Hybrid Mobile Applications

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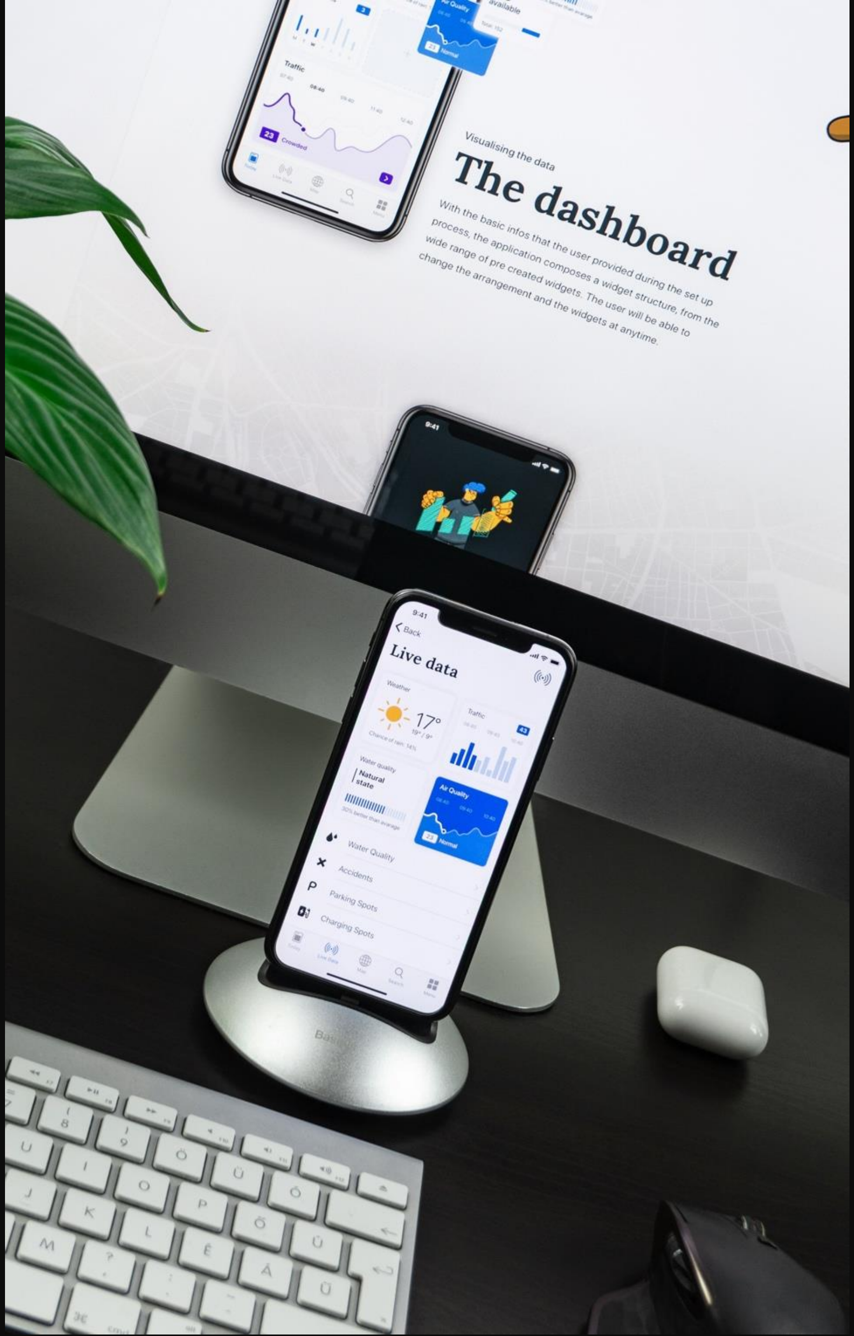
UNIVERSITY OF WARWICK


Visualising the data
The dashboard
With the basic infos that the user provided during the set up process, the application composes a widget structure, from the wide range of pre created widgets. The user will be able to change the arrangement and the widgets at anytime.
Live data

Why are you here?

Just curious about options?

Have an idea for an app?

No programming experience and wondering how difficult it will be?

All or none of the above.

Overview

Why and when to go mobile

Hybrid mobile and other options

How to get started

UI Design – but you’re not creative

Questions/Discussion

Practical

01

Why and when to go mobile

Why mobile?

