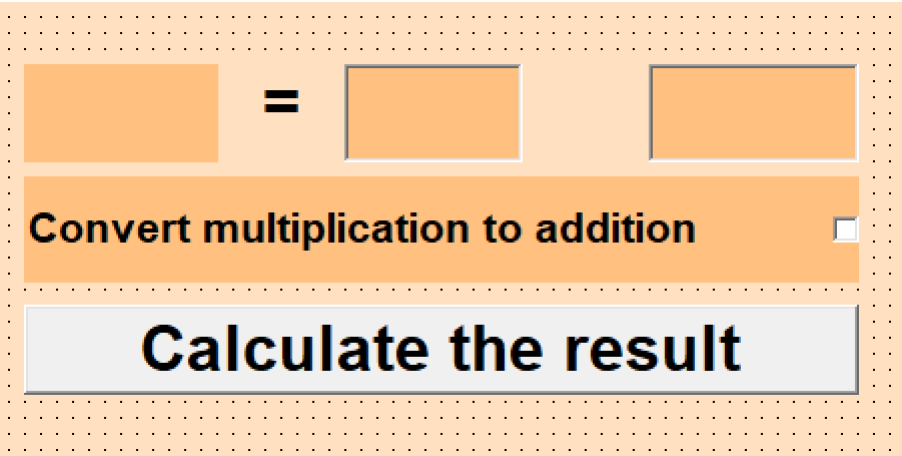
Frame tool

This tool is used as a container for the rest of the other tools to sort the operations and improve the appearance, and we must use the drawing method when placing the tools on it because the double-click method is ineffective.

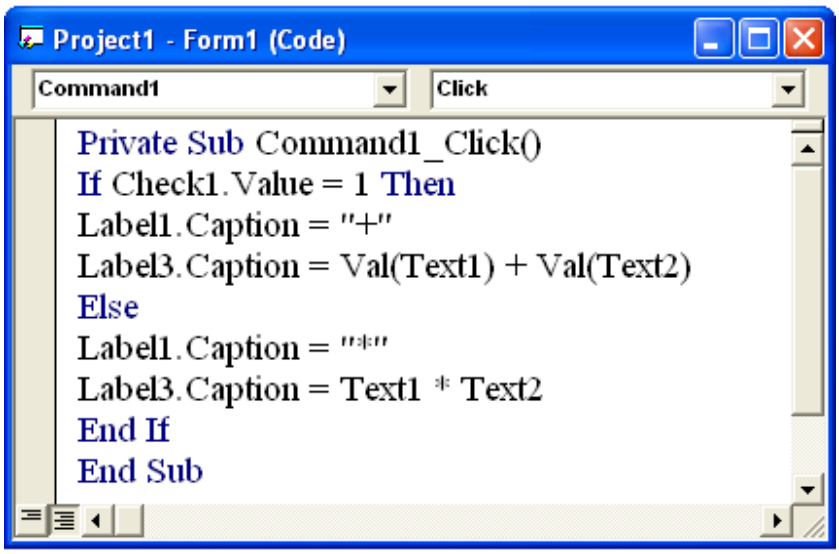
Example 10: It is required to create a program that performs addition and multiplication operations between two numbers using one command button while giving the user the option to convert the operation from addition to multiplication or vice versa.

Window design: In this program, we will need two text boxes, three labels, a Command button, and a Check box, then set the properties of the tools as shown in the following figure:

