Pocket Aces

CS 117 - Computer Networks: Physical Layer
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What is Pocket Aces?

What does it provide?

- Bottomless entertainment
- A multi-player smartphone card game suite

Where can it be used?

- Anywhere!
- Perfect for long trips or lines
- No internet connection required

Introduction

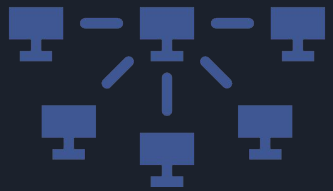
Pocket Aces is an Android app where users can play various card games against each other. The app's general execution of steps are:

1. Download and open the app.
2. Choose your game: Blackjack or Nertz.
3. Connect to a friend's phone via Bluetooth.
4. Play against each other.
5. Return to the main interface once a winner is selected.
6. Choose another game to play.

Initial Project Proposal

Utilize two smartphones which will communicate with each other via WiFi or BlueTooth to initiate a card game.

Multiple users will then play the Blackjack, Coup, or Nertz on their smartphones.



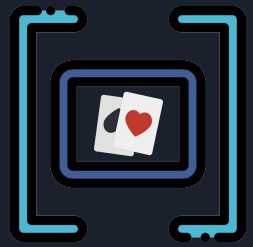
Game state will be maintained by master phone(the one who initiates the game) and updates will be sent via WiFi or Bluetooth to the other phones.

Changes in Project Design

- Selected Bluetooth as the method of communication
  - Doesn’t require internet
  - Easy interface for users to connect through

- Developed under Android Studios
  - Two available Android smartphones for testing
  - Flexible game development environment

- Limited scope to Nertz and Blackjack
  - Complexity of real time and turn based games



Functionality

- Smartphones connect via BlueTooth to initiate a card game.
- In Nertz, the phone will immediately communicate game state changes to the other phone
- In Blackjack, the game will control user turns with an FSM

Project Demo

Google Drive Video Link:

https://drive.google.com/file/d/1GkDenxpGWZyl_UjrFV41cesuVV6Ck-Kw/view?usp=sharing

WeVideo Link:

https://www.wevideo.com/view/1260467277

Methods of Implementation

- Utilized Android Studio with Java for development
    1. Initial app set up done through a xml manifest file
    2. UX/UI done through xml layouts
    3. Game logic and button responses implemented in Java
    4. Bluetooth Communication done using Android's BluetoothSocket and asynchronous event based Java to spawn user mode threads to receive/send messages
    5. Game state updates are shared between phones through JSON strings sent within these Bluetooth packets

Challenges

- Android Studio setup and learning curve
- Backwards compatibility between Android OS
  - Marshmallow (6.0) and Oreo (8.0)
- Bluetooth communication not available on emulator
  - Only had two devices, so only one person could test at a time



Potential Improvements

- Allow movement of entire/partial piles in Nertz
- Include adjustable settings for Blackjack game modes
- Upgrade multiplayer to allow more than 2 players
- Add more card games (War, Hearts, Euker, Poker, ...)
- Clean up user interface and add rules page

Conclusion

- Play free multiplayer card games without ads
- Learned practical implementation and limitations of Bluetooth
  - Simple to setup and universally available
  - Short-range and semi-stable connectivity