HCI and Design

Today

Design patterns and components

Material Design (Google)

Basically: How can YOU create designs that look good?

Design = Solutions

Design is about finding solutions

Unfortunately, designers often reinvent things
    Hard to know *how* things were done before
    Why things were done a certain way
    How to reuse solutions

How can codify design knowledge?

- An effective and flexible design is difficult to get "right" the first time.

- Yet experienced designers do make good designs
  - New designers (like many of you!) are usually overwhelmed by the all the design options available.

- Experienced designers evidently know something inexperienced ones don't, what is it?

How can codify design knowledge?

- Expert designers usually do **not** solve every problem from first principles, they **reuse** solutions that have worked for them in the past.

- When they find a good solution, they use it again and again.

- How can you reuse solutions that good designers have used again and again?

  - But still make them new/yours

  - And learn how to create awesome designs at the same time

Answer: Design patterns

Web design circa 2006

Jan 2007: The iPhone is introduced

The crisis of a tiny screen

Everyone simultaneously realizes their website is completely unusable.
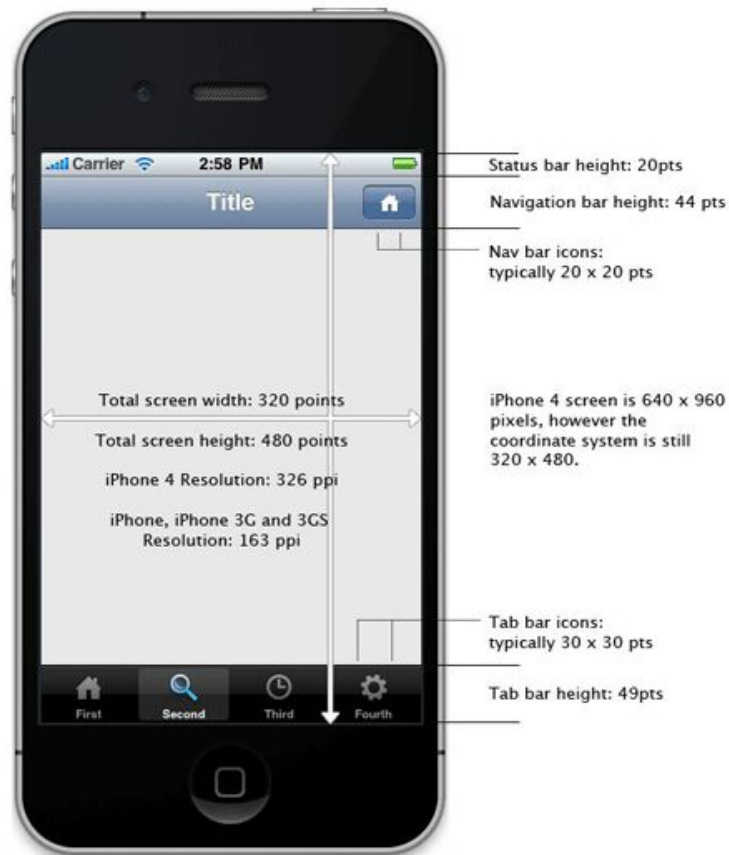
But Apple's own apps worked pretty well...

Guidelines for plug & play UI

Apple as the benevolent dictator

An opportunity to **redesign EVERYTHING** from scratch...

(for a very specific device)

Status bar height: 20pts

Navigation bar height: 44 pts

Nav bar icons: typically 20 x 20 pts

Total screen width: 320 points

Total screen height: 480 points

iPhone 4 Resolution: 326 ppi

iPhone, iPhone 3G and 3GS Resolution: 163 ppi

iPhone 4 screen is 640 x 960 pixels, however the coordinate system is still 320 x 480.

Tab bar icons: typically 30 x 30 pts

Tab bar height: 49pts

The resource-rich fared best

Re-make your app 10 times!