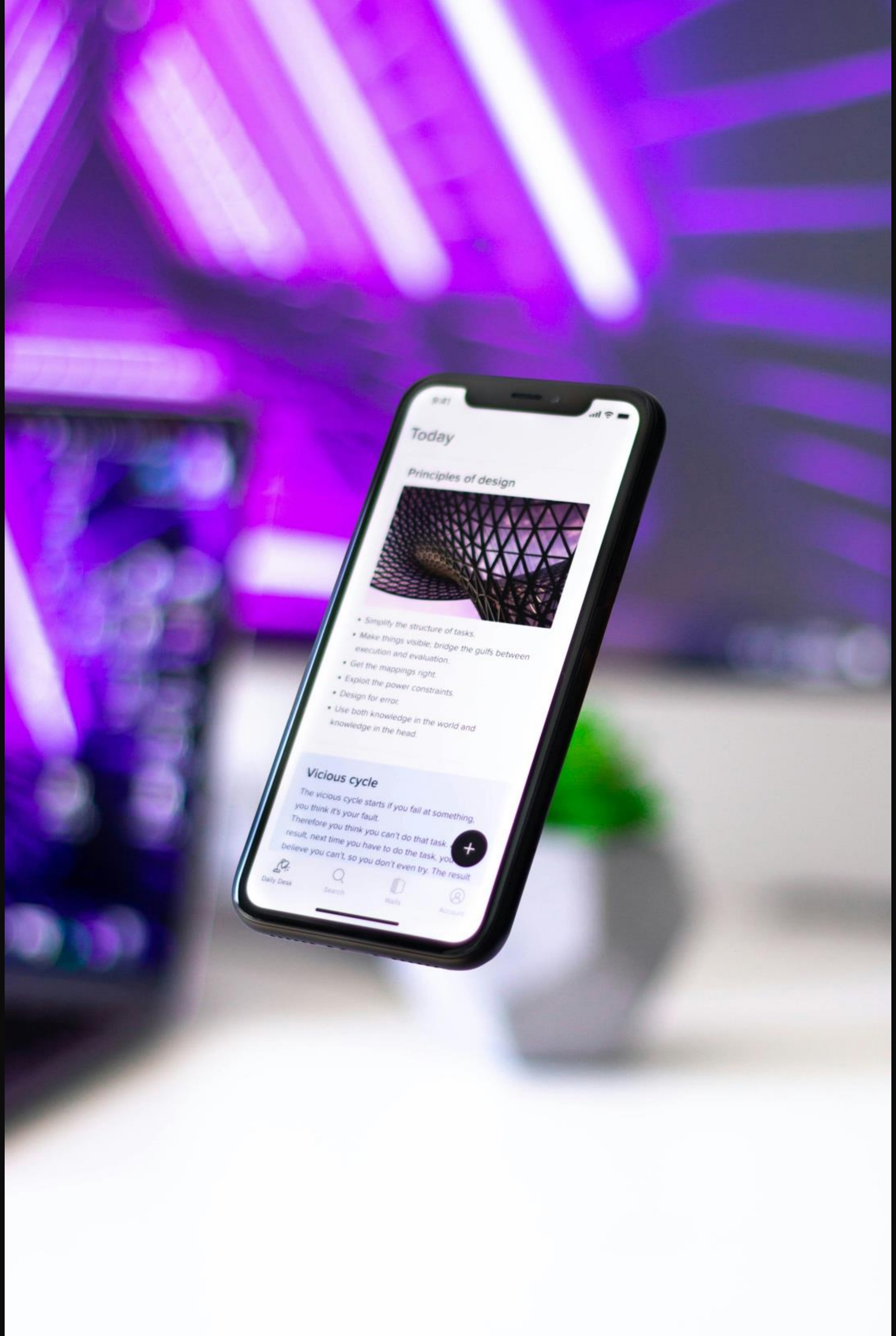
We know there is massive usage but from an intervention/research standpoint…

- Context-aware measurements
- Real-time contingent designs
- Longitudinal field experiments
- Nudging and behaviour change
- Social and network effects
- Targeting certain demographic groups

Why mobile?

Consider a mobile app when…

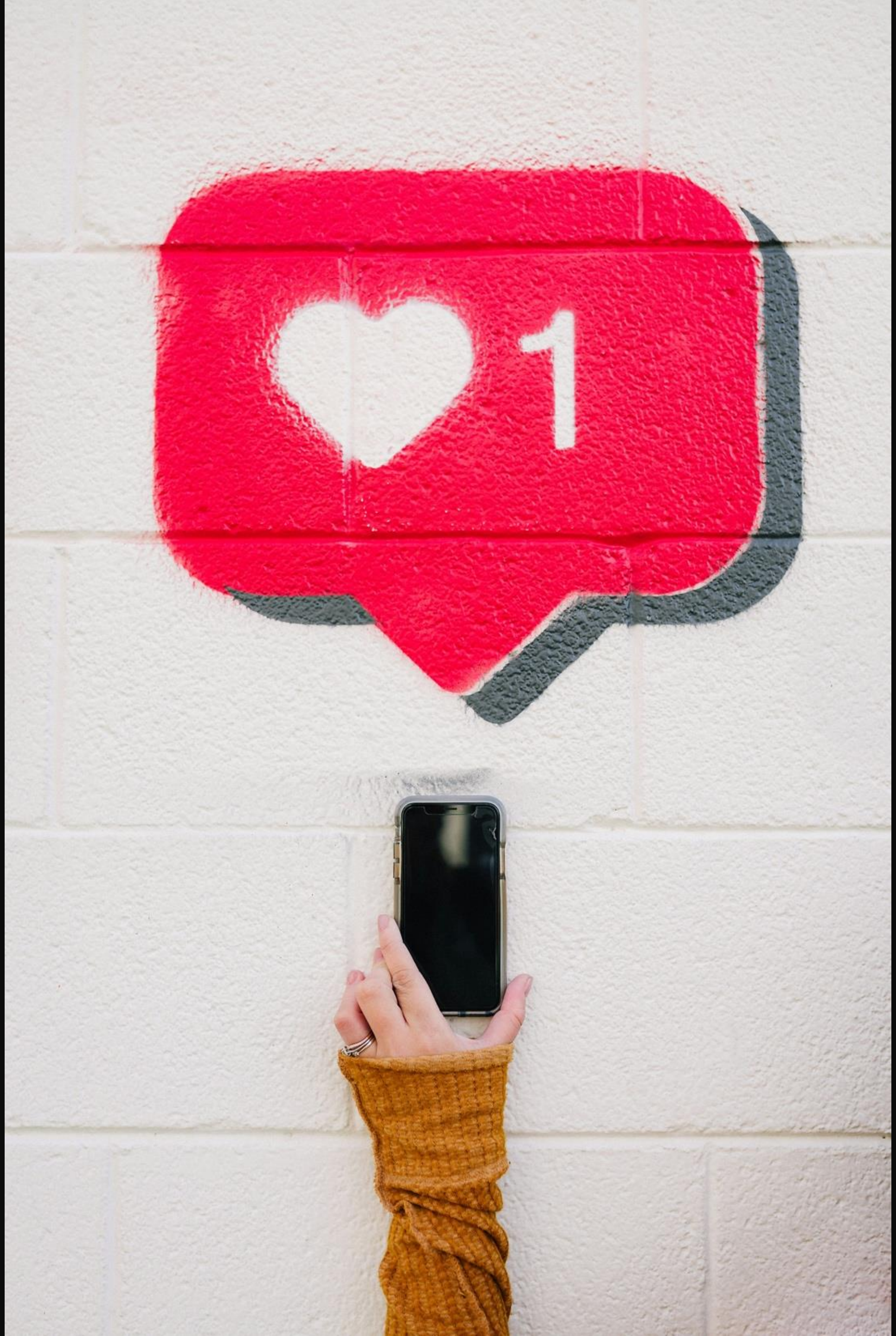
- Offline functionality required
- Device features (e.g. GPS)
- Push notifications
- Performance intensive features
- Building long-term user engagement
- Targeting younger and/or lower SE groups



Practical examples

How hardware and other phone features are used in existing apps.

