

# WEEK 1

# LECTURE



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# WEEK 0 REVIEW

- Review the syllabus
- Explore the Week 0 module in Canvas
- Locate and complete the Week 0 discussion assignment

# ANNOUNCEMENTS

- Office hours moved to Monday
- To clarify; the \$25 Google Developer Account fee is 100% optional and won't impact your grade

# WEEK 1



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# ASSIGNMENTS

- Discussion assignment
- App assignment

// both are in Canvas



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# DISCUSSION ASSIGNMENT

- What makes a great mobile app?
  - What features?
  - What price?
  - What level of performance?

# APP ASSIGNMENT

- We will be creating our first Android app

// Much more detail later



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# INTRODUCING MOBILE APP DEVELOPMENT



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# WHY LEARN APP DEVELOPMENT?

- Estimated 3.5 billion smartphones
- Add in tablets, smart watches, IoT devices...

# WHY LEARN APP DEVELOPMENT?

- Less expensive and more portable
- Smart devices are ubiquitous
- Majority of people in the world have at least one smart device

# WHY LEARN APP DEVELOPMENT?

- Large market opportunity for businesses and developers
- 30,000+ listings for "mobile developer" on LinkedIn
- Many more indie & freelance opportunities



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# CHALLENGE OF APP DEVELOPMENT

- Unique interactions (touch, rotation, gestures)
- Many different form factors
- Varying performance
- Limited network connectivity & memory

# USER INTERACTIONS

- Mobile apps require touch input
- 1-finger, 2-finger, multiple fingers
- Gesture detection
- Different size touch devices (finger, stylus, etc)
- Lack of tooltips

# **VARYING FORM FACTORS**

- **No standard mobile device size**
- **No standard screen orientation**
- **No standard mobile device hardware**
- **Account for screen resolution, screen size, presence of keyboard, sensor availability, etc**

# LIMITED RESOURCES

- Mobile devices go anywhere
- Makes them accessible & challenging
- Do you have internet? Is it fast?
- How expensive is your data plan?
- How much memory do you have on device?

# CHALLENGE OF APP DEVELOPMENT

- People are impatient
- People become distracted
- Plenty of competition
- Software is challenging



# PEOPLE ARE IMPATIENT

- People become distracted
  - Check calendar
  - Play music
  - Order food
  - Skim twitter
  - etc...



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# PEOPLE ARE IMPATIENT

- People will uninstall apps if they are not responsive
- People will abandon apps if not quickly useful



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# TYPES OF MOBILE DEVELOPMENT



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# TYPES OF MOBILE DEVELOPMENT

- **Native - iOS or Android**
- **Cross Platform - React Native, Flutter, etc**
- **Mobile Web**

# **NATIVE APP DEVELOPMENT**

- **Straight from Apple or Google**
- **Best control over user experience**
- **Full access to hardware, sensors, etc**
- **Requires multiple code bases and teams**
- **Requires specialized skillsets**

# CROSS PLATFORM DEVELOPMENT

- Shared codebase for iOS & Android
- Leverage skillsets of web or other devs
- Possibly faster for small projects
- Less direct access to hardware, sensors, OS
- User experience may not match user expectations

# MOBILE WEB

- Leverage existing web developers and code
- Extremely easy to ship and distribute
- Least access to hardware, sensors, OS
- Widely varying user experience

# PICKING A MOBILE TECHNOLOGY IS A COMPLEX DECISION



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# WHY ANDROID DEVELOPMENT?



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# WHY ANDROID DEVELOPMENT?

- Android accounts for 70+% of all mobile devices
- As of 2019, over 2.5 billion Android devices

# WHY ANDROID DEVELOPMENT?

- Android is much more approachable
- Consumer devices are less expensive
- Much cheaper to become an Android developer

# WHY ANDROID DEVELOPMENT?

- Android apps can be developed using Windows, Mac, Linux, ChromeOS
- Google Developer Account cost is \$25 for life
- Android app reviews are very fast

# PLANNING OUR PATH FORWARD



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# WHERE ARE WE HEADING THIS QUARTER?



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# GO FROM 0 TO APP DEVELOPERS

- Build an app similar to what is often expected during interview take home assignments

# GO FROM 0 TO APP DEVELOPERS

- Create our first app
- Add functionality
- Deploy & test
- Upload the the app store (Optional)



# SETTING UP OUR DEVELOPMENT ENVIRONMENT



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# OUR DEVELOPMENT ENVIRONMENT

- Android Studio (IDE)
- Git (Version Control)
- GitHub (Code Hosting & HW Submission)

# ANDROID STUDIO

- Integrated Development Environment (IDE) for Android
- Built by Google
- Based on IntelliJ

# ANDROID STUDIO TOOLS

- Android SDK
- Android Emulator
- Platform & Build Tools



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# INSTALLING ANDROID STUDIO

- <https://developer.android.com/studio/install>



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# INSTALLING ANDROID STUDIO

- Demo



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# CREATING OUR FIRST ANDROID APP



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# CREATING OUR FIRST ANDROID APP

- <https://developer.android.com/studio/projects/create-project>
- Demo



# ADDING OUR PROJECT TO GITHUB

- Demo



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# BUILDING AN ANDROID APK

- Demo



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