- **Web**
- **iPhone**
- **iPad**
- **Android**
- **Windows Phone**
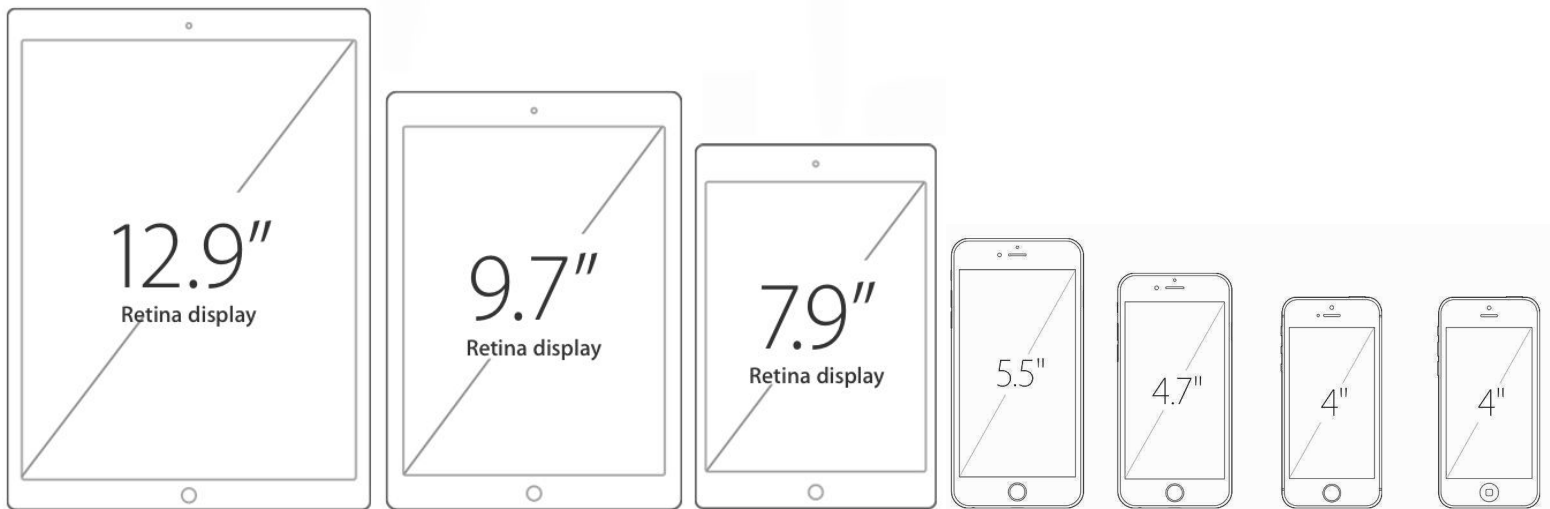- **Smart TVs**
- **etc...**
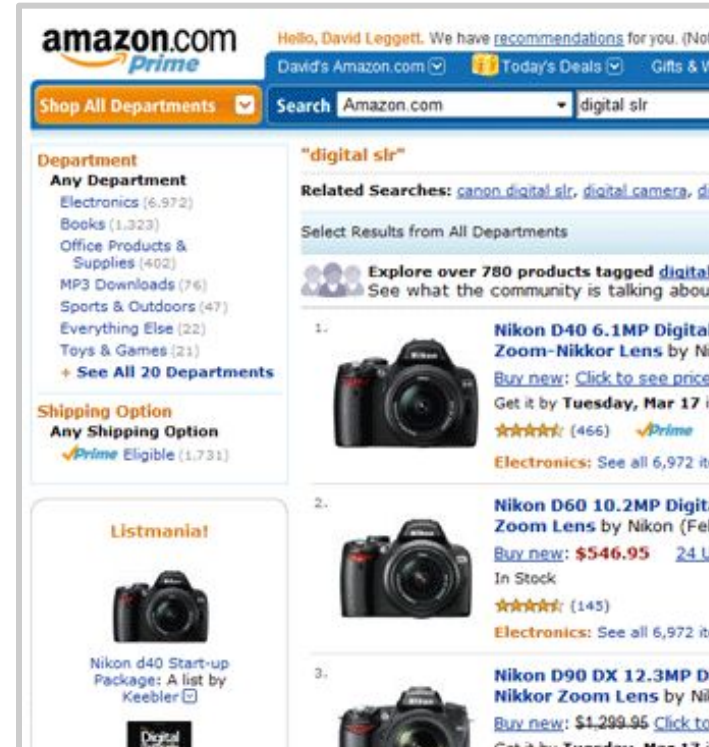
A SOLUTION

