COMP4021
Internet Computing

RGB

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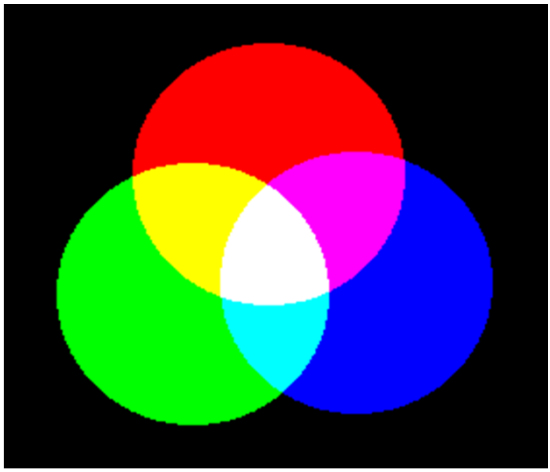
RGB Basics

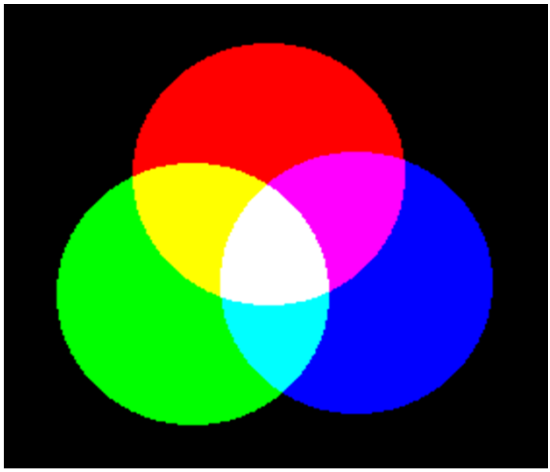
- There are two main approaches for using colour in web pages
  1. Using colour names e.g. brown
  2. Using the RGB method e.g. 150, 75, 0
- The RGB method is the most powerful, because you can ‘design’ any colour you want

RGB Representation



- A colour can be created by a combination of quantities of red (R), green (G) and blue (B) light
- We use 1 number for Red, another number for Green, and a third number for Blue
- The 3 numbers together make one colour
- By varying the numbers, you can create any colour

Three Numbers = 1 Colour



- Red

  An integer 0-255

- Green

  An integer 0-255

- Blue

  An integer 0-255

One single colour

Example - Pink

Counting in hexadecimal:
0 1 2 3 4 5 6 7 8 9 A B C D E F

- For web page programming
  # means hexadecimal

原来rgb和hexadecimal是同一种表示法！

pink is 255, 20, 147 using decimal

pink is #FF1493 using hexadecimal

- The red component is
  $(15*16) + 15 = 255_{10}$
- The green component is
  $(1*16) + 4 = 20_{10}$
- The blue component is
  $(9*16) + 3 = 147_{10}$

Common RGB Colours

• Hexadecimal	• Decimal
#FF0000	RGB (255, 0, 0)
#FF7F00	RGB (255, 127, 0)
#FFFF00	RGB (255, 255, 0)
#FFFF00	RGB (0, 255, 0)
#0000FF	RGB (0, 0, 255)
#4B0082	RGB (75, 0, 130)
#8F00FF	RGB (143, 0, 255)