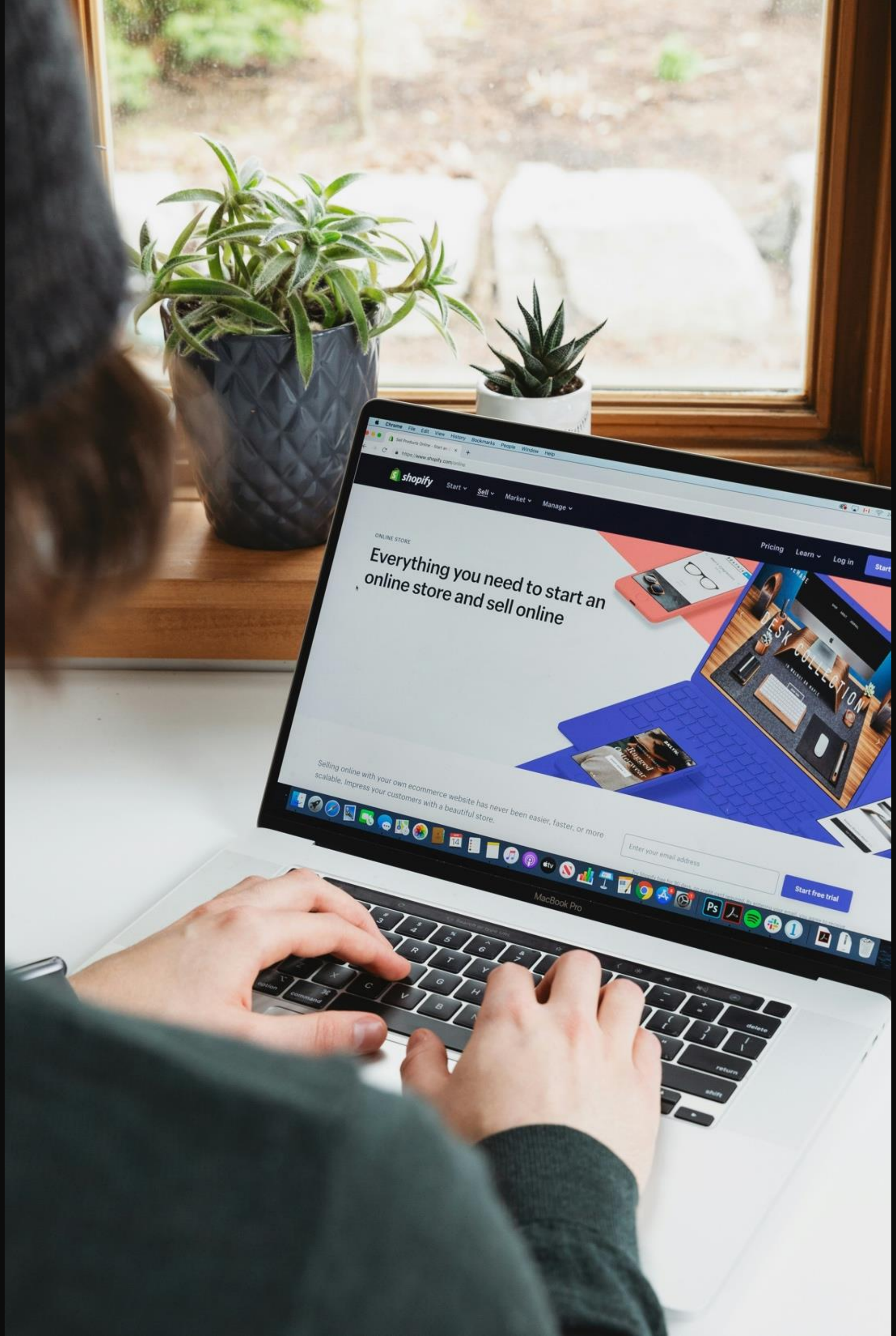
- Duolingo
- Headspace and Calm
- Banking apps
- TikTok and Instagram
- Strava and other fitness apps



Do you need a mobile app?

Consider sticking with a responsive web app when…

- Content-focused project
- Have a short development window
- Broad audience across all devices
- SEO discoverability is crucial
- Limited budget
- Older demographic


shopify
Everything you need to start an online store and sell online
Start free trial

02

Hybrid mobile and other options

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Hybrid versus Native Development

Native apps are built separately for each platform using platform specific languages (Swift for iOS and Kotlin for Android). Hybrid apps use a single codebase and utilise a bridge to communicate to the OS.

Native Development

- ✓ Best performance
- ✓ Full device access
- ✗ Need platform-specific expertise
- ✗ Separate iOS/Android codebases
- ✗ Takes twice as long (at least)

Hybrid Development

- ✓ Single codebase for both platforms
- ✓ Faster time to release
- ✓ Considerably cheaper to develop
- ✗ 85-95% of native performance
- ✗ Some device features may lag

Top Hyrid Frameworks

Flutter

- 🙂 Largest market share (~45%)
- 🙂 Best device performance
- 🙂 Great documentation
- 😒 Google backed
- 😒 Uses Dart language

React Native

- 🙂 Preferable for web developers
- 🙂 Based on React and JavaScript
- 🙂 More community driven
- 😒 Facebook/Meta creation

Honourable mention to Ionic Framework/CapacitorJS – works with any JavaScript framework.

Progressive Web Apps

Type of web app with a few extra scripts.