Responsive design for any screen

Adaptability also a mobile issue...
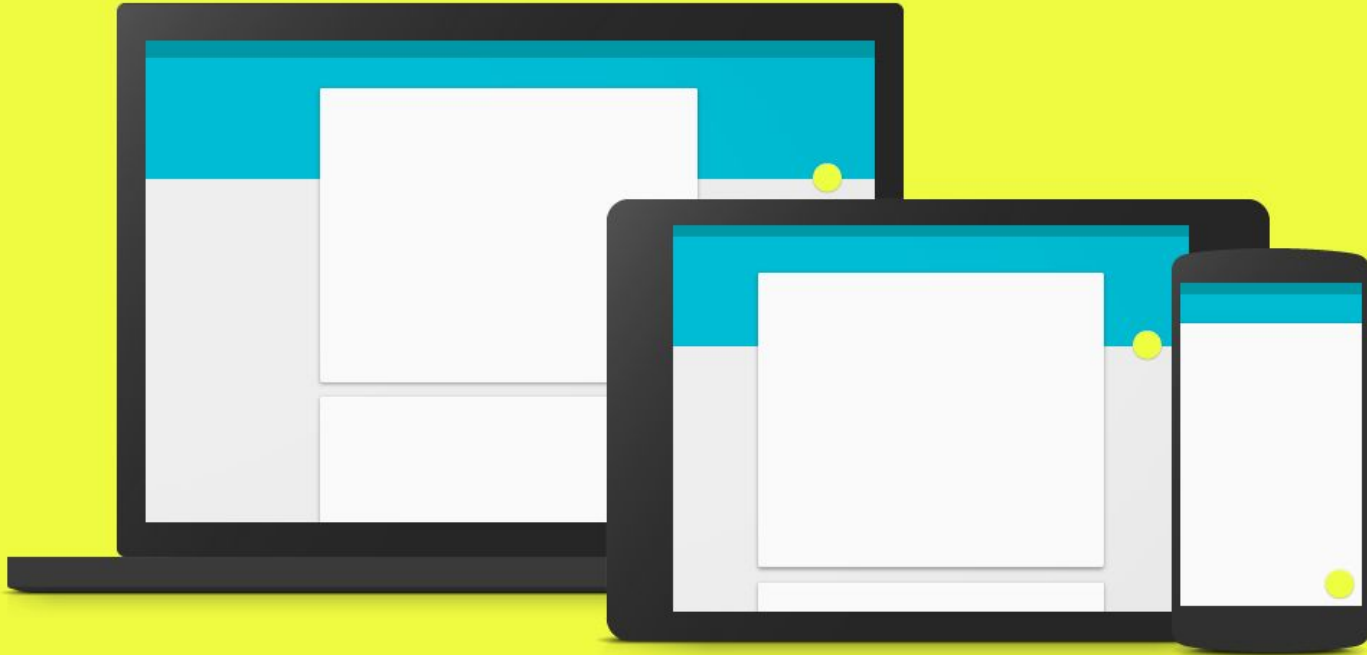
Oh Android. You so crazy.

...eventually even for Apple

No more 320x480 pixel-perfect layouts :-(

12.9"
Retina display

9.7"
Retina display

7.9"
Retina display

5.5"

4.7"

4"

4"

Google responds: Material Design

Material Design
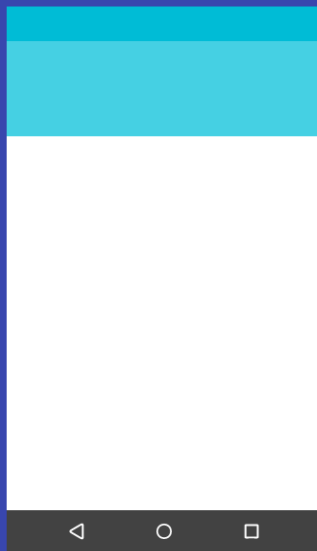
Released by Google in 2014

material.io

The main purpose of material design is to create a new visual language that combines principles of good design with technical and scientific innovation.