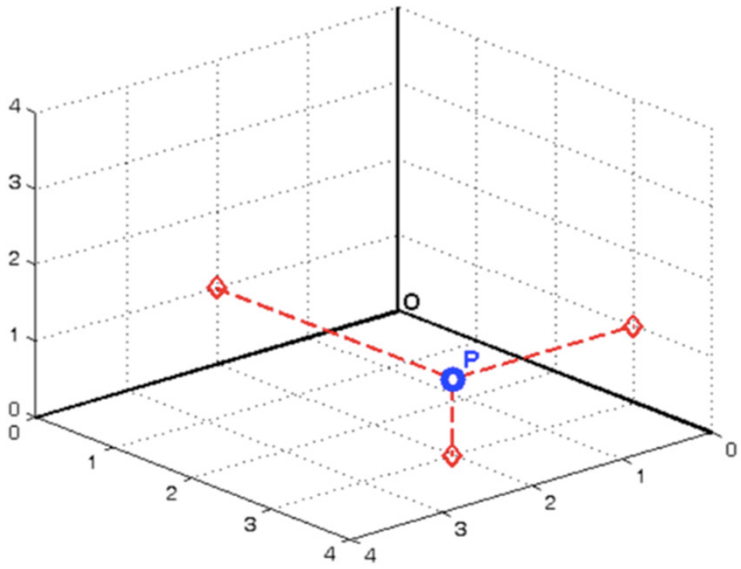
Use USA Spelling For Web Programming

- USA spellings
- UK/Hong Kong spellings

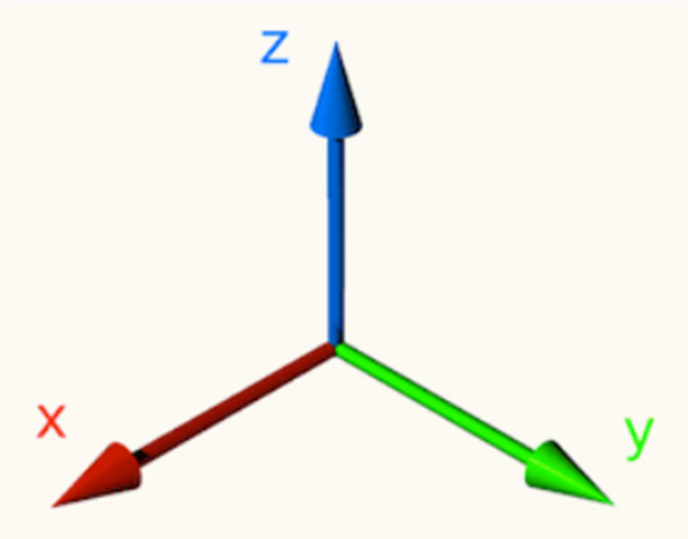
	color	not	colour
	grey	not	gray
Also:	center	not	centre

3D Position

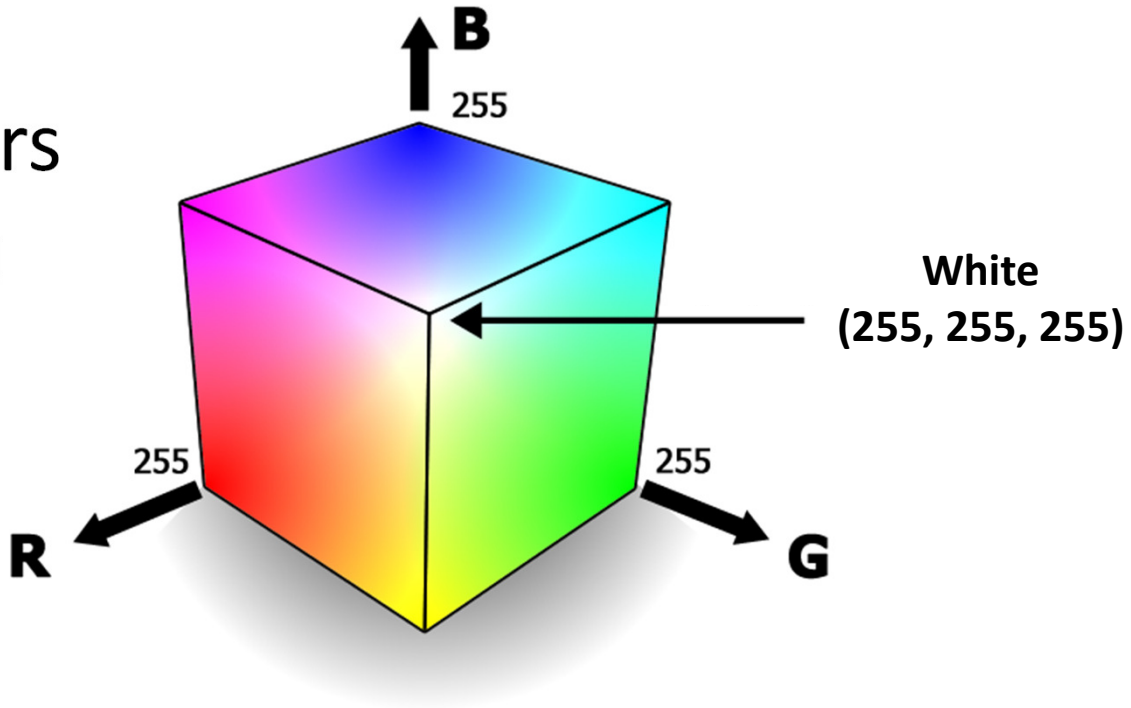
- When we think of a 3D position, we use three axes to help understand it
- The axes are: x axis, y axis and z axis
- The three numbers together give you a 3D position