- Install to home screen
- Works offline
- Send push notifications
- Access camera, GPS etc
- No app store needed

03

How to get started

Basic Tools of the Trade

You can get started for free!

1. A computer of some sort
    - For iOS you will need an Apple device
    - Windows is only android
2. A code editor
    - VS Code (good for Flutter and React)
    - Android Studio
3. Mobile Simulator
    - On Apple you'll need to download Xcode and dev tools
    - Built in on Android Studio

Advanced tools

Data persistence. Free, within limits.

1. While developing locally
   - Google’s Firebase emulator (easy)
   - Appwrite (involves some Docker)

2. Free cloud solutions
   - Google’s Firebase
   - Appwrite
   - Supabase

Advanced tools

Push Notifications. Also free, within limits.

Note, might not work well or at all in simulators, so try on an actual device.

Free cloud solutions

- Google’s FCM
- APNs by Apple
- Many, many others

Developer Accounts

Can develop and test on your own device but to 'publish' your app you'll need developer account for at least one platform.

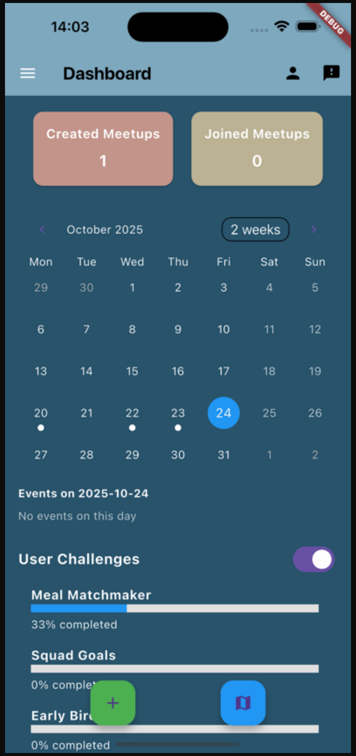
1. Apple's iTunes Connect
   - Costs £79 per year
   - Can invite test users before publishing to the store
   - Manual review process that can take a few days
   - Strict on standards and data
2. Google Play Store
   - Costs £25 for lifetime
   - Automated checking only

04

UI Design for the less creative

UI Design for non-creatives

People should not judge a book by its cover... but bad UI does turn people away.



Created Meetups 1

Joined Meetups 0

October 2025 2 weeks

Mon	Tue	Wed	Thu	Fri	Sat	Sun
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

Events on 2025-10-24

No events on this day

User Challenges

Meal Matchmaker

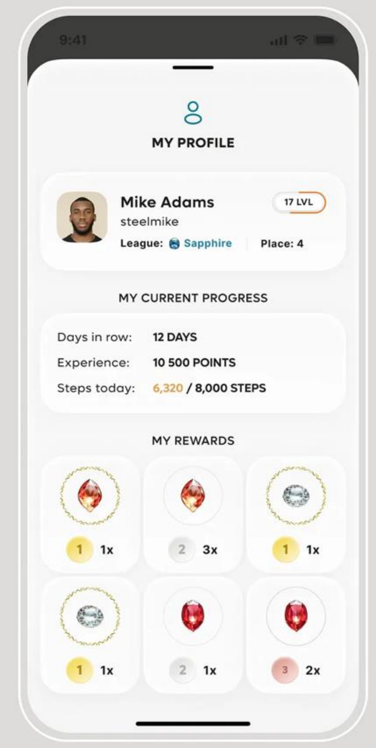
33% completed

Squad Goals

0% comple

Early Bir

0% completed



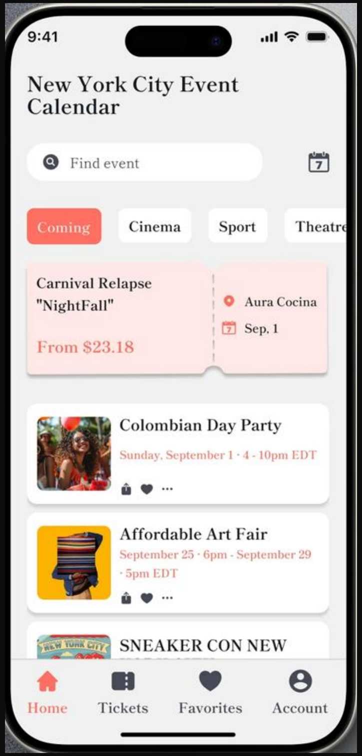
Mike Adams
steelmike
17 LVL
League: Sapphire Place: 4

MY CURRENT PROGRESS

Days in row: 12 DAYS
Experience: 10 500 POINTS
Steps today: 6,320 / 8,000 STEPS

MY REWARDS

1 1x, 2 3x, 1 1x
1 1x, 2 1x, 3 2x



New York City Event Calendar

Carnival Relapse "NightFall"
From $23.18
Aura Cocina
Sep. 1

Colombian Day Party
Sunday, September 1 · 4 - 10pm EDT

Affordable Art Fair
September 25 · 6pm - September 29 · 5pm EDT

SNEAKER CON NEW

It’s a process

The good news is you do not need an eye for colour, and AI is here to help.