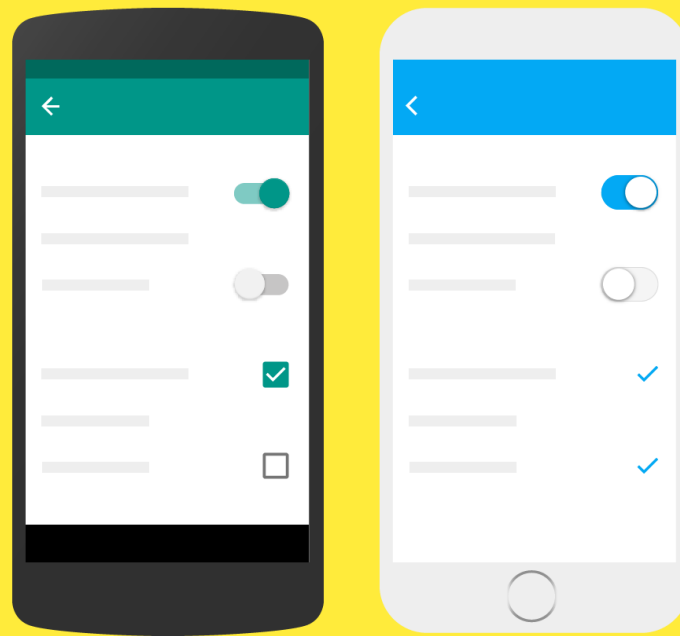Develop a single underlying system that allows for a unified experience across platforms and device sizes.
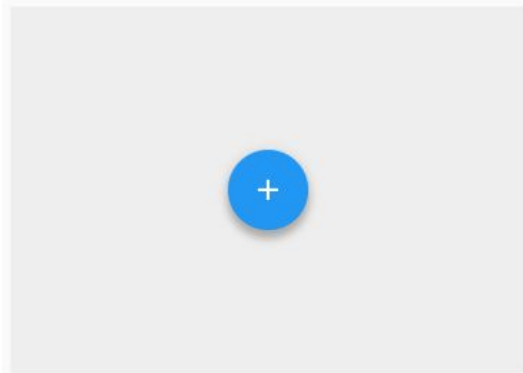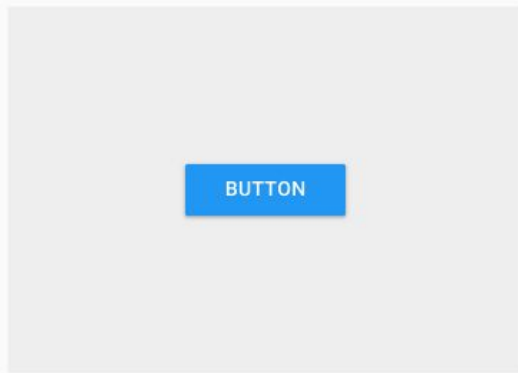
Material Design