The RGB Axes

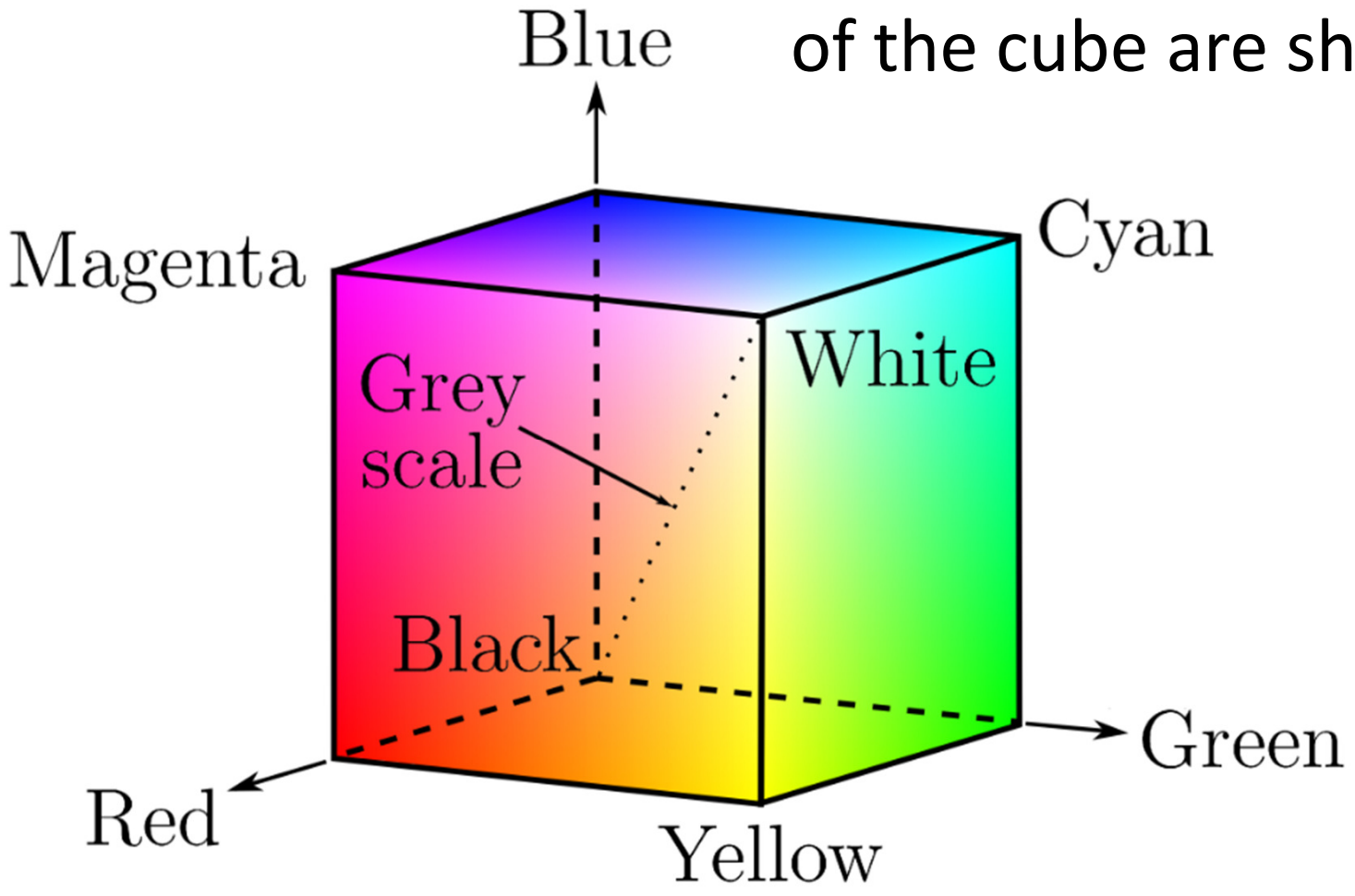


- Similarly, we can use 3 axes for RGB
- The axes are: red axis, green axis, and blue axis
- The three numbers together give you a colour



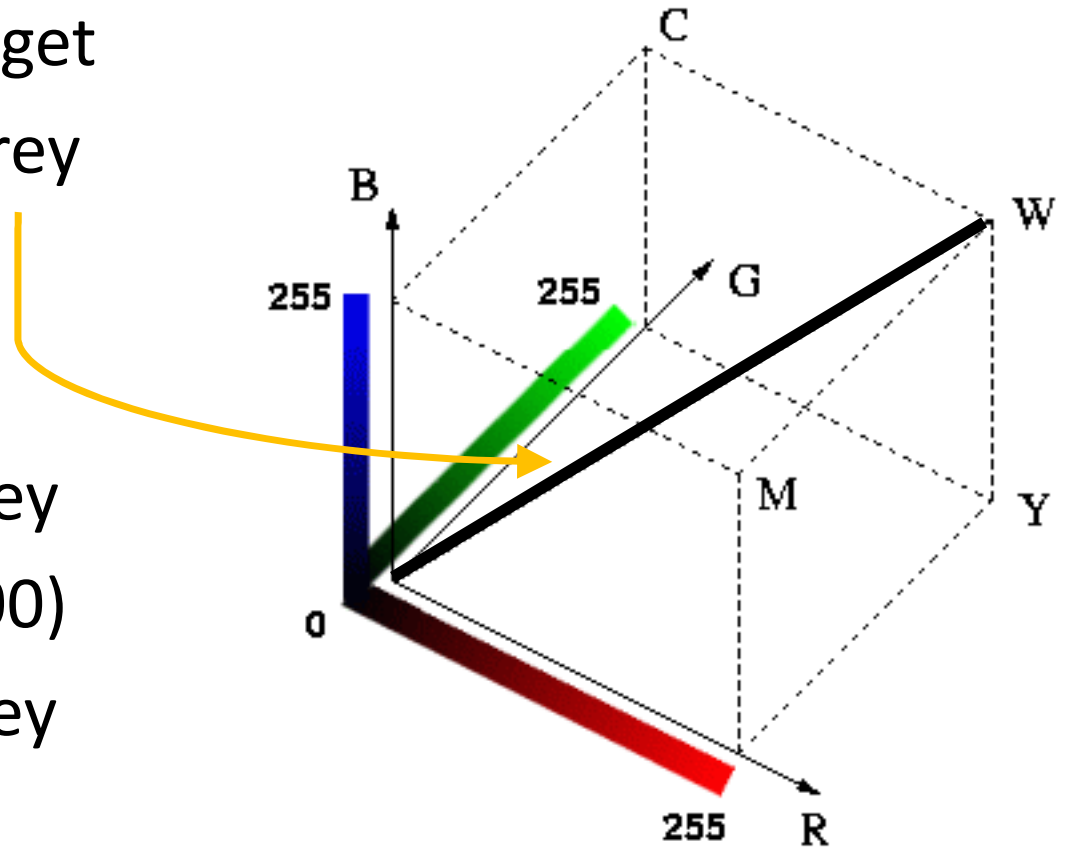
The RGB Cube

- In this diagram the names of the colours at the corners of the cube are shown



The Grey Line

- If red=green=blue then you have a line between black (0, 0, 0) and white (255, 255, 255)
- On that line, you get all the levels of grey
- For example, (50, 50, 50) would be dark grey and (200, 200, 200) would be light grey



R: red
G: green
B: blue
C: cyan
M: magenta
Y: yellow
W: white