CSS 3 Color properties

Overview

- **color** and **background-color** properties
- Color names
- RGB color values - Decimal code
- Transparency
- Opacity property (new CSS 3)
- Gradients (new CSS 3)

color and **background-color** properties

- **color** property:
  - Specifies the color of the **text** of an element

For example

```
h1 { color: blue; }
```

- **background-color** property:
  - Specifies an element's background color

For example

```
h1 { background-color: green; }
```

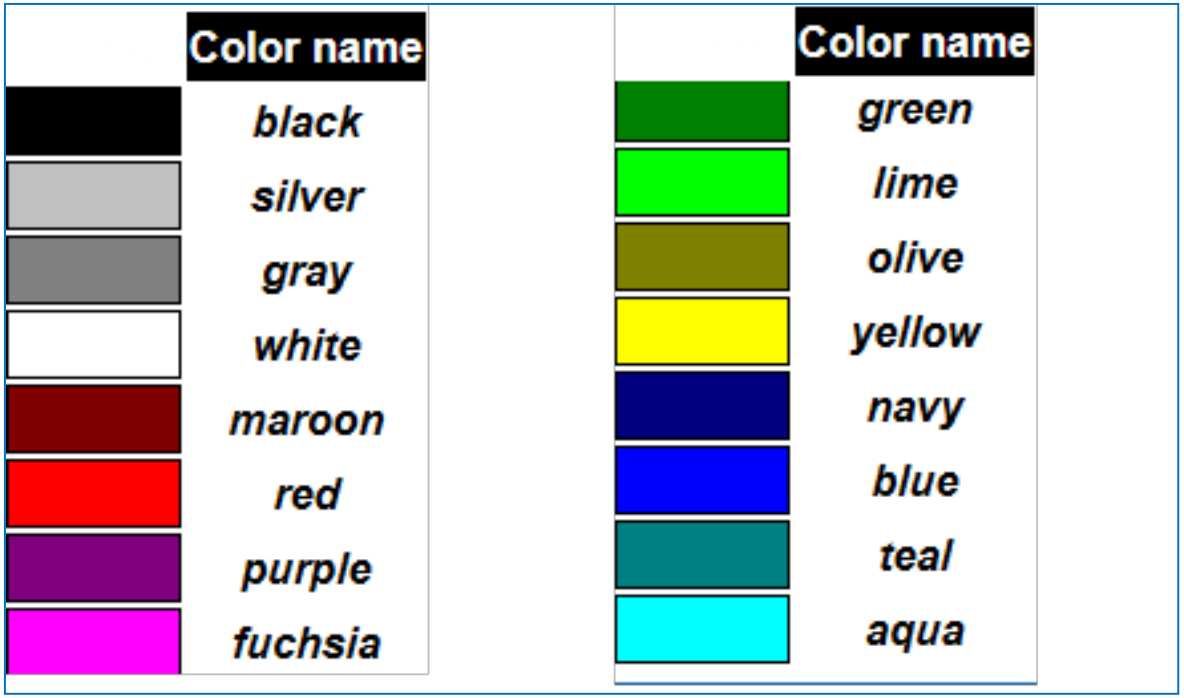
color and **background-color** properties (cont.)

- **color** property:
  - Can be applied to all elements

- **background-color** property:
  - Can be applied to all elements

Color names

- CSS basic color names: (specified by W3C)



Color name
black
silver
gray
white
maroon
red
purple
fuchsia

Color name
green
lime
olive
yellow
navy
blue
teal
aqua

For example

```
h1 { color: maroon;}

h2 { color: aqua; }
```

Color names (cont.)

- Most modern browsers support **140** CSS color names
- Full list of over 140 color names can be found on the W3C website (link below):

https://www.w3.org/TR/css-color-3

(Under Section 4.3)

RGB color values - Decimal code

- **RGB** (red-green-blue) color model:
  - most common way to define color in CSS

- **2 ways** to use RGB color model:
  - **Decimal code**
  - Hexadecimal code

(Our focus)

RGB color values - Decimal code (cont.)

a) RGB color model – **Decimal code**

- syntax:
  rgb(*red*, *green*, *blue*)

- 3 parameters **red, green, blue**
  - represent the intensity of the colors (red, green and blue)
  - can be a **integer value** between **0** and **255**

For example

```
h1 { color: rgb( 0, 255, 0);}
```

Note:
rgb keyword used

This means **green color,** no red and no blue

RGB color values - Decimal code (cont.)