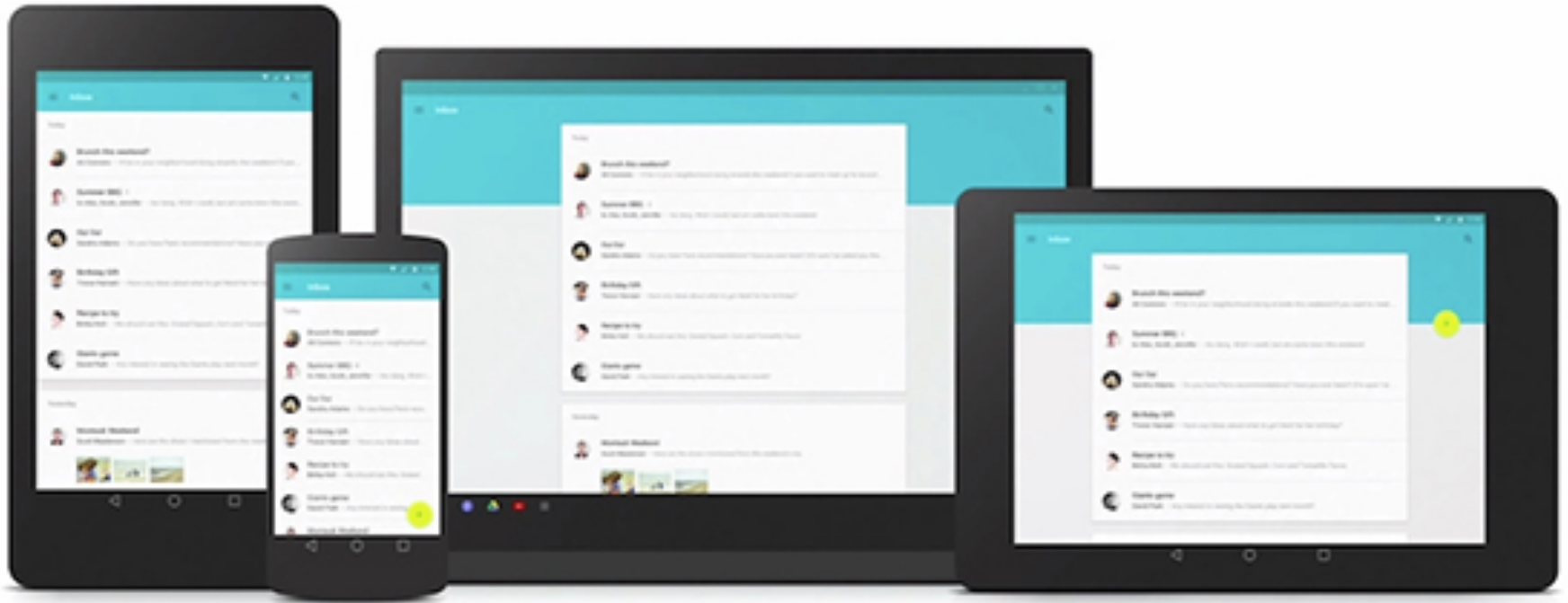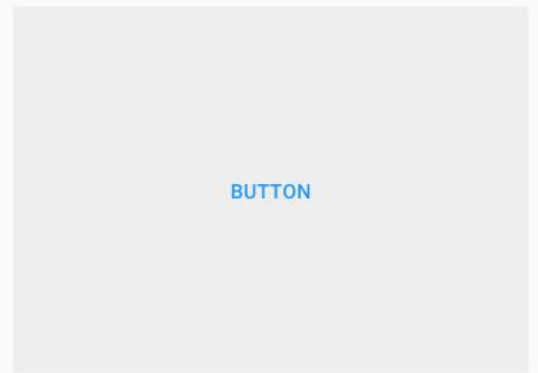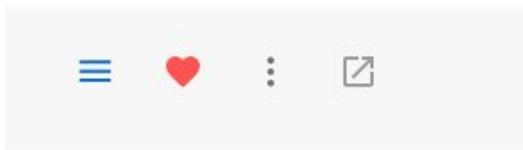
Reusable components
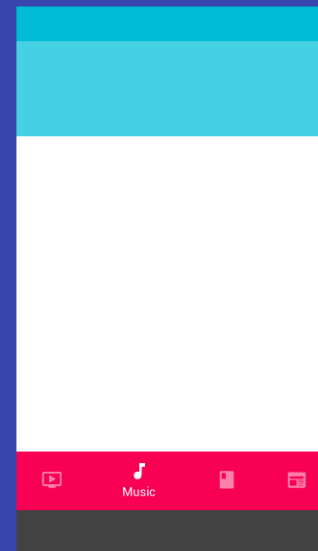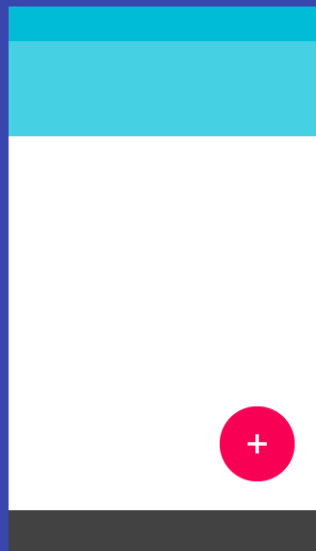
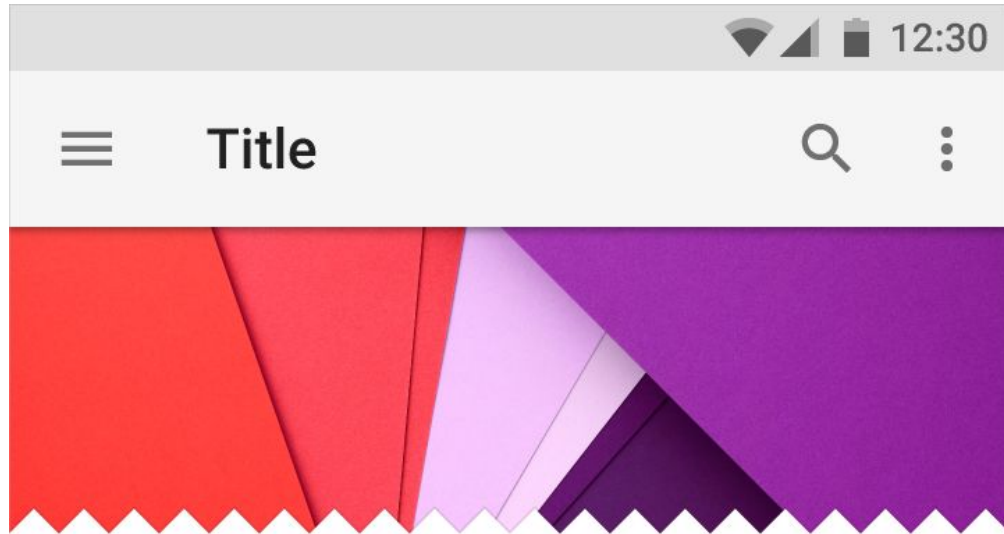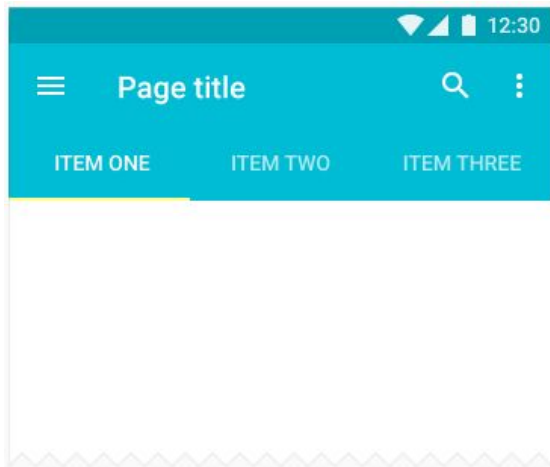# Different devices