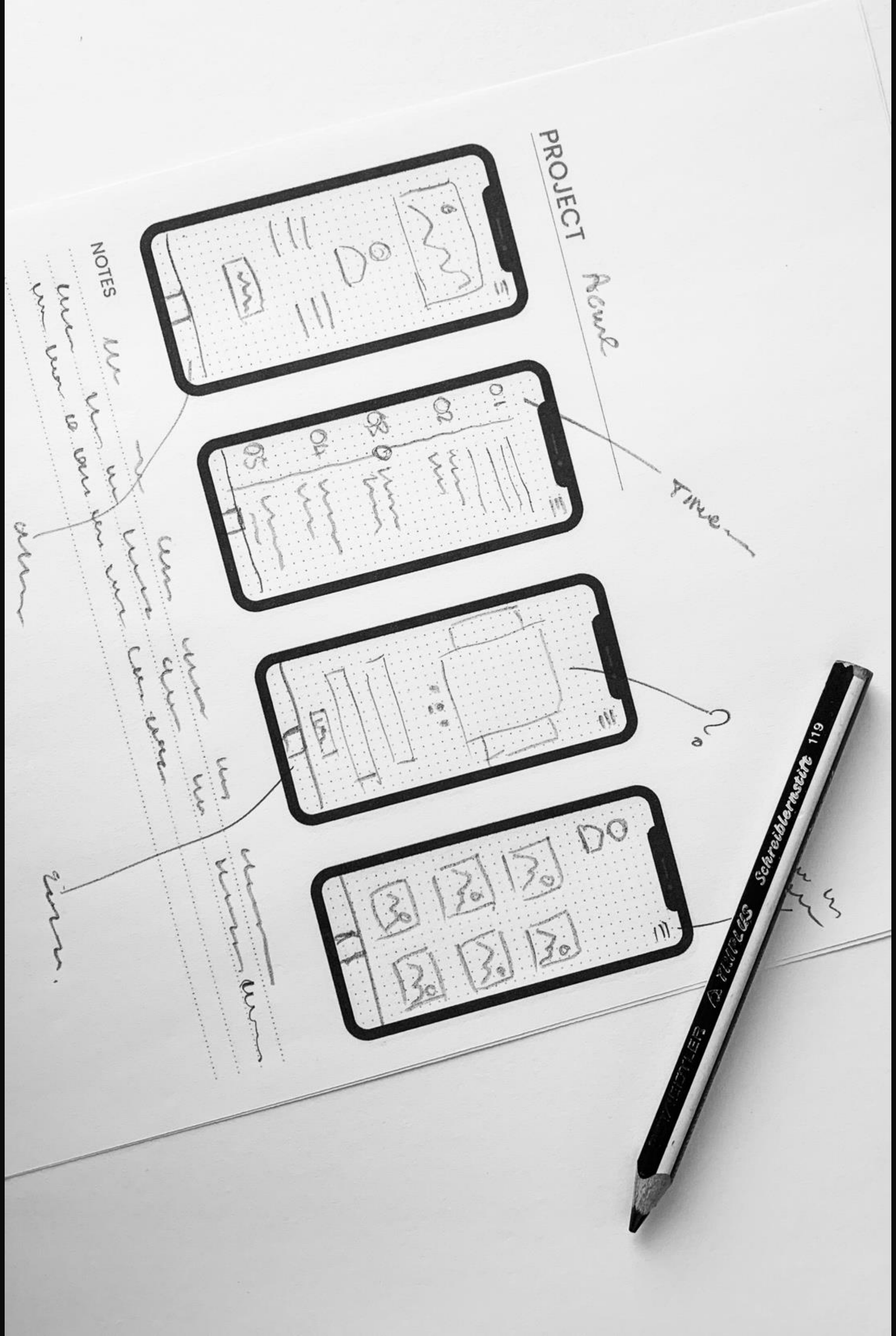
1. Find yourself a colour scheme
   - Coolors: https://coolors.co
   - Adobe: https://color.adobe.com/explore

2. Research some designs and layouts
   - https://dribbble.com (type in mobile+UI)

3. Talk to your favourite AI

   More on this shortly!

4. Get some free content (optional)
   - https://unsplash.com is great for photos

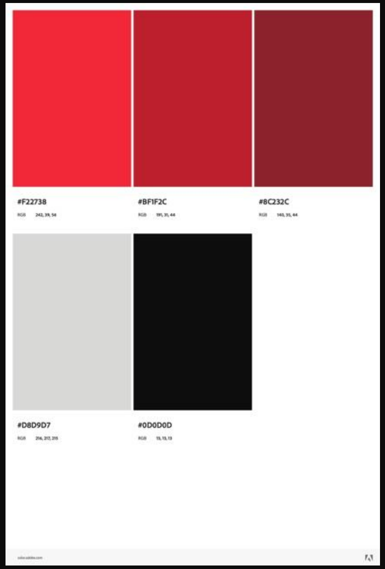


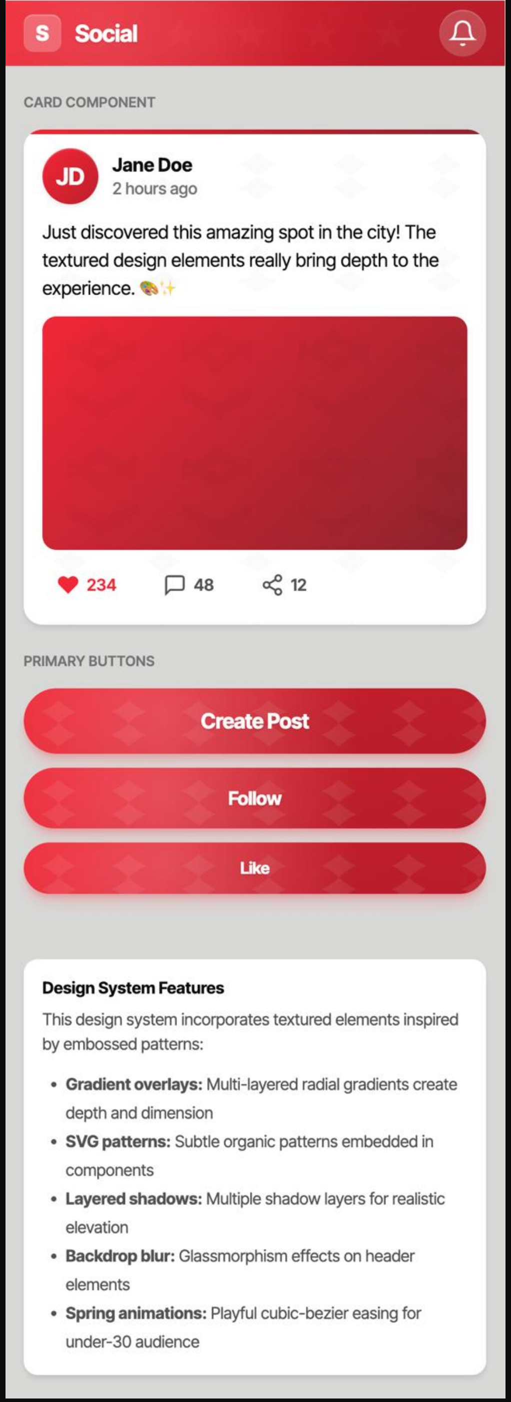
After a quick chat to Claude

Claude is my personal preference, but they’re all pretty similar.