Examples - intensity of the colors

```
h1 { color: rgb( 255, 0, 0); }
```

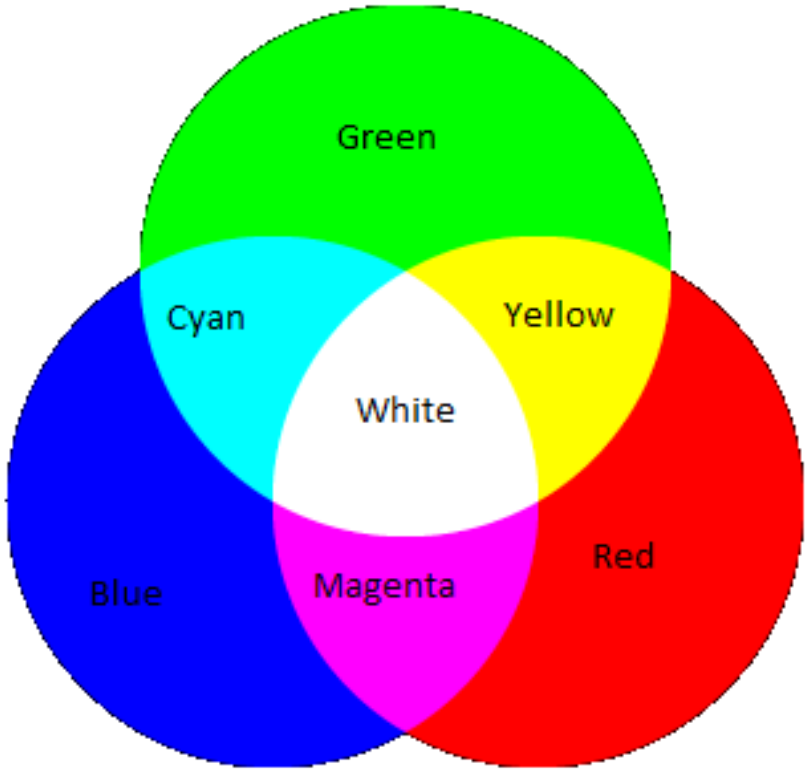
red color, no green, no blue

```
h1 { color: rgb( 0, 0, 255); }
```

blue color

```
h1 { color: rgb( 255, 0, 255); }
```

purple color
(red and blue mix)



Note:
No space between **rgb** keyword
and the opening bracket

RGB color values - Decimal code (cont.)

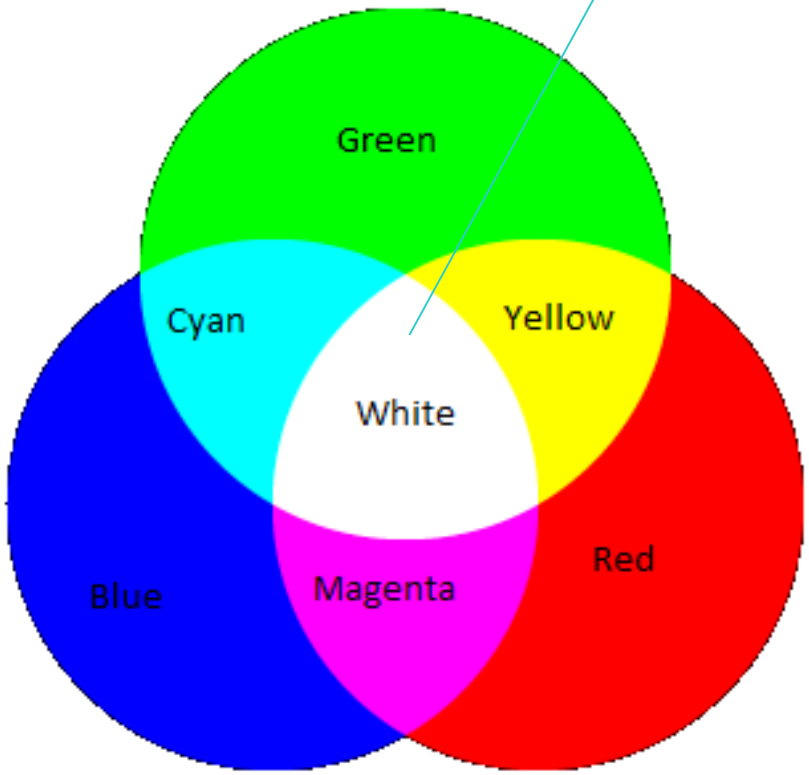
More Examples - intensity of the colors

```
h1 { color: rgb( 255, 255, 255); }
```

