CS194A
Android Programming Workshop

Lecture 8: November 4, 2020
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Outline

- Logistics
- Code Review Example
- Remote Databases (Firebase)
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● Logistics
● Code Review Example
● Remote Databases (Firebase)
Week #

1. Assn 1: Tip Calculator
2. Assn 2: Google Maps
3. Assn 3: Yelp Clone
4. Industry panel discussion
Outline

- Logistics
- Code Review Example
- Remote Databases (Firebase)
Code review

- Are there logic errors or edge cases that weren’t considered?
- Is the code written idiomatically so that it follows best practices for the language and can be maintained in the future?
- Are there alternative (potentially cleaner) approaches to implementing the same functionality?

- Company/team socialization!
Code review- what to look for?

- Architecture review
- Tests
- Logic/functionality errors
- Complexity
- Comments
- Style

Try it out: sample pull request
Outline

● Logistics
● Code Review Example
● Remote Databases (Firebase)
Remote Cloud Databases

- Where does the data for your app come from?
  - Local SQLite database
  - Web API
  - Your own backend service

- Remote cloud database: combines benefits of local storage using SQLite and Web APIs
Build your own backend

- Use a technology such as Django (Python), Ruby on Rails, Node (Javascript), etc. to create your own backend, hosted on a server
- Lots of headaches, and requires expertise in various domains:
  - Redundancy/robustness: database backups
  - Scaling: what happens when your app becomes popular?
  - Security: database passwords, key rotation, etc.
BaaS = Backend as a service

- Platforms for database/service hosting, management, deployment, etc.
- Free for most student/toy projects, you only get charged for usage beyond the free tier.
- Features:
  - Easy setup and integration with mobile apps
  - Web UI to view/modify data
  - APIs to perform CRUD operations on the data
  - As a developer, you must comply with the limitations around querying
NoSQL databases

- NoSQL databases: does not use SQL to access the data, there is no strict schema
  - **Benefits**: simplicity, flexibility, “horizontal” scalability to many servers
  - **Drawbacks**: some queries are more expensive, less structure around data may lead to data inconsistency, lack of “ACID”
Firebase

- Remote database management platform, owned by Google
  - Has become more popular since Facebook stopped managing Parse
  - Incorporates many services to develop your app, grow your user base, and monetize.
  - Popular among hobbyists and for early-stage startups
Firestore

- “Flexible, scalable database for mobile, web, and server development”
- Keeps data in sync across clients through real time updates
- Automatic offline support
Firestore

- NoSQL cloud database to store and sync data
- Made up of documents and collections
  - Documents are like JSON objects which have fields of various types
  - Collections are a group of documents
• Documents define the attributes for that object
I want posts by all users in the InstaFire app

Here's a list of posts:
1. Post “vacation pic!”
2. Post “Golden Gate”
3. ........................
Cloud Firestore

posts

Add document

B1opdc3u8n8a0Cqi6ytA

Start collection

Add field

creation_time_ms: 1584175245800

description: "lovely views :)

image_url: "https://firebasestorage.googleapis.com/v0/b/instafirestore-de474.appspot.com/o/images%2FgoldenGate.jpg?alt=media&token=bcf178a5-3392-4d38-ba5b-4bac9534d371"

user

age: 24

username: "nathan"
LeRGBGreNJ6EF42wqqYw

creation_time_ms: 1584174995435
description: "My hipster look"
image_url: "https://firebasestorage.googleapis.com/v0/b/instafire-de474.appspot.com/o/images%2Fhipster.jpg?alt=media&token=057e03cd-99d8-4a20-9532-7d4c90d4d3fb"

user

age: 52
is_celebrity: false
username: "rahul"
Prep for next week

Optional: Go through the Instagram clone using Firebase