



Responsiveness

Sesiunea 15 - 10/06/2021



Responsiveness: **about**



Responsiveness: **about**

- It's an approach to ensure usability and user satisfaction
- The design and development should respond to the users' behaviour and environment
(about web only, not native - ios, android)
- Params: screen size, platform, orientation
- The platform should respond to the users ecosystem (without the need for a different design and development phase)
- To consider: crowded UIs, user engagement, ease of use and interaction

Responsiveness: **main tools**

- Fluid, proportion-based grids
- Flexible images (and other media)
- Media queries (CSS3)
- Units of measure
- Percentages vs. pixels, points
- max-width/min-width/max-height/min-height



Responsiveness: **viewport meta tag**

- The browsers' viewport is the area of the window in which the content can be seen
- Not being always the same size as the rendered page, the browsers natively provides scrollbars to give the possibility to access all content
- The viewport meta tag was introduced to let devs control the viewport's scale and size
- Basically we want to be able to expand the viewport, rather than zoom it to fit the screen
- The initial-scale property controls the zoom level when the page is first loaded
- Other available attributes like minimum-scale, maximum-scale and user-scalable affect the initial scale and width, as well as limiting changes in zoom level
- Having the viewport vary with the device (smaller on mobile than on desktop), the <meta> viewport gives the browser instructions on how to control the page's dimensions and scaling

Responsiveness: **viewport meta tag**

```
<meta name="viewport" content="width=device-width, initial-scale=1">
```

The Why:

- Control the width and scaling of the browsers' viewport
- width=device-width: matches the screens' width in device-independent pixels
- initial-scale=1: establishes a 1:1 relationship between CSS pixels and device-independent pixels
- Avoid horizontally scrolling
- To avoid shrinking and fitting into a more narrow viewport (mobile)
- To allow media queries to perform effectively

Responsiveness: **viewport meta tag**

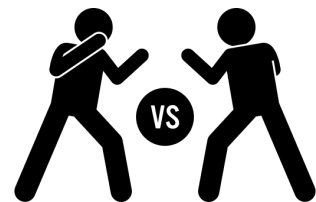
```
<meta name="viewport" content="width=device-width, initial-scale=0.86, maximum-scale=3.0, minimum-scale=0.86">
```

Content props::

- Width (device-width or specific size - 600) - "width=320, initial-scale=1" will fit precisely on a small phone in portrait mode
- Height (device-height or specific size - 600)
- Initial-scale (controls the zoom level at 1st loading of the page)
- Maximum-scale (this and the following control how users are allowed to zoom in/out the page)
- Minimum-scale
- User-scalable

Percentages vs. Pixels

- Key concept for responsiveness is fluidity and proportionality (not given by fixed sizes)
- Relative units of measure help simplify and adapt layouts to various viewports
- With a responsive layout, the user shouldn't need to worry about zooming, scrolling and accidentally hidden content



CSS units

Absolute:

- px (1px=1/96 * 1in)
- in (1in=96px=2.54cm)
- pt (1pt=1/72 * 1in)
- pc (1pc=12pt)
- cm
- mm

Relative:

- em: relative to the font-size of the element (1em=current size of the current font)
- ex: relative to the x-height of the current font
- ch: relative to the width of the 0
- rem: relative to the font-size of the root element
- vw: relative to 1% of the width of the viewport
- vh: relative to 1% of the height of the viewport
- vmin: relative to 1% of viewport's smaller dimension
- vmax: relative to 1% of viewport's larger dimension
- %: relative to the parent element

Note: Since **em** units are calculated based on the root-defined font-size on the parent element, this makes the entire component easily resizable by changing only the font-size of the parent element.

```
.example {
  font-size: 20px;
}
```



/code\



Responsiveness: **basic concepts**

- hide content
- switch content
- sizes/font-sizes
- minimalism is key (not only on mobile)
- UX is the main principle



Media queries

- Filters that can be applied to CSS styles
- Styles can be changed based on the characteristics of the device rendering the content, including the display type, width, height, orientation, resolution
- The logic is not mutually exclusive: for any filter meeting the criteria the resulting CSS block is applied using the standard rules of precedence
- Usage: dedicated files, **@media** rule

Media queries: separate files

```
<link rel="stylesheet" media="(max-width: 640px)" href="max-640px.css">  
<link rel="stylesheet" media="(min-width: 640px)" href="min-640px.css">  
<link rel="stylesheet" media="(orientation: portrait)" href="portrait.css">  
<link rel="stylesheet" media="(orientation: landscape)" href="landscape.css">  
<link rel="stylesheet" href="print.css" media="print">
```

Media queries: @media rule

```
@media (query) {  
    /* CSS Rules used when query matches */  
}
```

query:

- min-width: rules applied for any browser width **greater than** the defined value in the query
- max-width: rules applied for any browser width **less than** the defined value in the query
- min-height: rules applied for any browser height **greater than** the defined value in the query
- max-height: rules applied for any browser height **less than** the defined value in the query
- orientation=portrait: rules applied for any browser where the height is **greater than** or equal to the width
- orientation=landscape: rules applied for any browser where the width is **greater than** or equal to the height



/code\



Breakpoints

- The content should determine how the layout adjusts to its container
- Never create breakpoints based on specific devices, products or brands
- Pick major breakpoints, then improve
- Pick minor breakpoints when necessary
- Mobile first is the best approach for responsive design



Breakpoints: devices (it's a no!)

- 360x640
- 1366x768
- 1920x1080
- 375x667
- 360x720
- 768x1024
- ...