white color
(mix of all three primary colors)

```
h1 { color: rgb( 0, 0, 0); }
```

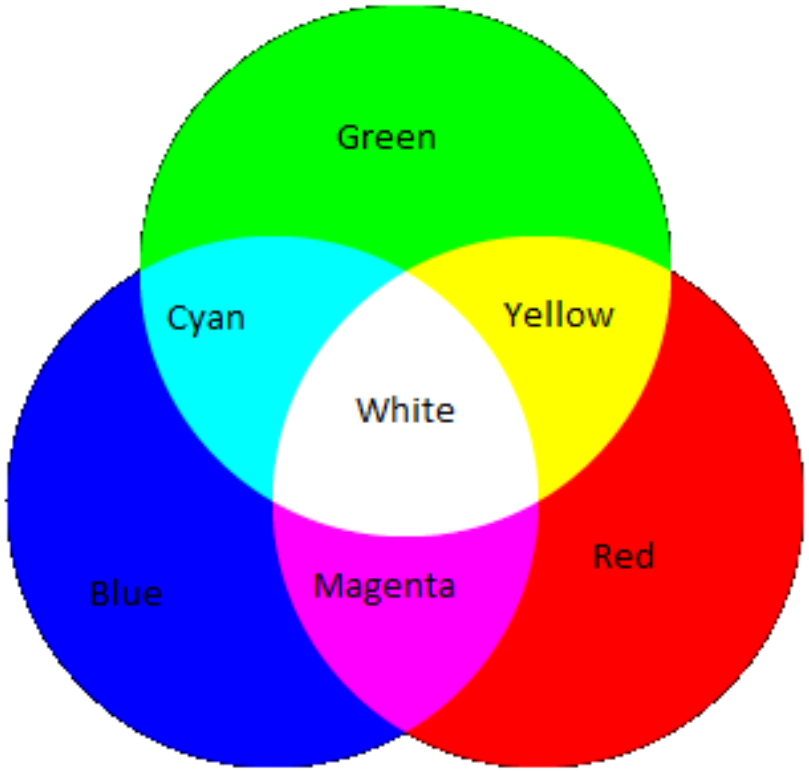
black color
(absence of all three primary colors)



RGB color values - Decimal code (cont.)

More Examples - intensity of the colors

Color name	Decimal
black	0,0,0
silver	192,192,192
gray	128,128,128
white	255,255,255
maroon	128,0,0
red	255,0,0
purple	128,0,128
fuchsia	255,0,255



RGB color values - Decimal code (cont.)

- parameters red, green, blue
  - can **also** be a **percentage value** between **0%** and **100%**

For example

```
h1 { color: rgb( 50% , 0% , 100%); }
```

Note:
integer value 255 is equal to **percentage value** 100%

```
rgb(0,255,255) = rgb(0%,100%,100%)
```

RGB color values - Decimal code (cont.)

b) RGB color model – **Hexadecimal code**

- Uses **#** symbol
- Followed by **3** or **6** **hexadecimal** values

```
p { color: #f00 }                    /* #rgb */
p { color: #ff0000 }                 /* #rrggbb */
p { color: rgb(255,0,0) }
p { color: rgb(100%, 0%, 0%) }
```

Note:
All 4 examples **=** **red** color

RGB color values - Decimal code (cont.)

- **Hexadecimal code**
  - Uses **16** characters
  - Uses numbers (0 – 9) and letters (a – f)

Hexadecimal:	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Decimal:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Example

```
p { color: #f00 }                    /* #rgb */
p { color: #ff0000 }                 /* #rrggbb */
```

RGB color values - Decimal code (cont.)