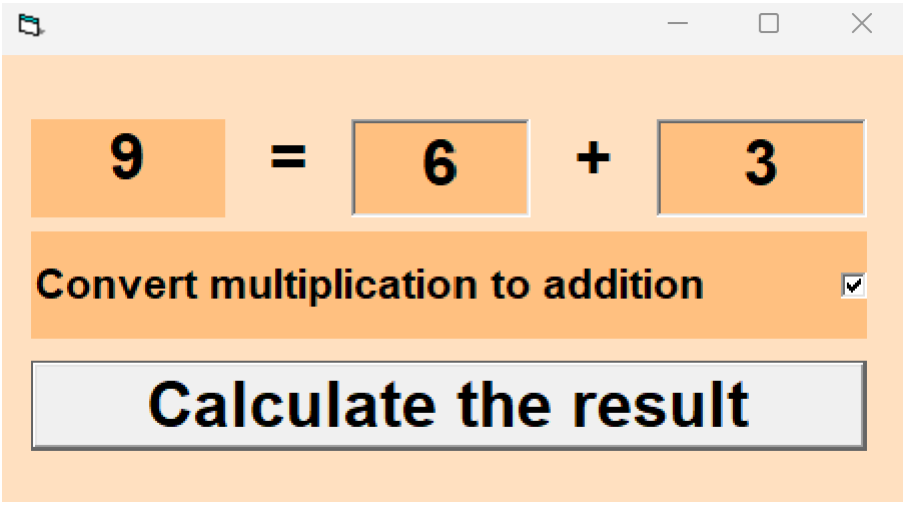
Design:



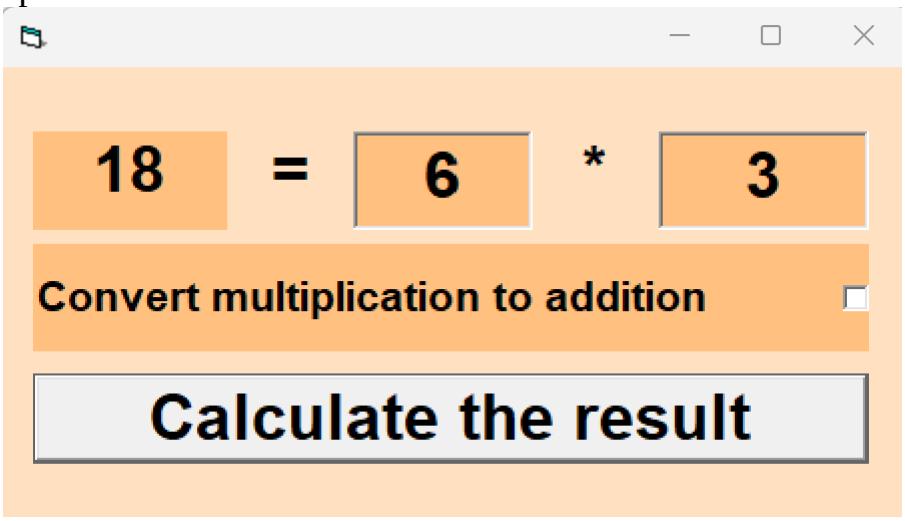
Writing the code:



Implementation of the collection process:

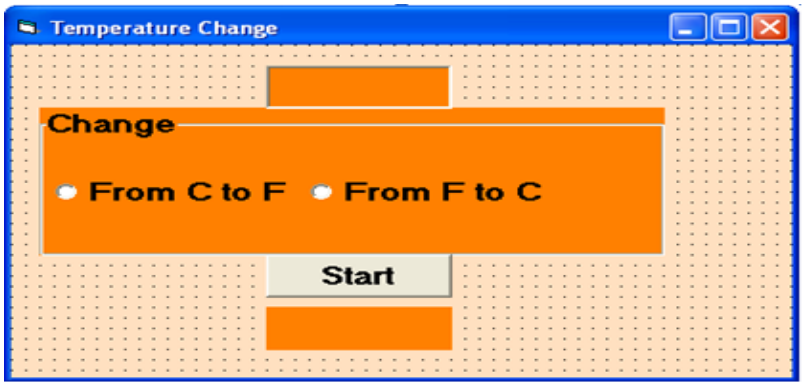


Execute multiplication:

