COMP1022Q
Introduction to Computing with Excel VBA

RGB

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Outcomes

- After completing this presentation, you are expected to be able to:
  1. Explain the RGB system for representing colour
  2. Change the appearance of cells using RGB

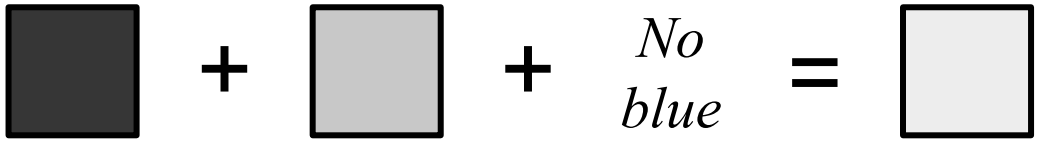
Using Colour in VBA

- There are different ways to use colour
  1. Using a simple number
  2. Using the RGB method
  3. Using colour names

- The second method is the most powerful, because you can ‘design’ any colour you want

How Colours are Made in Computers

- For computers, a colour is actually a combination of red, green and blue (RGB) that gives you a single colour
  - You make one colour by using some amount of red, some amount of green and some amount of blue
- For example, yellow is made of a combination of red and green, without any blue



- Sometimes this is called the RGB colour system

Making an RGB Colour

- To make a colour using RGB, you give three numbers to represent the amount of red, green and blue you need to use
- Usually, the three numbers are each stored in a *byte* (we will not look at what a byte is in any detail)
- A byte stores an integer in the range 0-255 inclusive
- For example, to make yellow, you will use 255 of red, 255 of green and 0 of blue
- White has 255 for all three numbers and black has 0 for all of them

Using RGB in VBA

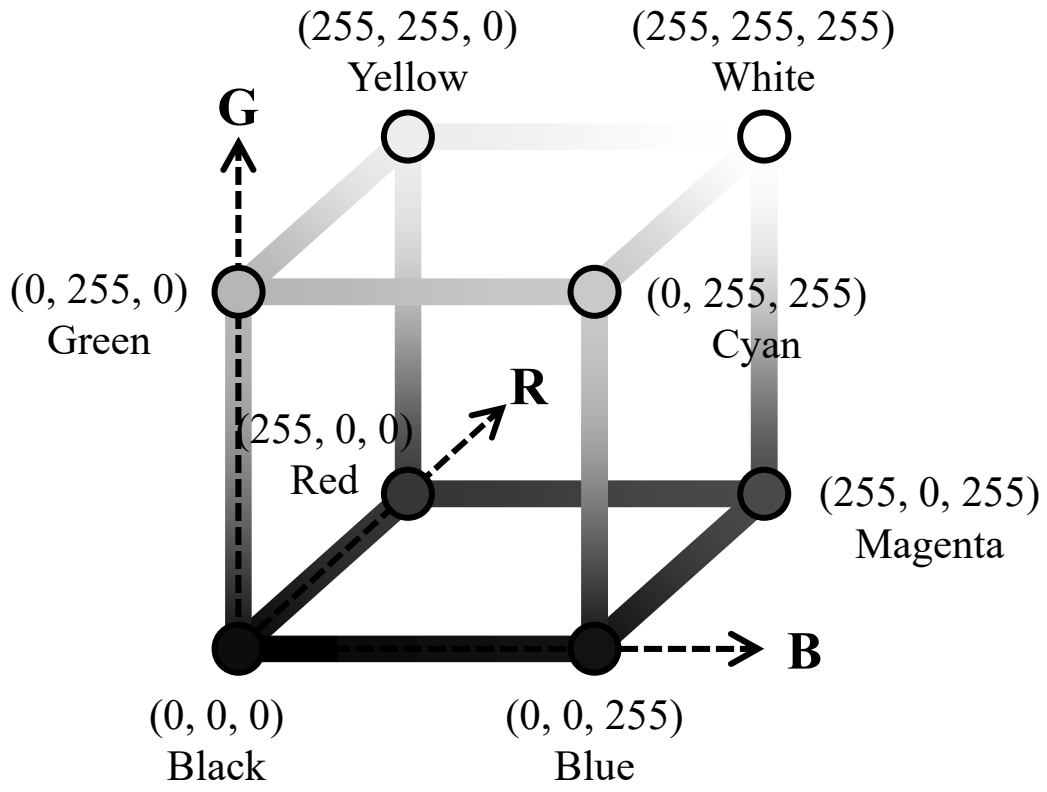
- In VBA, we use the RGB function to create a colour, like this:

RGB(*Red* , *Green* , *Blue*)

  - Each of the three numbers has the range 0-255
- The total number of colours that you can make is then 256 × 256 × 256 = 16.8M!
- To better understand RGB it is useful to think of the 3 numbers as (x, y, z) and then plot colours on a 3D cube

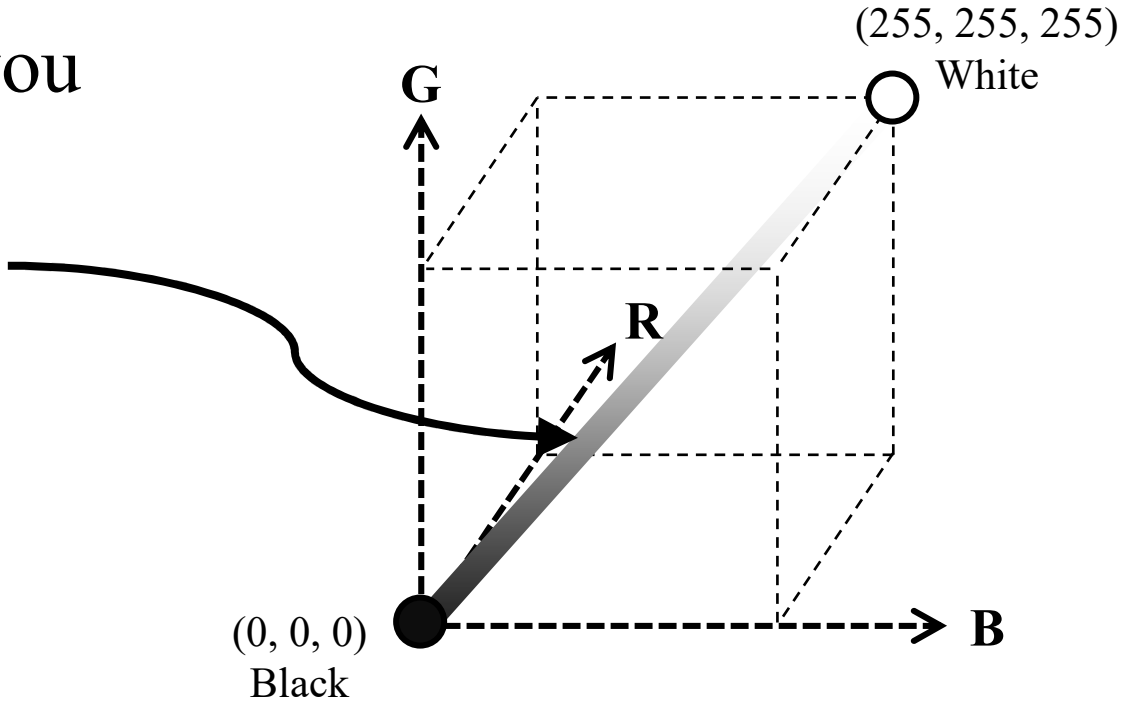
The RGB Cube

- In this diagram the colours at the corners of the cube are listed
- You should know them very well as they are the colour names that you have used before, i.e. vbWhite, vbBlack, vbRed and so on



The Grey Line

- If the values of red, green and blue are the same, i.e. red = green = blue, you get a line between black and white
- On that line, you get different levels of grey



An Example Using RGB

- In this example, three cells (B5, C5 and D5) contain the red, green and blue numbers
- If the numbers are changed the colour of cell C7 will be set to the RGB colour specified by the above cells using the following code:

```
Red = Range("B5").Value
Green = Range("C5").Value
Blue = Range("D5").Value

Range("C7").Interior.Color = _
    RGB(Red, Green, Blue)
```

The colour of cell C7 is set to this RGB colour

More RGB Colours

Red	Green	Blue
255	255	0

Red	Green	Blue
128	128	128

Red	Green	Blue
0	255	255

Red	Green	Blue
0	0	180

Red	Green	Blue
255	140	240

Red	Green	Blue
0	0	0

A Summary

- In VBA, you can specify simple colours using three different ways
  - For example, this line of code:

    ```
    Range("A1").Interior.ColorIndex = 4
    ```

    is equivalent to this line of code:

    ```
    Range("A1").Interior.Color = vbGreen
    ```

    and it is also equivalent to this line of code:

    ```
    Range("A1").Interior.Color = RGB(0, 255, 0)
    ```

- For more variety of colours, you will need to use the RGB function then