COMP1022Q Review Questions Week 5

These practice questions, as well as the answers, are released for the content of each week. These are just for you to practice. You don't have to hand them in. There's no marks for doing them, but it will help your understanding if you go through them.

Q1)

On the right is a worksheet.

	A	B
1	**Venue**	**Capacity**
2	Lecture Theatre C	213
3	Room 2502	122
4	Lecture Theatre A	404
5	Room 2407	126
6	Lecture Theatre G	135

Below is a VBA macro. (It was shown in Q5 of last week's review questions).

```
Sub FindVenue()
    Dim Row As Integer
    Row = 2
    Do While Cells(Row, 2).Value <= 200 And Row < 6
        Row = Row + 1
    Loop
    MsgBox Cells(Row, 1).Value & _
    " is the first venue in the list with capacity larger than 200."
End Sub
```

Someone has converted the Do While … Loop in the macro shown above into Do … Loop While, as shown below.

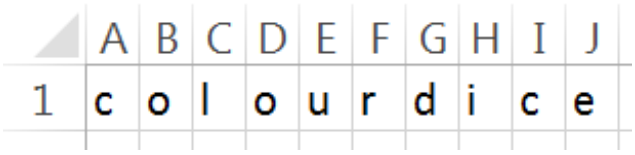
```
Sub FindVenue()
    Dim Row As Integer
    Row = 2
    Do
        Row = Row + 1
    Loop While Cells(Row, 2).Value <= 200 And Row < 6
    MsgBox Cells(Row, 1).Value & _
    " is the first venue in the list with capacity larger than 200."
End Sub
```

If you look at the message box produced by the second macro, will it show the same venue that the first macro shows?

Answer (Yes/No): _____

Q2)

Given the following worksheet,



which one of the following VBA code shows a different message from the other three?

A)

```
Sub GetWord()
   Dim Count As Integer
   Word = ""
   For Count = 1 To 10 Step 3
     Word = Word & _
       Cells(1, Count).Value
   Next Count
   MsgBox Word
End Sub
```

B)

```
Sub GetWord()
  Dim Count As Integer
  Word = ""
  For Count = 10 To 1 Step -3
    Word = _
    Cells(1, Count).Value & Word
  Next Count
  MsgBox Word
End Sub
```

C)

```
Sub GetWord()
  Dim Count As Integer
  Word = ""
  For Count = 1 To 10 Step 3
    Word = _
    Cells(1, 11 - Count).Value _
    & Word
  Next Count
  MsgBox Word
End Sub
```

D)

```
Sub GetWord()
  Dim Count As Integer
  Word = ""
  For Count = 10 To 1 Step -3
    Word = _
    Cells(1, 11 - Count).Value _
    & Word
  Next Count
  MsgBox Word
End Sub
```

Answer (A/B/C/D): _____

Q3) Here is some VBA code.

```
Sub DoLoop()
    Dim X As Integer
    For X = 3 To 12 Step 2
        Cells(1, Int(X / 2)).Value = X
    Next X
End Sub
```

After running the above code in an empty worksheet, what does the content of the worksheet become? You need to fill in the appropriate cells below to show the content of the worksheet after the code has finished running. Remember that `Int()` simply dumps the decimal place.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2													
3													

Q4)

A student has prepared the following worksheet. It contains the highest temperatures for each day in the past four weeks from 10th September to 7th October 2018.

	A	B	C	D	E	F	G	H	I
1		**Mon**	**Tue**	**Wed**	**Thur**	**Fri**	**Sat**	**Sun**	
2	**10 Sep - 16 Sep**	31	32	31	32	33	36	33	
3	**17 Sep - 23 Sept**	30	32	32	32	32	32	32	
4	**24 Sep - 30 Sep**	31	32	30	30	29	31	31	
5	**1 Oct - 7 Oct**	30	31	31	31	30	29	31	

The student then wrote a VBA macro to analyse the temperatures, shown below.

```
Sub LoopInsideLoop()
    Dim Row As Integer
    Dim Col As Integer
    Dim Count As Integer
    Count = 0
    For Row = 2 To 5
        For Col = 2 To 8
            If Cells(Row, Col).Value < 30 Then
                Count = Count + 1
            End If
        Next Col
    Next Row
    MsgBox Count
End Sub
```

When the macro is executed, what is shown in the final message box?

Answer: _____

Q5)

Here is a worksheet.