Hello Claude, you are an expert and innovative mobile UI and web graphics designer. Using the attached colour palette and image create an initial design system for a mobile app - use industry typical spacing and border radius, the font will be Inter Tight.
The app will have a social function, it will be hybrid using flutter, and target people under 30. At this stage I want a design tokens Json document, and in html create the following components: app header, a card and a primary button as examples. Textured elements required.

From here you can rinse and repeat for different pages – the design tokens are key.
Your AI agent can then convert the html into widgets or components with a little prompting.





CARD COMPONENT

Jane Doe
2 hours ago

Just discovered this amazing spot in the city! The textured design elements really bring depth to the experience. 🎨✨

PRIMARY BUTTONS

Design System Features

This design system incorporates textured elements inspired by embossed patterns:

- **Gradient overlays:** Multi-layered radial gradients create depth and dimension
- **SVG patterns:** Subtle organic patterns embedded in components
- **Layered shadows:** Multiple shadow layers for realistic elevation
- **Backdrop blur:** Glassmorphism effects on header elements
- **Spring animations:** Playful cubic-bezier easing for under-30 audience

UI Design Take Aways

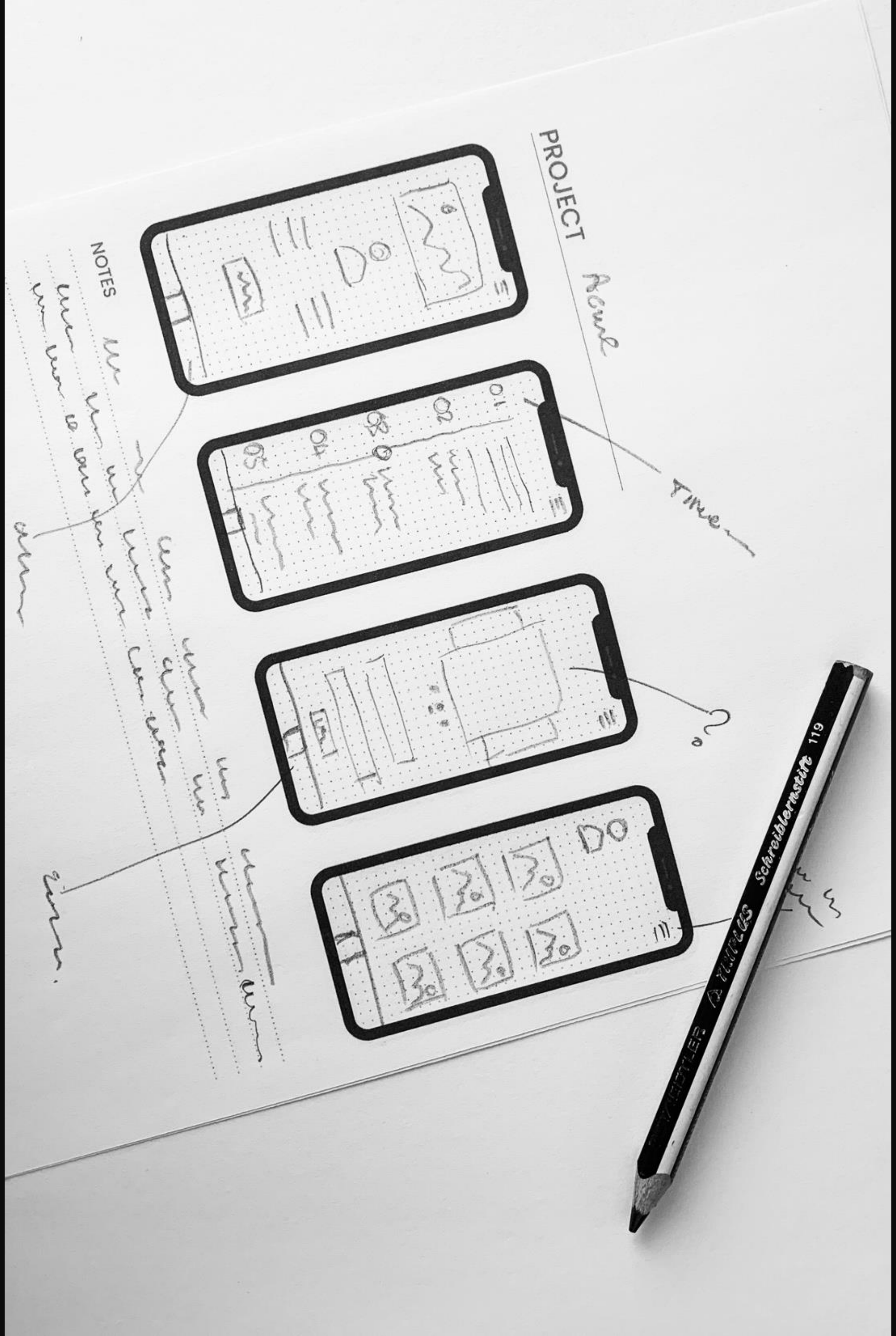
It takes some time but learn the following.

