



Web design and development II (CW2)

Class 4

Absolute measurement units

An absolute measurement unit is fixed. It never varies whatever the context is.

Although this type of units can be used, they are not always stable and may vary depending on the screen or viewport used to view a web page. It is safer to use variable measurement units.

Pixels (px):

Number of pixels.

At a 72 ppi resolution, 72 pixels is equal to one inch.

Pixels (px) isn't exactly an absolute measurement unit since the display will vary based on screen resolution. However, it is quite the best in this way that it ensures the clearer rendering.

Points (pt):

Measurement unit used in print typography to define font size.

1 point is equal to 1/72 of an inch.

Picas (pt):

Measurement unit used in print typography to define text lines.

1 pica is equal to 12 points.

Inches (in):

1 inch is equal to 2.54 cm.

Centimetres (cm):

Metric measurement unit.

Relative measurements units

A relative measurement unit is variable. It varies based on the context.

Indeed, although a centimetre seems quite small on a big screen, it is fairly big on mobile phone's screen. This is in this type of situations that variable measurement units become very useful.

Em (em):

1 em is equal to 1 time the default font size defined in the code.

If the default font size is 16px, then 2em will equal 32px.

This is the unit we should always be using to specify font size as it is based on the user's default font size. So, for instance, the body of text could be displayed using 1 em, titles 1.5 em and captions 0.7 em.

This unit can also be used to define any dimensions which will then be variable.

The only problem with em is that it is inherited and forces to confusing calculus in many circumstances.

Different approaches to web design

There are different approaches when it comes to web design. Although creating a web site never really was simple (various browsers and platforms requirements, languages or technologies unevenly supported, etc.), it became much more complex.

Indeed, the apparition of devices such as tablets and mobile phones started requiring much more flexibility. It would be foolish to ignore mobile devices as it represents at least 50% of the total Internet traffic.

Fortunately, new languages, new technologies and new design approaches now help us designing web sites. Hence the importance of mastering them and to integrate a continuous learning process into our practice.



Smartphone



Tablet (portrait)



Tablet (landscape)

Static design

Static design (or fixed design) is related to invariable dimensions (for instance 960px) regardless of screen surface. That is how most of web sites were designed until very recently. The beginnings of *Responsive Web Design (RWD)* in the years 2010 was going to change everything.

Dedicated design

Dedicated design consist in building, for instance, a web site for desktop and an alternate web site for mobile phones. In the last case, the web site would have been hosted in a sub-domain such as m.mywebsite.com.

Fluid design

Fluid design (or *liquid design*) consist in an approach using variable units for dimensions (pourcentage, em, vw, etc.). This way, the web site's design automatically adapts to the browser's window size or to the devices viewports.

Adaptive design

Adaptive design consist in an improvement of static design. Dimensions are invariable, but they vary depending on the dimensions detected using media queries. Breaking points are defined so the web sites adapts to different screen formats (320px, 480px, 768px, 1024px, etc.).

Responsive design

Responsive design consist in an improvement of fluid design. Using media queries, the content and the structure of a page are reorganized based on different criteria.

Mobile first

Mobile first est une approche voulant que l'on conçoive d'abord la version mobile du site pour ensuite produire les autres versions en fonction des points de rupture (minimalement : mobile, tablette, ordinateur de bureau).

Progressive enhancement

Progressive enhancement is related to *mobile first* approach consisting into creating the mobile version of a web site first, and then enhancing gradually the volume of content based of the screen dimension. So, there would be more content on a desktop version than on a mobile version of a web site.

Responsive degradation

This approach consist in the opposite of progressive enhancement. Here, the most detailed version of a web site is created first. So content is removed (or hidden) based on screen dimension.

Although it is easier to enhance a web site than to degrade it, it is always more convincing to show a client a detailed version of a web site. This is why many designer prefer this approach.

Common components of a responsive web site

- Page layout based on a fluid grid using variable measurement units.
- Use of images or media and flexible content in order for them not to overflow their containers.
- A mobile first approach and progressive enrichment aimed at accessibility, compatibility and performance of the designed pages.
- Preferences given to all that can be executed server-side in order to optimize the performance of the pages.

The media queries

Media queries can allow for a given CSS file to be used in a certain situation (based on screen size or orientation, for instance) and another CSS file in other situations.

It is also possible to use media queries within the CSS document to give alternate styling based of various factors.

```
<link rel="stylesheet" media="print" href="print.css">
```

```
<link rel="stylesheet" media="screen" href="screen.css">
```

```
<link rel='stylesheet' media='screen and (min-width:600px)' href='medium.css'>
```

```
<link rel='stylesheet' media='screen and (max-width:600px)' href='small.css' >
```

```
media="(orientation:landscape)"
```

```
@media screen {  
    h1 {  
        text-align : center;  
        font-family : Verdana, sans-serif;  
        font-size : 18pt;  
    }  
}
```

```
@media screen and (max-width:600px) {  
    h1 {  
        border : 1px solid blue;  
    }  
}
```