	A	B
1	**Score**	**Grade**
2	90	A
3	75	B
4	65	C
5	50	D
6	0	F
7		
8	**Score:**	85
9	**Grade:**	B

Part A)

Some VBA code has been written so that the grade of a given score entered in cell B8 is shown in cell B9. The lookup table to assign the grade is shown in cell A2 to cell B6. Cell A2 to cell A6 shows the minimum score that is required to achieve a grade, which is shown in the second column (cell B2 to cell B6). For example, the grade for a score of 95 is 'A'. Similarly, the grade for 75 is 'B', for 74 it is 'C' and for 20 it is 'F'. For this question, you can't use the Excel cell function VLOOKUP or anything like that, all the logic has to be done in VBA. This is to encourage you to get practice with understanding and doing `For` loops in VBA.

You need to fill in the blanks below so that cell B9 shows you the grade correctly.

```
Sub AssignGrade()
    Dim Score As Integer
    Dim Row As Integer
    Dim Grade As String
    Score = Range("B8").Value
    For Row = 2 To 6

        If Score _____________________________________________ Then
            Exit For
        End If
    Next Row

    Range("B9").Value = ___________________________________________
End Sub
```

The image on the last page is shown again here for your easy reference.

	A	B
1	**Score**	**Grade**
2	90	A
3	75	B
4	65	C
5	50	D
6	0	F
7		
8	**Score:**	85
9	**Grade:**	B

Part B)

Let's forget about VBA for this part. Using cell A2 to cell B6 as the conversion table, can a cell formula be created using VLOOKUP (with no VBA) to find the grade for a score just like what you have done for part A?

Answer (YES/NO): _____

Q6)

Here is a worksheet.

	A	B	C
1	**Month**	**Profit**	
2	Jan	$1,000	
3	Feb	$2,600	
4	Mar	-$800	
5	Apr	$3,700	
6	May	$2,700	
7	Jun	-$700	
8	Jul	-$280	
9	Aug	$3,250	
10	Sep	-$280	
11	Oct	-$500	
12	Nov	$2,600	
13	Dec	$3,100	
14			

Cell B2 to cell B13 have been displayed using the currency format. You can ignore the dollar sign shown at the start of those cells when you answer this question, because the dollar signs are not actually inside the content of the cells, they are just displayed by Excel.

```
Sub Process()
    Dim Row As Integer
    Row = 2
    Do While Cells(Row, 2).Value >= 0 And Row <= 13
        Row = Row + 1
    Loop
    MsgBox Row
End Sub
```

Someone has converted the subroutine shown above so that it uses a `For` loop instead of a `Do While … Loop`. The subroutine is shown below. You need to fill in the blanks so that the subroutine below behaves the same as the subroutine shown above. You cannot alter any of the code already given to you.

```
Sub ProcessUsingForLoop()
    Dim Row As Integer

    For ____________________________________________________
        If Cells(Row, 2).Value < 0 Then


            ________________________
        End If
    Next
    MsgBox Row

End Sub
```

Answers to Week 6 Review Questions

Q1)

	A	B
1	**Venue**	**Capacity**
2	Lecture Theatre C	213
3	Room 2502	122
4	Lecture Theatre A	404

The answer is No.

The loop in the second macro will consider the cells in the second column starting from row 2. First, the variable Row contains the value 2. The content of a `Do … Loop While` is always executed at least once. Inside the loop, one is added to the value of the variable Row, which becomes 3. The cell in row 3 and column B (cell B3) is then considered in the condition of the loop.

In this case the value of cell B3 is 122, which is not larger than 200, so the loop continues. The next row is processed. In this case, the value of cell B4 is 404, which is larger than 200, so the loop stops. The value in the first column of row 4 (cell A4) is shown, in this message:

Lecture Theatre A is the first venue in the list with capacity larger than 200.

However, the first macro, which was shown in last week's review questions, shows this:

Lecture Theatre C is the first venue in the list with capacity larger than 200.

The venue shown by the second macro is not the same as the venue shown by the first macro, so the answer is No.

Q2) The answer is D.

Choice A gives the message "code".

In the For loop, the variable Count starts with the value 1. It gets the content 'c' in cell A1 and appends it to the variable word, which is initially empty. Step 3 means the variable Count is increased by 3 for the next iteration. It becomes 4. The character in cell D1 is appended to the variable word which becomes "co". Next, the value of Count is increased to 7. The character in cell G1 is appended to the variable word and it becomes "cod". The variable Count is again increased by 3 to 10 and the character in cell J1 is appended to the variable word which is now "code". After that, Count becomes larger than 10. The loop ends.

Choice B gives the message "code".