Breakpoints: Yes!

value	0px	600px	960px	1280px	1920px
key	xs	sm	md	lg	xl
screen width	-----	-----	-----	-----	----->
range	xs	sm	md	lg	xl

Declarative:

- Phone: @media (max-width: 599px) {}
- Tablet-portrait: @media (min-width: 600px) {}
- Tablet-landscape: @media (min-width: 900px) {}
- Desktop: @media (min-width: 1200px) {}

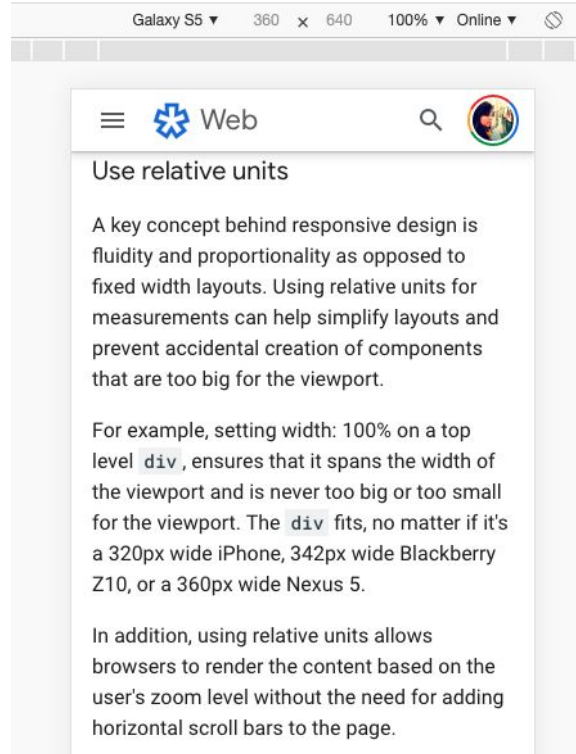




/code\



Testing tool: **Chrome DevTools**



Testing tool: **BrowserStack** [\(website\)](#)



BrowserStack Responsive

Products ▾

Developers ▾

Solutions ▾

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







FREE TRIAL

Responsive Design Testing on Real Devices

Check website responsiveness on multiple iOS & Android devices

<http://www.google.com/search?q=einstein>

Check

												
iPhone X	Galaxy Note 10	iPhone 8 Plus	Galaxy S9 Plus	iPhone SE	Pixel 3 XL	iPad Mini 2019	Galaxy S7	iPad Pro	Kindle Fire HDX 7	Galaxy Tab S4	Windows	Mac OSX
375x812	412x869	414x736	412x740	320x568	412x846	768x1024	360x640	1024x1366	600x960	1134x712	1280x1024	1920x1080
												

Try Live Interactive Testing on 2000+ real browsers and devices. [Get Started Free](#)



iPhone X

Galaxy Note 10 >

Viewport: 375x812 | Screen size: 5.8" | Monitor size: 15.4"



Portrait



Landscape

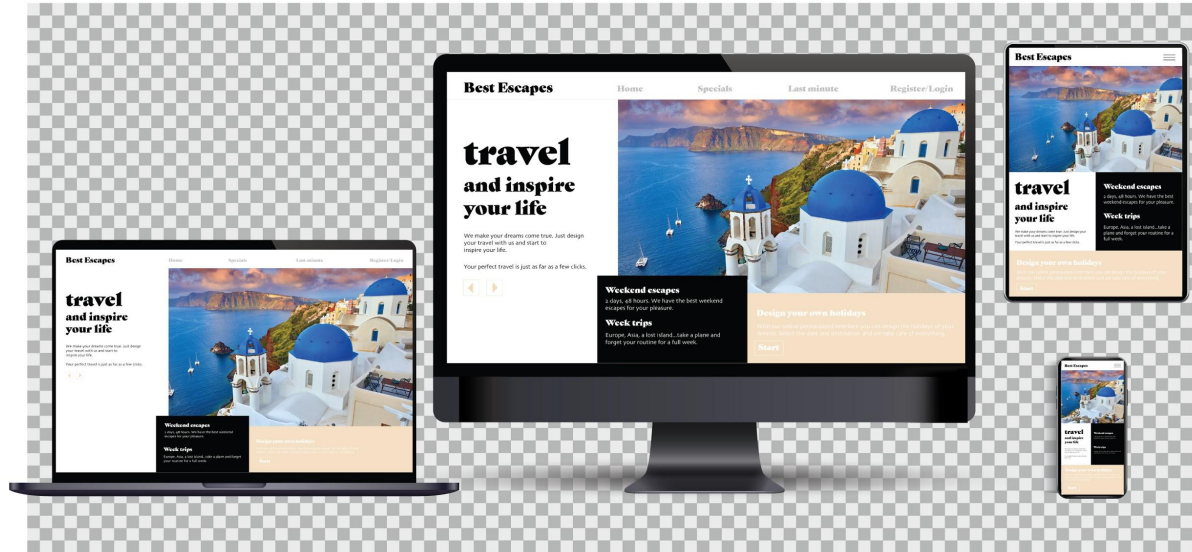




/Assignment\



Assignment #8



- Well-formed doc
- Semantic tags
- External stylesheet
- Use font awesome for the icons (arrows, sandwich menu on mobile)
- Responsive layout, using media queries

Useful info:

- Fonts: Gastromond, Skia (or similar)
- Color hex: #f4dfc4 (nude), #a0a0a0(gray)

/code: content switch technique\



Resources

- Web Fundamentals: <https://developers.google.com/web/fundamentals/design-and-ux/responsive>
- Viewport meta tag: https://developer.mozilla.org/en-US/docs/Mozilla/Mobile/Viewport_meta_tag
- Breakpoints: <https://material-ui.com/customization/breakpoints/>
- **BrowserStack:** <https://www.browserstack.com/>



/Q&A\





Thank you

Next: Introduction to JS