- Convert from **Hexadecimal** to **Decimal**
- a) start at **right most digit**
- b) multiply right most digit by 16^0
- c) multiply each digit by a multiple of 16, **moving left**, increase the power by 1 for each digit going to the left

Example 1
C9 = 201

9 = 9 * (16 ^0) = 9
C = 12 * (16 ^1) = 192

d) Then, add the **product** results.
9 + 192 = 201

Hexadecimal:	8	9	A	B	C	D	E	F
Decimal:	8	9	10	11	12	13	14	15

RGB color values - Decimal code (cont.)

- Convert from **Hexadecimal** to **Decimal** (cont.)

Example 2
FF = 255

15 = 15 * (16 ^0) = 15
15 = 15 * (16 ^1) = 240

Then, add the **product** results.
15 + 240 = 255

2 examples which **= purple** color

```
p { color: #ff00ff }
p { color: rgb(255,0,255) }
```

255 is the highest value for **RGB color - Decimal code**

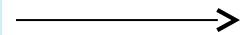
FF is the highest value for **RGB color - Hexadecimal code**

Hexadecimal:	8	9	A	B	C	D	E	F
Decimal:	8	9	10	11	12	13	14	15

Transparency

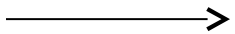
- CSS color transparency:
  - uses **rgba** keyword
  - with **4** parameters (*red, green, blue, opacity)*
  - ***opacity*** *parameter:*
    - *a decimal number between 0 and 1*
    - *indicates the transparency of the color*
    - ***0*** *= fully transparent*
    - ***1 =*** *fully visible*

```
color: rgba(255, 0, 0, 1);
```



web page

```
color: rgba(255, 0, 0, 0.3);
```



web page

Transparency (cont.)

- **transparency** keyword:
  - results in a fully transparent (invisible) color

```
color: rgba(255, 0, 0, 1);
```
→ web page

```
color: rgba(255, 0, 0, 0);
```
→

```
color: transparent;
```
→

Note: the text will be completely invisible in the web browser
-the text **color** is transparent

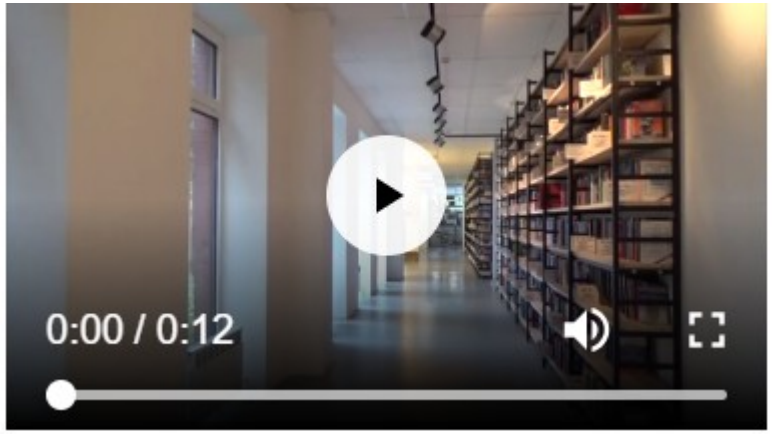
-the text is still present
- the text can be seen if the user highlights the text

web page

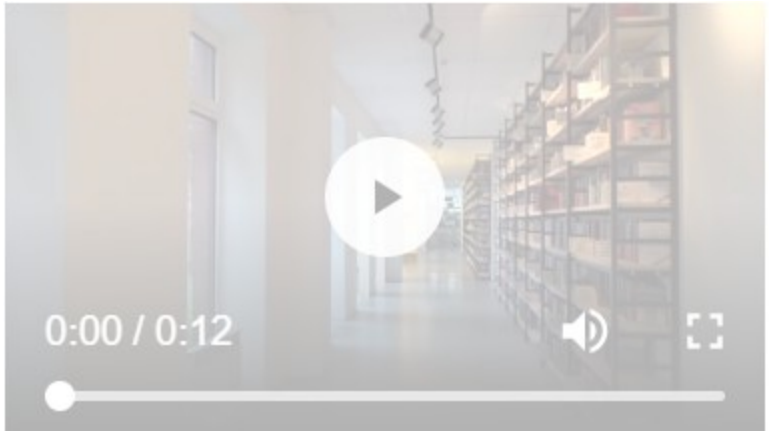
Opacity property

- affects the **transparency** for various elements
  (not limited to text color)

```
video
{ opacity:1; }
```




```
video
{ opacity:0.3; }
```



Opacity property (cont.)