Buttons

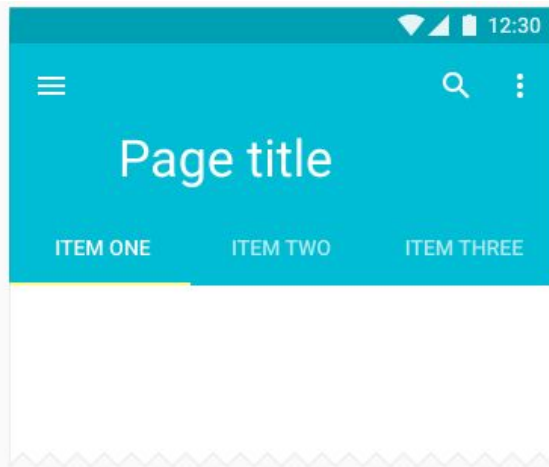Floating action button

Raised button
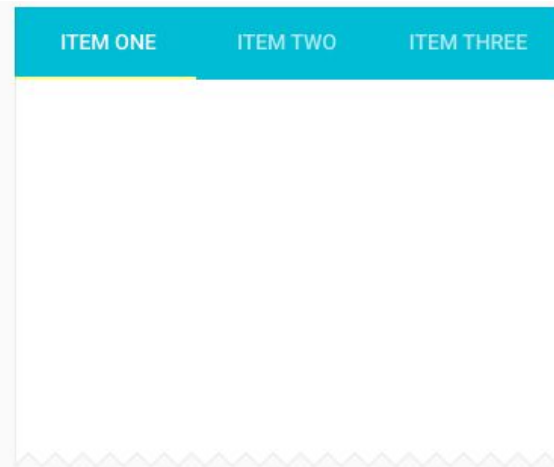
Flat button

Icon buttons

Navigation bar

