FIT 100 Nested For Loops

❖ Just as with Do While loops, we can nest one for loop inside another. This is very common when dealing with 2-dimensional arrays
❖ For each iteration of the outer loop executes, we start the inner loop over again.

```
Dim i As Integer, j As Integer
For i = 1 To 3
   For j = 1 To 2
      Print i, j
   Next j
Next i
```

Result:
1 1
1 2
2 1
2 2
3 1
3 2

FIT 100 Visualizing Nested For Loops

❖ We can show this graphically by drawing a box around the inner loop:

```
Dim i As Integer, j As Integer
For i = 1 To 3
   For j = 1 To 2
      Print i, j
   Next j
Next i
```

Result:
1 1
1 2
2 1
2 2
3 1
3 2

FIT 100 For Loops & Do While Loops

❖ These are equivalent:

```
Dim i As Integer, j As Integer
For i = 1 To 3
   For j = 1 To 2
      Print i, j
   Next j
Next i
```

```
Dim i As Integer, j As Integer
i = 1
Do While i <=3
   j = 1
   Do While j <= 2
      Print i, j
      j = j+1
   Loop
   i = i+1
Loop
```

FIT 100 Mini-Exercise

❖ How many squids does this print?

```
Dim i As Integer, j As Integer
For i = 1 To 20
   For j = 1 To 30
      Print "squid"
   Next j
Next i
```

FIT 100 Mini-Exercise -- Answer

❖ How many squids does this print?

```
Dim i As Integer, j As Integer
For i = 1 To 20
   For j = 1 To 30
      Print "squid"
   Next j
Next i
```

Answer: 600 squids!

FIT 100 Mini-Exercise

❖ What does this print?

```
Dim i As Integer, j As Integer
For i = 0 To 3
   For j = 1 To i
      Print i, j
   Next j
Next i
```

❖ What does this print?

```
Dim i As Integer, j As Integer
For i = 0 To 3
    For j = 1 To i
        Print i, j
    Next j
Next i
```

```
1  1
2  1
2  2
3  1
3  2
3  3
```

Note that the upper bound for the inner loop depends on the loop variable for the outer loop.