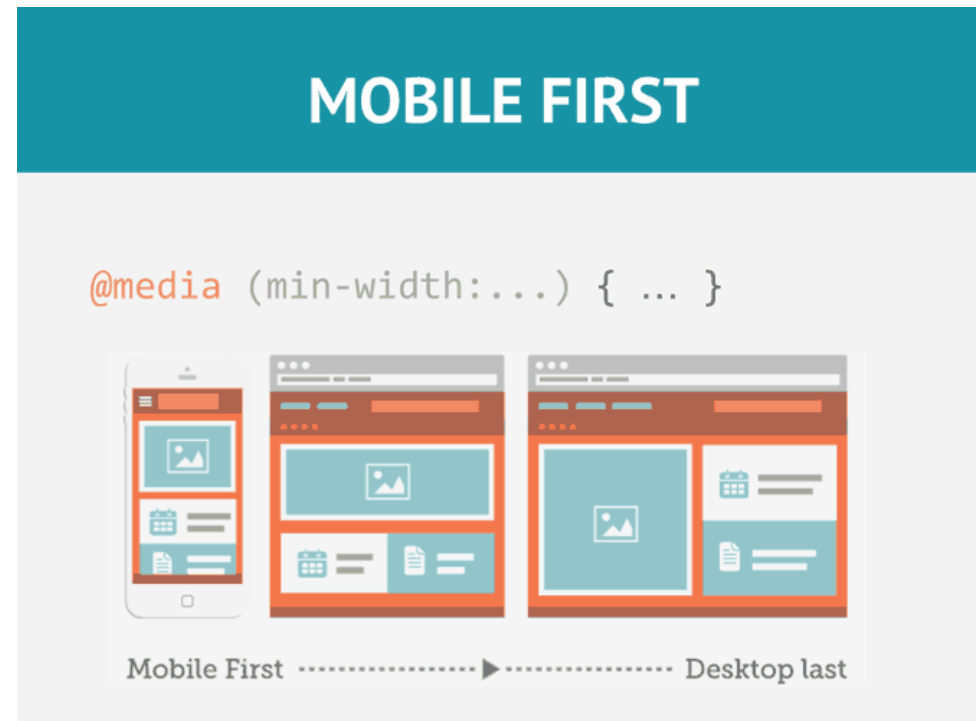# Responsive Design

– Definition

– Mobile 1st

– Viewport Size & Pixel Ratio

– Media Queries

Agenda

Responsive Design

– we want to ensure that

our Angular app looks good on any device

Mobile 1st

– Typically you start implementing the mobile version
  – more than 3/4 of access thru mobiles

– Use media queries for
  – tablet (e.g. 2 columns)
  – laptop (e.g. 3 columns)
  – desktop (e.g. 4 columns)

MOBILE FIRST

@media (min-width:...) { ... }

Mobile First ·········▶·········· Desktop last

https://www.silocreativo.com/en/media-queries-css-work/

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Viewport Size & Pixel Ratio

– Viewport Size

– Device Orientation

– Pixel Ratio
  – "Retina" === 2x → 4px for 1
  – nowadays 3x → 9px for 1

– https://www.mydevice.io/
  – https://yesviz.com/viewport/
  – <meta name="viewport" content="width=device-width, initial-scale=1" />

Media queries

– media queries are like if statements depending on viewport

MEDIATYPE

```
@media not|only mediatype
all
print
screen
speech
braile / projection / tv (Deprecated)
```

MEDIA FEATURE

```
@media and|not|only (media feature)
height
width
max-height / min-height
max-width / min-width
```

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Media queries examples

- @media (min-width: 640px) {} /* tablet */
- @media (min-width: 960px) {} /* laptop */
- @media (max-width: 1280px) {} /* desktop */

- @media (min-width: 40em) and (orientation: portrait) {}

- @media (min-resolution: 1.5dppx) {} /* higher density */

https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_media_queries/Using_media_queries

Best Practices

– use px for media queries

– mobile first, then use min-width

– make images responsive (width in %)
  – use <img> srcset, avoid background images

– test on different (also native) devices

Tips

Responsive Design

– Definition

– Mobile 1st

– Viewport Size & Pixel Ratio

– Media Queries

Summary

Questions?

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