1. Basic terminology
   - Design system
   - Design tokens

2. Atomic design approach
   1. Atoms
   2. Molecules
   3. Organisms

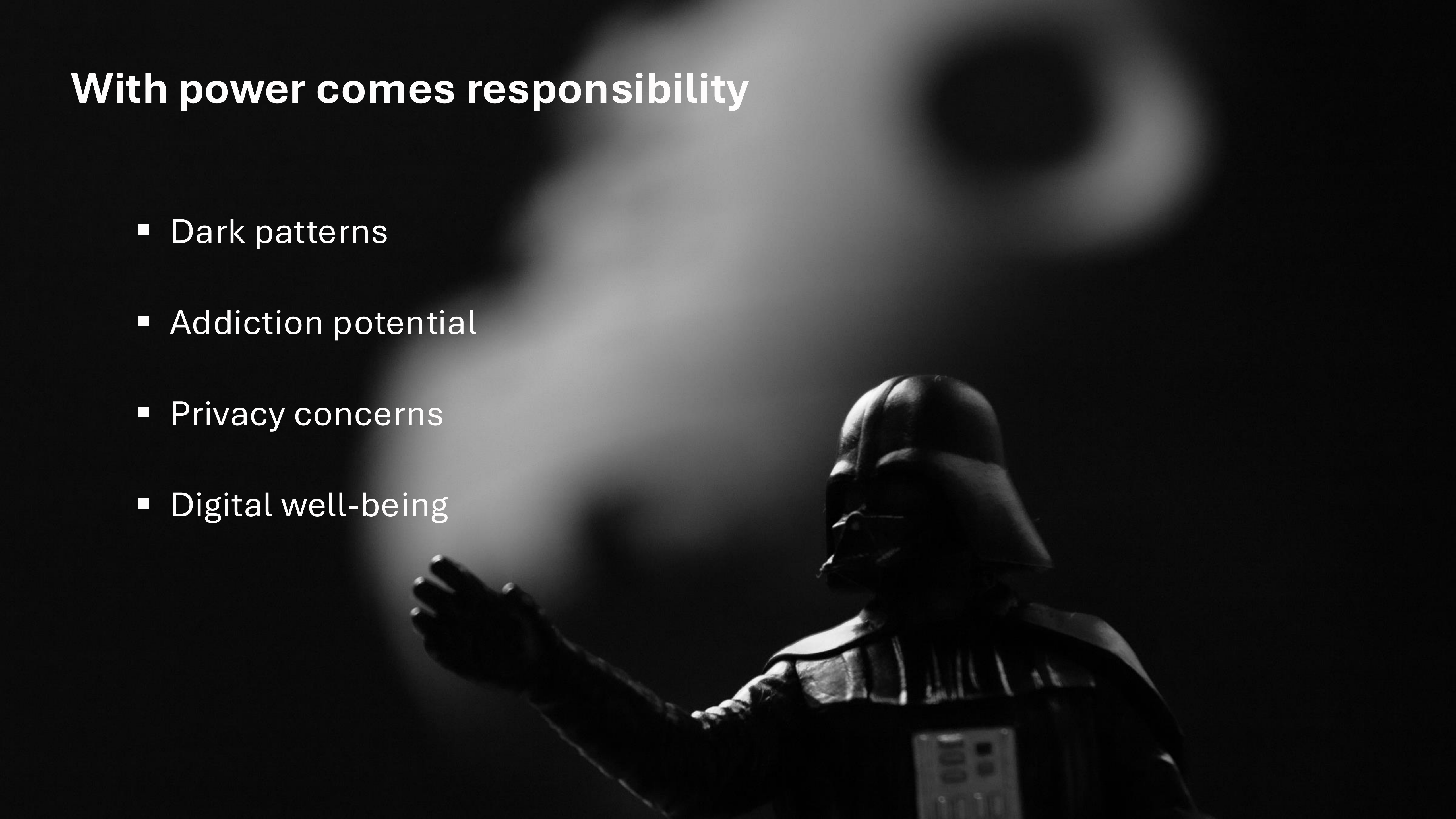
3. Plan your page out, it’s always a grid though!