In the For loop, the variable Count starts with the value 10. It gets the content 'e' in cell J1 and put it in front of the initial content of the variable word which becomes "e". Step -3 means the variable Count is decreased by 3 for the next iteration. It becomes 7. The character in cell G1 is added in front of the content in the variable word which becomes "de". Next, the value of Count is decreased to 4. The character in cell D1 is added in front to the variable word and it becomes "ode". The variable Count is again decreased by 3 to 1 and the character in cell A1 is added in front to the variable word which is now "code". After that, Count becomes smaller than 1. The loop ends.

Choice C gives the message “code”.

In the For loop, the variable Count starts with the value 1. It gets the content ‘e’ in the cell with row 1 and col (11 – 1), i.e. cell J1, and put it in front of the initial content of the variable word which becomes “e”. Step 3 means the variable Count is increased by 3 for the next iteration. It becomes 4. The character in cell G1 (row 1 and col (11 – 4)) is added in front of the content in the variable word which becomes “de”. Next, the value of Count is increased to 7. The character in cell D1 is added in front to the variable word and it becomes “ode”. The variable Count is again increased by 3 to 1 and the character in cell A1 is added in front to the variable word which is now “code”. After that, Count becomes smaller than 1. The loop ends.

Choice D gives the message “edoc”.

In the For loop, the variable Count starts with the value 10. It gets the content ‘c’ in the cell with row 1 and col (11 – 10), i.e. cell A1, and put it in front of the initial content of the variable word which becomes “c”. Step -3 means the variable Count is decreased by 3 for the next iteration. It becomes 7. The character in cell D1 (row 1 and col (11 – 7)) is added in front of the content in the variable word which becomes “oc”. Next, the value of Count is decreased to 4. The character in cell G1 is added in front to the variable word and it becomes “doc”. The variable Count is again decreased by 3 to 1 and the character in cell J1 is added in front to the variable word which is now “edoc”. After that, Count becomes smaller than 1. The loop ends.

Q3) The answer is:

	A	B	C	D	E
1	3	5	7	9	11

The variable X starts with the value 3 in the For loop. `Int()` dumps the decimal place of a number, i.e. returning the integer part only. So, `Int(3/2)` is 1. The value 3 is placed in the cell A1 (row is 1 and col is 1). Then, X is increased by 2 and it becomes 5. `Int(5/2)` is 2. The value 5 is placed in cell A2. Similarly, X is increased to 7 and `Int(7/2)` is 3. The value 7 is placed in cell A3. X is again increased to 9 and `Int(9/2)` is 4. The value 9 is placed in cell A4. X is then increased to 11 and `Int(11/2)` is 5. The value 11 is placed in A5. Finally, X is increased to 13, which is larger than 12. The loop ends.

Q4) The answer is 2.

The nested For loop (*nested* means something inside something else) visits every cell in cells A2 to H5 and counts how many of those cells have values less than 30. In other words, the code is looking for days which are not too hot. The outer loop starts at row 2 and stops at row 5. The inner For loop starts at column B (column number 2) to column H (column number 8). The If statement increases the value of the variable Count by 1 if the value in the cell is less than 30.

Q5) Part A) The answers are shown underlined below.

```
Sub AssignGrade()
    Dim Score As Integer
    Dim Row As Integer
    Dim Grade As String

    Score = Range("B8").Value
    For Row = 2 To 6
        If Score >= Cells(Row, 1).Value Then
            Exit For
        End If
    Next Row
    Range("B9").Value = Cells(Row, 2).Value
End Sub
```

As the numbers in cell A2 to cell A6 are sorted in decreasing order, we need to find the closest number larger than the value of `Score`. This means we have to look at each number in the first column between row 2 to 8 (i.e. `Cells(Row, 1).Value`) and to stop when the number is smaller than `Score`. So, the condition for the If statement is `>= Cells(Row, 1).Value`. The corresponding value in column B (i.e. `Cells(Row, 2).Value`) is returned.

Part B) The answer is: No

The value we look for may not exist in the conversion table (cell A2 to cell B6). So that means approximate matching has to be employed when the VLOOKUP is done. However, approximate matching has to be performed on numbers which are in **increasing order**. The values in cell A2 to cell A6 are not in increasing order. We cannot write a VLOOKUP formula which gives a correct result.

Q6) The answers are shown underlined below.

```
Sub ProcessUsingForLoop()
    Dim Row As Integer
    For Row = 2 To 13
        If Cells(Row, 2).Value < 0 Then
            Exit For
        End If
    Next
    MsgBox Row
End Sub
```

In the first macro the initial value of `Row` is 2 and the loop ends when the value of `Row` is 13. Equivalently, the `Row` in second macro, which uses a `For` loop, should start with the value 2 and end with the value 13. So the first blank is `2 To 13`.

If we encounter a negative number, the loop must stop. Therefore, the second blank is `Exit For` , which will immediately stop the loop.