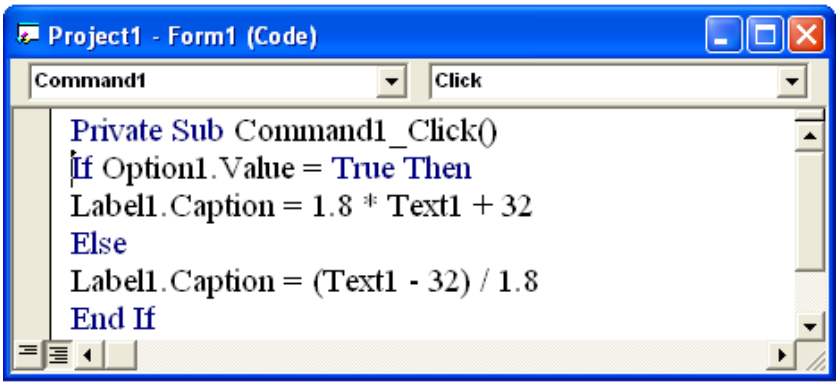


Example : A program is required to convert temperatures from Celsius to Fahrenheit or vice versa.
Window design: In this program, we will need a text box, one Label, a Command button, a Frame tool, and two Option buttons; then, we set the properties for the tools, as in the following figure:

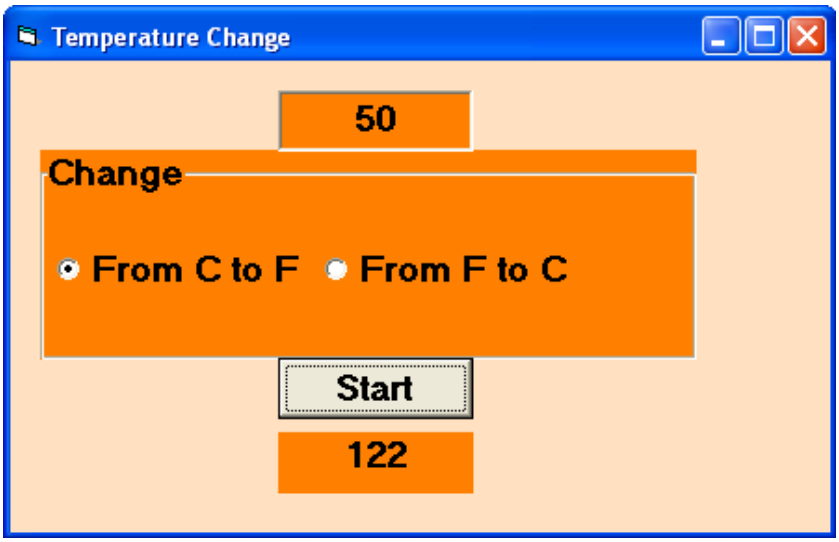
Design:

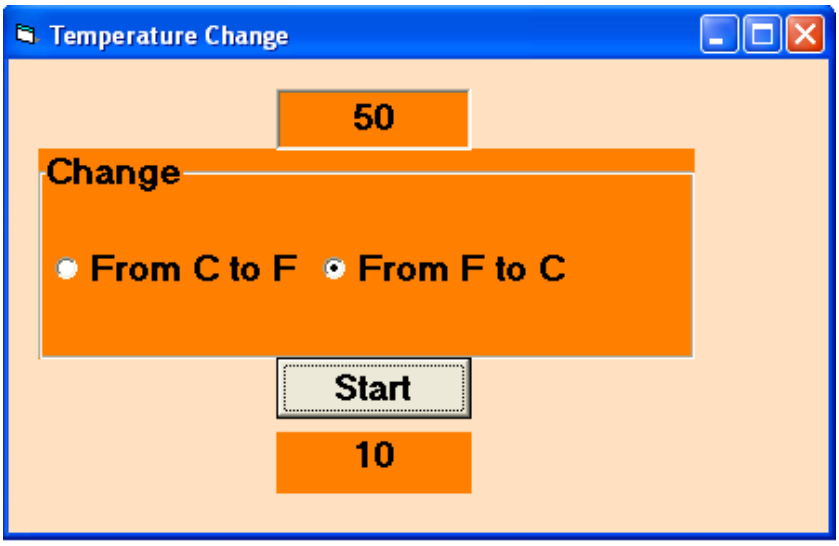


Writing the code:



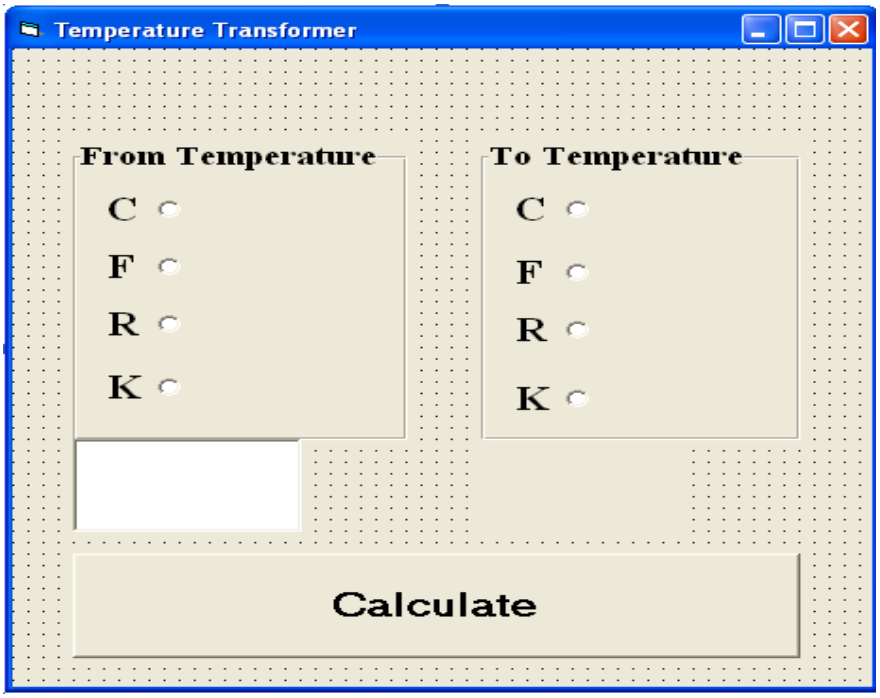
Execution:





Example : It is required to create a program to change the temperature that allows the user to choose one from C, F, K, or R and change it to one from C, f, K, or R.

Window design: In this program, we will need a text box, one Label, a Command button, two Frame tools, and eight Option buttons, where all four Option buttons must be placed in the frame using the drawing method only because using the double-click method will not allow the work of buttons check correctly. Then we set the properties for the tools as shown in the following figure:



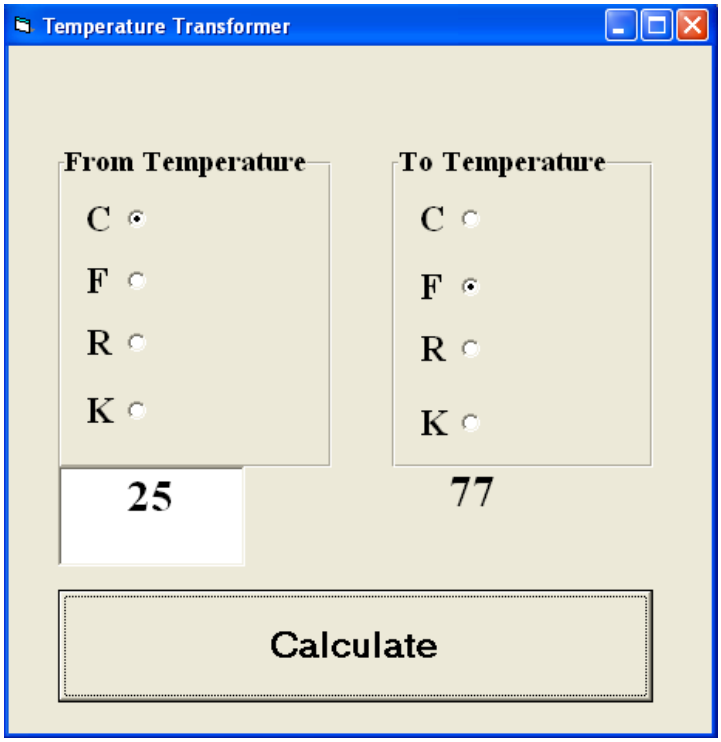
Writing the code: This code must be written in the Command window