4. Creativity does not happen in a vacuum.

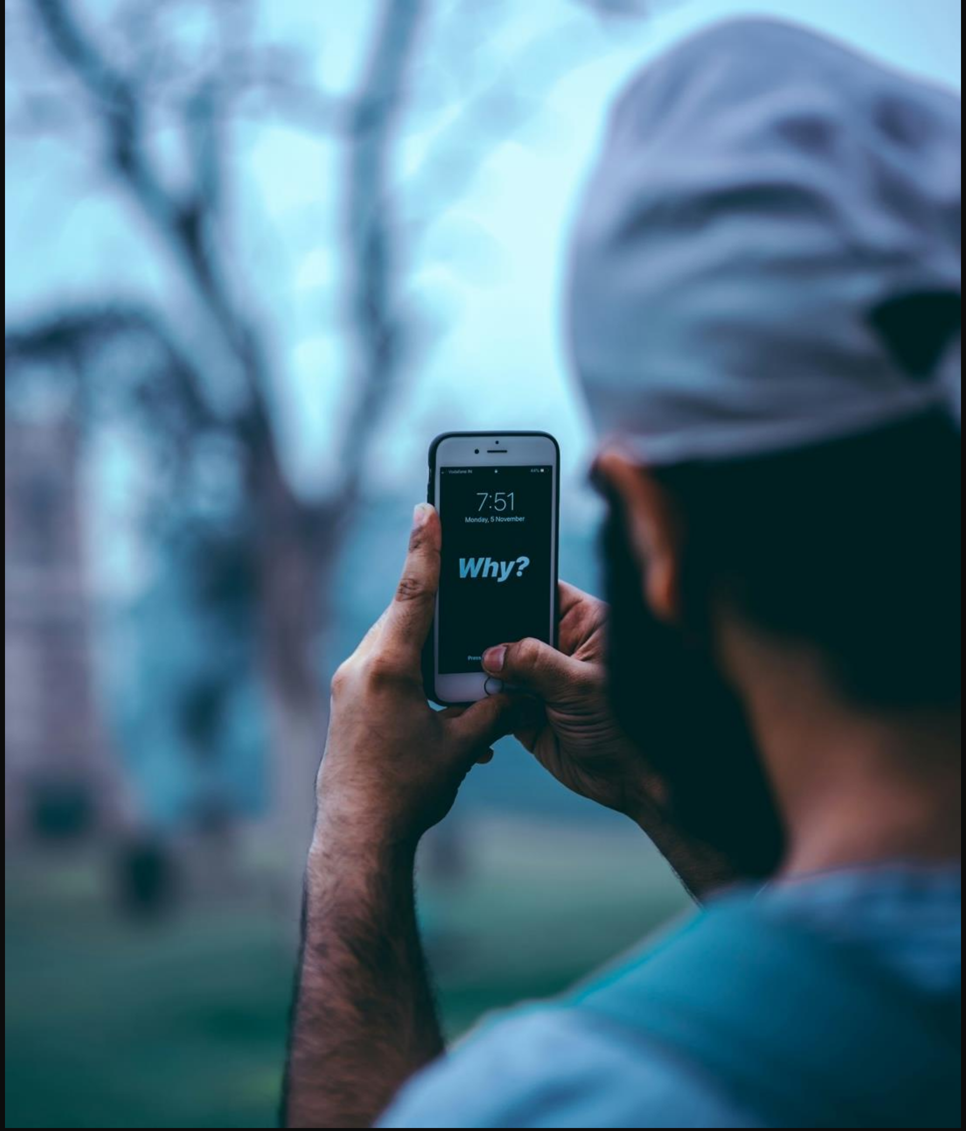


With power comes responsibility

- Dark patterns
- Addiction potential
- Privacy concerns
- Digital well-being



Questions?



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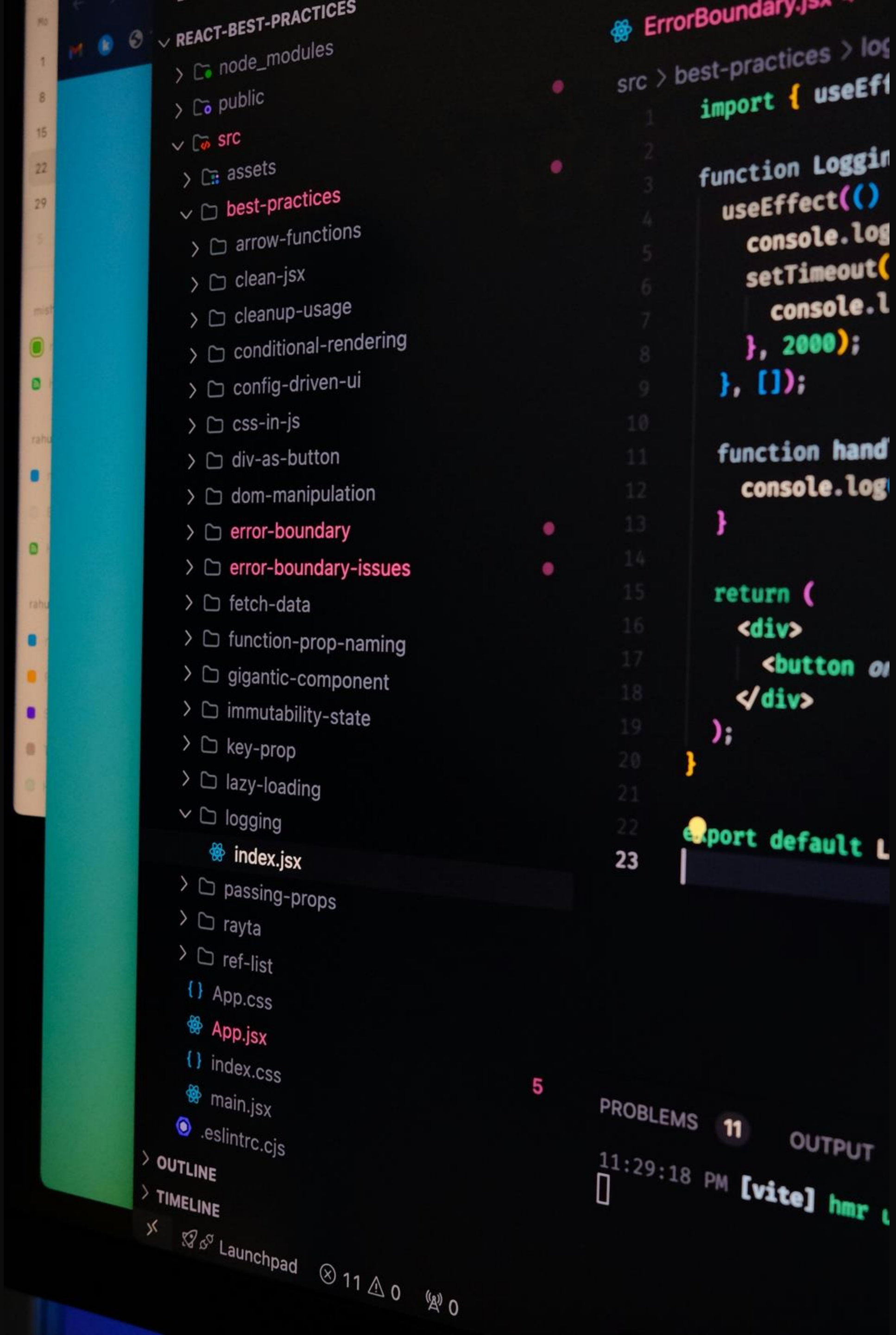
Getting Started Today

Action Plan

- Install VS Code
- Choose a Framework
- Follow official tutorials
- Run your first “hello world”
- Guide available: https://tinyurl.com/ywedpzwz



```
import { useEff

function Loggin
  useEffect(()
    console.log
    setTimeout(
      console.l
    }, 2000);
  }, []);

  function hand
    console.log
  }

  return (
    <div>
      <button o
    </div>
  );
}

export default L
```

```
11:29:18 PM [vite] hmr
```