- ***opacity*** *value:*
  - *a decimal number between 0 and 1*
  - *indicates the transparency of the* ***element***
  - ***0*** *= fully transparent*
  - ***1 =*** *fully visible*

```
table
{ opacity:1; }
```


Departments	Contact Person	
Physics	Smith	09923684
	Jane	n/a

```
table
{ opacity:0.1; }
```


Departments	Contact Person	
Physics	Smith	09923684
	Jane	n/a

Opacity property (cont.)

- **opacity** property is new in **CSS 3**

```
img
{ opacity:1.0; }
```

```
img
{ opacity:0.5; }
```

Gradients

- CSS 3 gradient:
  - creates a smooth color transition between two or more colors

- 2 types of gradients
  1. **linear gradient**
  2. **radial gradient**

- **gradients** are new in **CSS 3**

Gradients (cont.)

- Linear gradient
  - Color fades from one color to another in a single direction
  - basic syntax:
  - linear-gradient(direction, color1, color2, ...)

Can include more colors

```
h1
{ background: linear-gradient(to bottom, red, yellow); }
```

- **background** property
- **linear-gradient** keyword

- **direction**
- **color 1**
- **color 2**

Gradients (cont.)

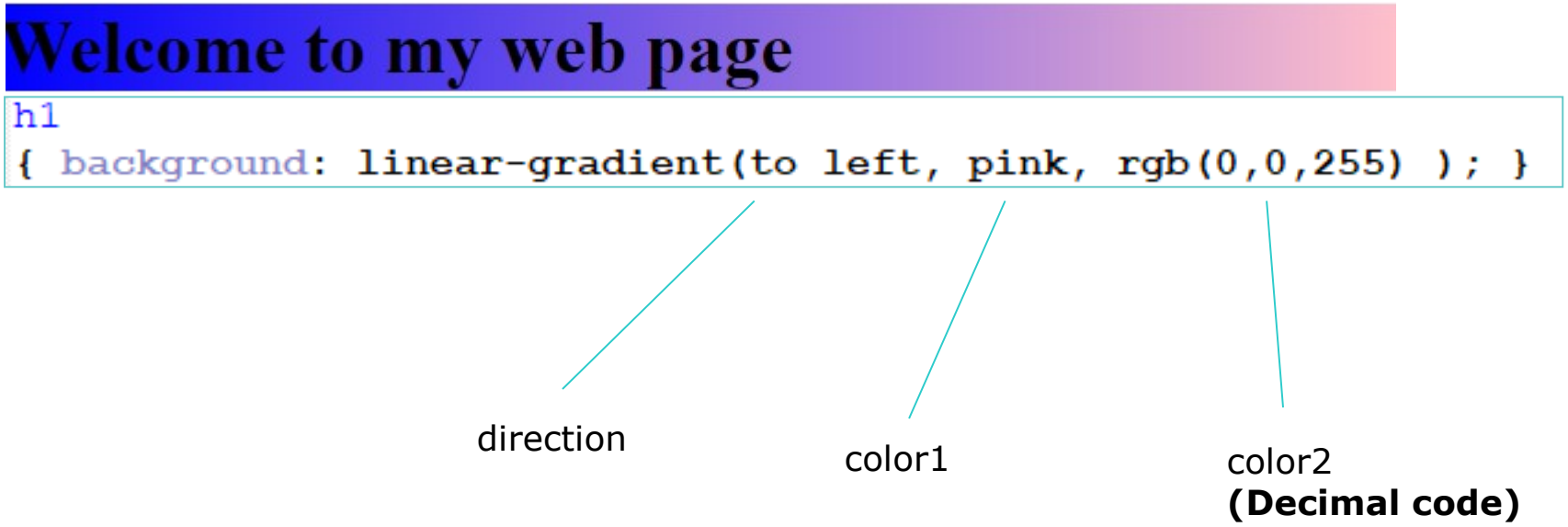
- Linear gradient (cont.)
  - Possible directions: **left, right, top, bottom**

```
h1
{ background: linear-gradient(to top, red, yellow); }
```


```
h1
{ background: linear-gradient(to right, pink, blue); }
```

Gradients (cont.)

