

# RE2708

Computational Thinking and Programming for Real Estate







R E 2 7 0 8



*The feature that makes the function **Dir()** so useful is that:*

- a. It can read the entire folder contents in one go.*
- b. When used repeatedly, it keeps reading file names from the same directory specified initially.*
- c. It is a very efficient implementation of a repeated iteration.*
- d. It is used to define a list of file names as String.*



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*The function **Rnd()** generates random numbers:*

- a. Like in a casino.*
- b. **Uniformly distributed between 0 and 1.***
- c. Randomly choosing either 0 or 1, like a coin toss in a casino.*
- d. Corresponding to the respective inflation and interest rate scenario.*



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*In a scenario analysis:*

- a. **We change a particular assumption about the model.***
- b. We change the underlying structure of the model.*
- c. We change a particular piece of code randomly.*
- d. We change specific numbers to be between 0 and 1.*



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**1.** `ActiveCell.Value = "5"`



**2.** `Sub Function f(x)`

`f = 3 * x`

`End Sub`



Function – End Function

**3.** `fPaths = ActiveWorkbook.Path`



**4.** `Range(A5).Value = 37`



Range("A5") or: `Sub a()`

`A5 = "A5"`

`Range(A5).Interior.Color = vbRed`

`End Sub`

**5.** `Range("A1:B5").Value = "Yes"`



**6.** `Range("A1:B5").Cells.NumberFormat("yyyy-mm-dd")`



`NumberFormat` is a property of the Cells object, is it not a method!



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## Exercise:

Write a Sub which uses the function  
***Replace***.

|   | A | B                     | C            | D |
|---|---|-----------------------|--------------|---|
| 1 |   |                       |              |   |
| 2 |   | Email address:        | User ID:     |   |
| 3 |   | johnny.zhang@mail.com | johnny.zhang |   |
| 4 |   |                       |              |   |
| 5 |   |                       |              |   |
| 6 |   |                       |              |   |

## Solution:

```
Sub ExampleCleaning()  
  
    Email = "johnny.zhang@mail.com"  
  
    ID = Replace(Email, "@mail.com", "")  
  
    Range("B3").Value = Email  
    Range("C3").Value = ID  
  
End Sub
```



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## Exercise:

Write a Sub which uses the statement ***With.***

|    | A | B | C | D |
|----|---|---|---|---|
| 1  |   |   |   |   |
| 2  |   |   |   |   |
| 3  |   |   |   |   |
| 4  |   |   |   |   |
| 5  |   |   |   |   |
| 6  |   |   |   |   |
| 7  |   |   | X |   |
| 8  |   |   | X |   |
| 9  |   |   | X |   |
| 10 |   |   | X |   |
| 11 |   |   |   |   |
| 12 |   |   |   |   |
| 13 |   |   |   |   |

## Solution:

```
Sub MyFormatting()  
    With Range("C7:C10")  
        .Value = "X"  
        .Cells.Interior.Color = vbBlue  
        .Font.Size = 20  
        .Font.Name = "Arial"  
        .Font.Color = vbYellow  
    End With  
End Sub
```



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## Exercise:

Write a Sub which lists in column B all the file names found in the folder indicated in cell A1.

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| Name                                       | Date modified     | Type                 | Size     |
|--|-------------------|----------------------|----------|
| RE2708 - Tutorial 1 - Solution.pdf         | 1/9/2022 3:11 pm  | Adobe Acrobat D...   | 431 KB   |
| RE2708 - Tutorial 1 - Solution.pptx        | 1/9/2022 3:10 pm  | Microsoft PowerP...  | 3,568 KB |
| RE2708 - Tutorial 1.pptx                   | 1/9/2022 3:02 pm  | Microsoft PowerP...  | 4,340 KB |
| RE2708 - Tutorial 2 - Valuation model.xlsm | 19/9/2022 1:46 pm | Microsoft Excel M... | 19 KB    |
| RE2708 - Tutorial 2.pptx                   | 19/9/2022 1:02 pm | Microsoft PowerP...  | 3,994 KB |

|   | A   | B  |
|---|---|--|
| 1 | C:\Users\bizcrba\Dropbox\Teaching\RE2708\Tutorials\ | RE2708 - Tutorial 1 - Solution.pdf         |
| 2 |   | RE2708 - Tutorial 1 - Solution.pptx        |
| 3 |   | RE2708 - Tutorial 1.pptx                   |
| 4 |   | RE2708 - Tutorial 2 - Valuation model.xlsm |
| 5 |   | RE2708 - Tutorial 2.pptx                   |