Tabs

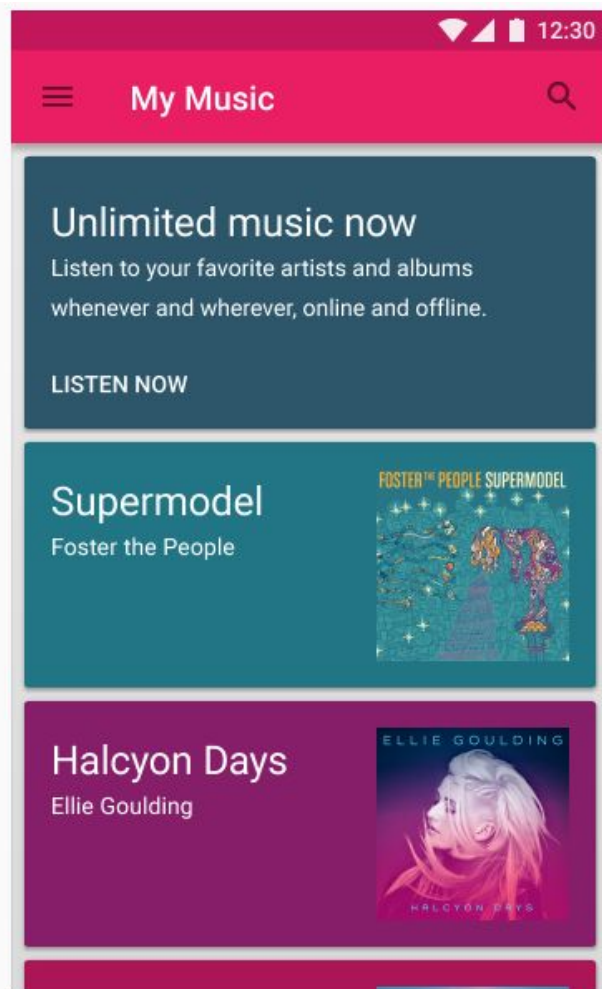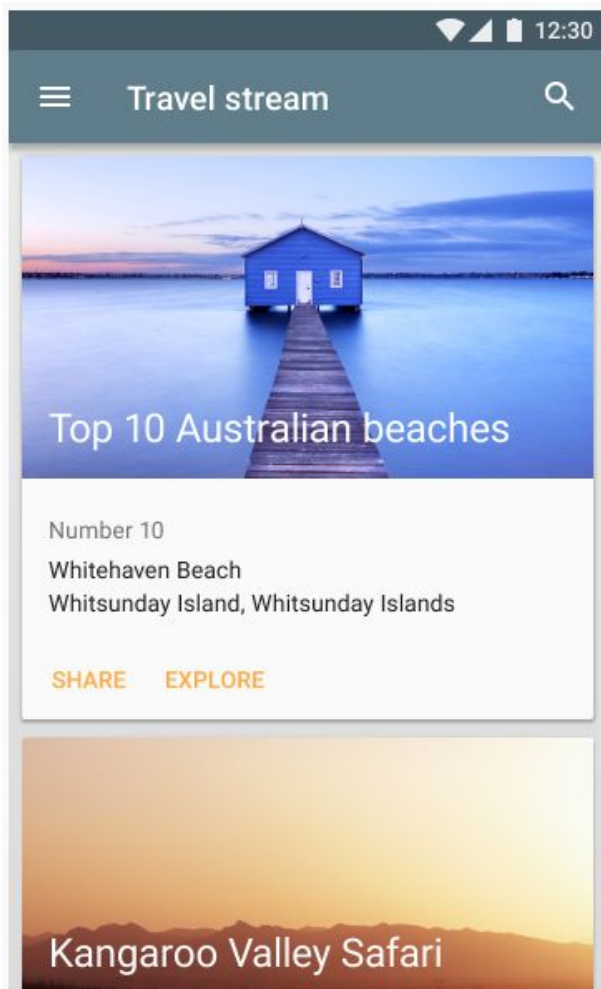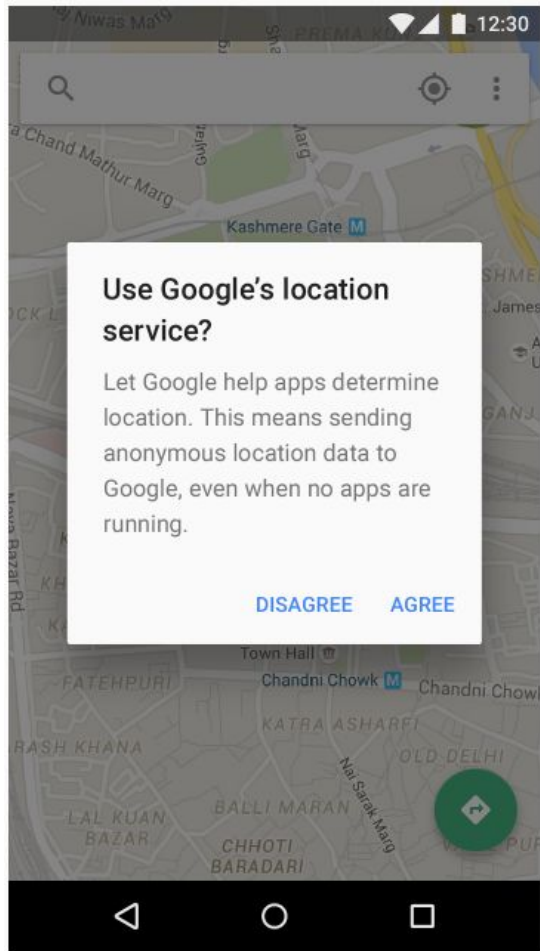Default app bar and fixed tab bar