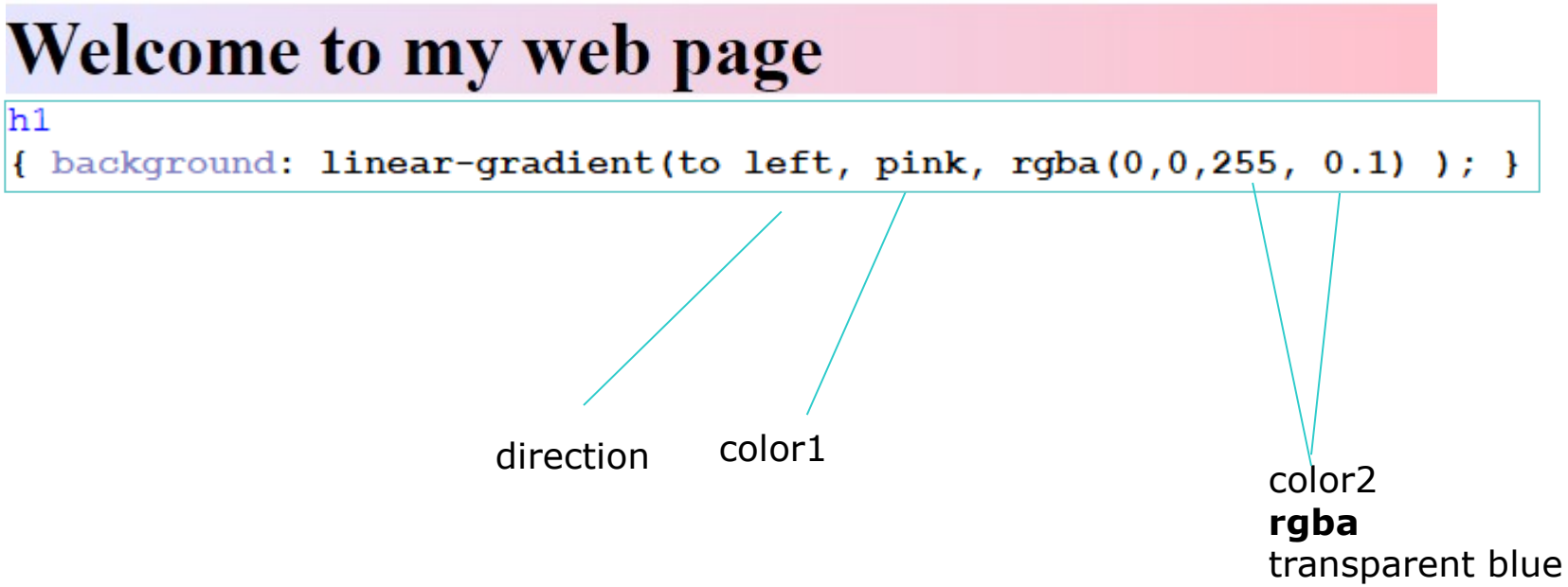
- Linear gradient
- can include **RGB Decimal code** colors



(The example: change color from **pink** to **blue**, from right **to left**)

Gradients (cont.)

- Linear gradient
- can include **RGBA** transparent colors



Gradients (cont.)

- Linear gradient
- can be **diagonal**
- combine a **vertica**l direction and a **horizontal** direction

```
background: linear-gradient(to bottom right, pink, aqua );
```

to bottom right: transition from **color1** to **color2** (color2 in the bottom right)

Gradients (cont.)

- Linear gradient (recap)
  - The basic syntax:
  - linear-gradient(direction, color1, color2);

for example

```
background: linear-gradient(to bottom, pink, aqua );
```

Note: there are more complex uses of linear-gradient (above is the basic syntax)

Gradients (cont.)

- Radial gradient:
  - color begins from a single point and smoothly spreads out in a circular shape

for example

```
background: radial-gradient(pink, aqua );
```

Gradients (cont.)

- Radial gradient
  - basic syntax:
  - radial-gradient(color1, color2);

for example

```
background: radial-gradient(pink, aqua );
```

Note: there are more complex uses of radial-gradient (above is the basic syntax)