## Solution:

```
Sub ReadMyFiles()  
    fPath = Range("A1").Value  
    fName = Dir(fPath)  
    Range("B1").Value = fName  
    For i = 1 To 4  
        fName = Dir()  
        Range("B1").Offset(i, 0).Value = fName  
    Next  
End Sub
```





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## Exercise:

Write a Sub which lists in column B all the file names found in the folder indicated in cell A1.

|   | A   | B  |
|---|---|--|
| 1 | C:\Users\bizcrba\Dropbox\Teaching\RE2708\Tutorials\ | RE2708 - Tutorial 1 - Solution.pdf         |
| 2 |   | RE2708 - Tutorial 1 - Solution.pptx        |
| 3 |   | RE2708 - Tutorial 1.pptx                   |
| 4 |   | RE2708 - Tutorial 2 - Valuation model.xlsm |
| 5 |   | RE2708 - Tutorial 2.pptx                   |
| 6 |   |  |

### *Learning points:*

- ***Do-Until***
- ***Counter variables:  $i = i + 1$***

## Solution:

```
Sub ReadMyFiles2()  
  
    fPath = Range("A1").Value  
  
    fName = Dir(fPath)  
  
    Range("B1").Value = fName  
  
    i = 1  
  
    Do Until fName = ""  
  
        fName = Dir()  
  
        Range("B1").Offset(i, 0).Value = fName  
  
        i = i + 1  
  
    Loop  
  
End Sub
```





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## Exercise:

Use the workbook "RE2708 - Tutorial 2 - Valuation model.xlsx" to run a scenario analysis.

- Define the scenarios manually.

|                                    |                      |
|------------------------------------|----------------------|
| Insert your scenario analysis here |                      |
| ↓                                  |                      |
| Project discount rate              | Valuation (mil. SGD) |
| 1%                                 | \$40.71              |
| 1.10%                              | \$39.88              |
| 1.20%                              | \$39.07              |
| 1.30%                              | \$38.26              |
| 1.40%                              | \$37.47              |
| 2%                                 | \$36.68              |
| 1.60%                              | \$35.90              |
| 1.70%                              | \$35.12              |
| 1.80%                              | \$34.36              |
| 1.90%                              | \$33.60              |
| 2%                                 | \$32.85              |

## Solution:

```
Sub Scenario1()  
    For i = 1 To 11  
        Range("C4").Value = Range("B34").Offset(i, 0).Value  
        Range("C34").Offset(i, 0).Value = Range("B26").Value  
    Next  
  
    Range("C4").Value = 0.013  
  
End Sub
```



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## Exercise:



Use the workbook "RE2708 - Tutorial 2 - Valuation model.xlsx" to run a scenario analysis.

- Define the scenarios **automatically**.
- Use the **Rnd()** function.

| Insert your scenario analysis here |                      |
|------------------------------------|----------------------|
|                                    |                      |
| Project discount rate              | Valuation (mil. SGD) |
| 1.68%                              | \$35.29              |
| 1.50%                              | \$36.66              |
| 1.51%                              | \$36.57              |
| 1.46%                              | \$36.97              |
| 1.35%                              | \$37.84              |
| 1.40%                              | \$37.43              |
| 1.27%                              | \$38.51              |
| 1.06%                              | \$40.25              |
| 1.24%                              | \$38.72              |
| 1.98%                              | \$33.01              |
| 1.06%                              | \$40.20              |

## Solution:

```
Sub Scenario2()  
  
    low = 0.01  
  
    high = 0.02  
  
    For i = 1 To 11  
  
        Range("B34").Offset(i, 0).Value = low + (high - low) * Rnd()  
  
        Range("C4").Value = Range("B34").Offset(i, 0).Value  
  
        Range("C34").Offset(i, 0).Value = Range("B26").Value  
  
    Next  
  
    Range("C4").Value = 0.013  
  
End Sub
```