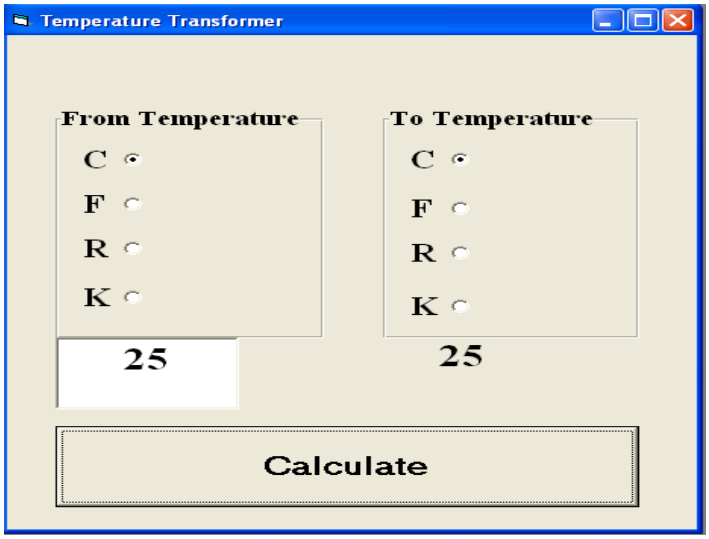
```
Private Sub Command1_Click ()
If Option1.Value = True and Option5. Value = True Then
Label1 = Text1.Text * 1
End If
If Option1.Value = True and Option6. Value = True Then
Label1 = Text1.Text * 1.8 + 32
End If
If Option1.Value = True and Option7. Value = True Then
Label1 = Text1.Text + 460
End If
If Option1.Value = True and Option8. Value = True Then


Label1 = Text1.Text + 273.15
End If
If Option2.Value = True and Option5. Value = True Then
Label1 = (Text1.Text - 32) / 1.8
End If
If Option2.Value = True and Option6. Value = True Then
Label1 = Text1.Text * 1
End If
If Option2.Value = True and Option7. Value = True Then
Label1 = (Text1.Text - 32) / 1.8 + 460
End If
If Option2.Value = True and Option8. Value = True Then
Label1 = (Text1.Text - 32) / 1.8 + 273.15
End If

If Option3.Value = True and Option5. Value = True Then
Label1 = Text1.Text - 460
End If
If Option3.Value = True and Option6. Value = True Then
Label1 = (Text1.Text - 460) * 1.8 + 32
End If
If Option3.Value = True and Option7. Value = True Then
Label1 = Text1.Text * 1
End If
If Option3.Value = True and Option8. Value = True Then
Label1 = Text1.Text - 460 + 273.15
End If
```

```
If Option4.Value = True and Option5. Value = True Then
Label1 = Text1.Text - 273.15
End If
If Option4.Value = True and Option6. Value = True Then
Label1 = (Text1.Text - 273.15) * 1.8 + 32
End If
If Option4.Value = True and Option7. Value = True Then
Label1 = Text1.Text - 273.15 + 460

End If
If Option4.Value = True and Option8. Value = True Then
Label1 = Text1.Text * 1


End If
End Sub
```

It is noted in this code that the And command is used to separate two conditional clauses. With the validity of these two clauses, the commands within the conditional clause will be executed.

Execution:





Exercise 1: It is required to create a program similar to the previous example, but it is used to change the currency between dollars, dinars and euros, depending on entering the following:

- The amount to be transferred
- The exchange rate of the dollar against the Iraqi dinar
- The exchange rate of the euro against the Iraqi dinar

Exercise 2: It is required to create a luck test program with the following specifications:
Using three posters, Each poster shows a random number ranging between 1 and 10 depending on the Rnd command and one command key to execute the program and use a formula for the Condition. The phrase "You are very lucky" appears in a fourth poster if the three numbers match, and the term "You are lucky" if any two numbers match. Only the phrase "You're unlucky" if the three numbers don't match.