Extended app bar and fixed tab bar

Fixed tab bar pinned to top with scrolled content
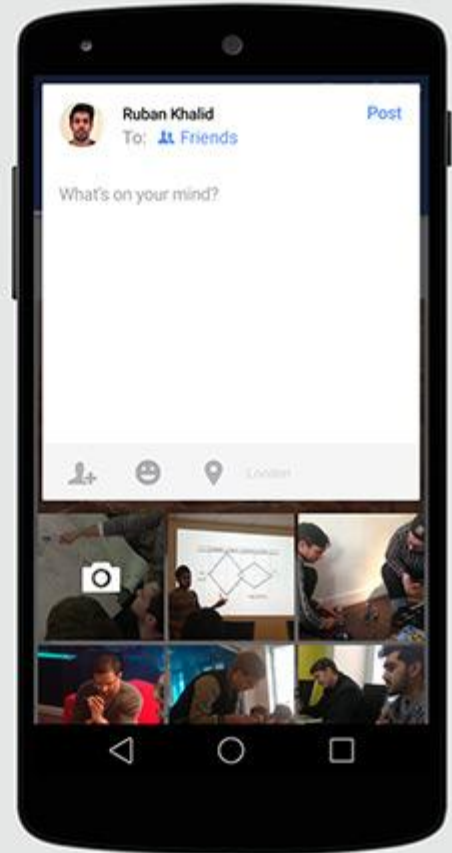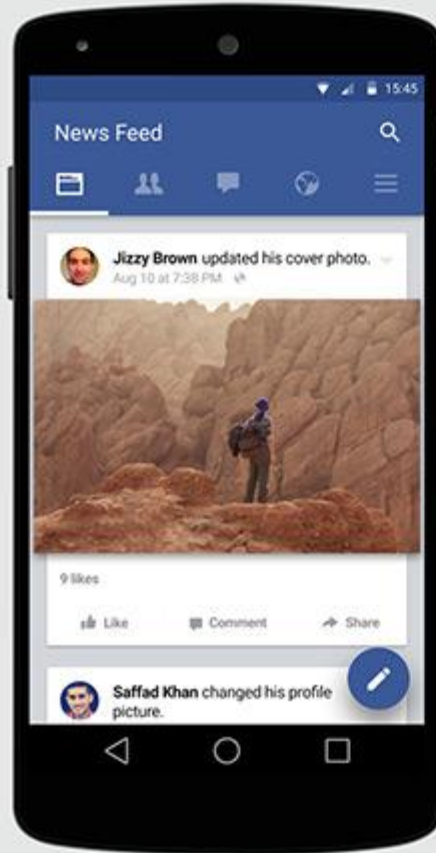
Cards

Dialogue

Spot the <card> and the <button>!

Any app can be reduced to these basic elements

Let's Practice

Goal: Decompose an app into design patterns / components

1. Choose any popular app or website

2. Go though it and identify the different patterns/components used

3. Make a list, take screenshots, label different components

4. (If time) Compare and critique with your neighbor

List of components: https://material.io/guidelines/

Submit: Upload a pdf of your work to this google folder.

http://bit.ly/2FjuURw THE FILENAME SHOULD BE YOUR NETID!