



# Remote Command App

John Lee, Yichen Wu, Will Chuang, Daguean Chen.

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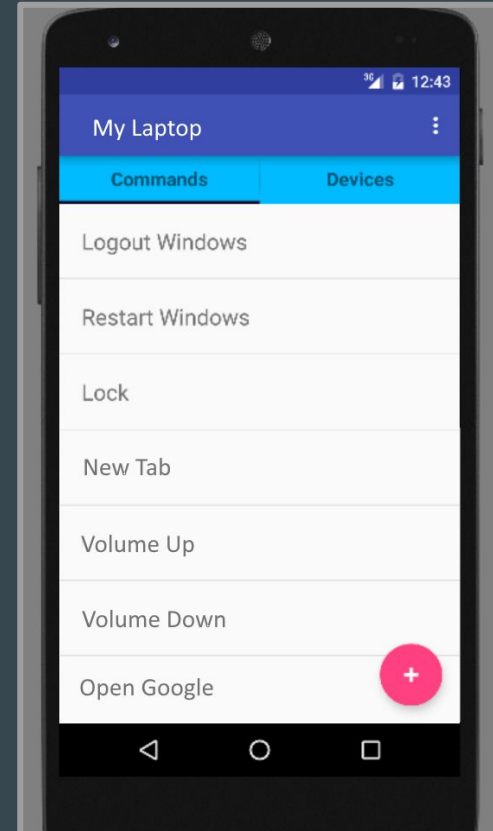
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# Motivation

- Simplistic combination of PC remote control apps and remote shell
  - PC remote control apps don't have a lot of customizability but are easy-to-use
    - E.g. Can't implement new functionalities
  - Remote shell apps aren't useful for average user that don't have experience in shell scripting
- Single press buttons that send/execute scripts on PC make it easy-to-use and convenient
- Preset commands make it useful for the average user
- Customizability of commands make it useful for programmers

# Software, Hardware, Languages Used

- Android Studio
- Java
- Python
- Batch
- Wi-Fi
  - UDP
  - TCP
- Android Smartphone and Tablet
- Computer
  - Windows mostly
  - Tested PC application on Linux as well



# Functions Implemented

## ANDROID APPLICATION

- Java
- *Realm* database integration to save commands and device IP address and passwords locally
  - *Realm* - Third party mobile database
- When connecting, user is prompted to input device password if it has not been saved
  - Device passwords are sent after they are hashed
- Auto-connect and login to last connected device when application opens
- Create/Edit/Delete/Reorder commands
- PC device discovery search using UDP

## PC APPLICATION

- Python
- Prompts user to create password for device access if password does not exist
  - Passwords are saved to local file after hashing
- Continuously broadcasts UDP packet for device discovery
- TCP connection used for sending commands
  - Authenticate connection using password
  - Authenticate commands using common linear congruential number generator
- Caches commands for faster repeated usage
  - Checks version of cached command, if not up-to-date, will request updated script

# Difficulty During Project

- Coming up with various preset commands to include with the application
  - Wrote preset commands for Windows only so far
- Sending UDP packet on broadcast address (255.255.255.255) not working for some LAN
  - Replaced with looping through 0 to 255 on local subnet (e.g. 192.168.1.0 - 192.168.1.255)

# Demo Time!

## PC SIDE

1. Run Python server script.
2. If password is not set, create password.
3. Let application run in background

To create a new password, delete settings.dat and restart application

## ANDROID SIDE

1. Start Remote Command application
2. Press Search button and click on a device you want to connect to, enter password if new device
3. Send intended command

To modify commands: Press and hold down on a command to display the Edit, Delete, and Switch order options.

# Member Contribution

- John Lee
  - Android application and UDP discovery functionality
- Yichen Wu
  - PC app TCP connection, helped with pre-set commands
- Will Chuang
  - Presentation slides, helped with pre-set commands
- Daguan Chen
  - UI and GUI, presentation slides, non-preset commands

# Further Improvement

- Real-time keystrokes (remote keyboard)
  - Have keypad up in Android app and whatever keys are pressed get sent in real-time
- Cursor control (remote mouse)
- Simultaneous connections with multiple devices
  - Function to send to specific device or to all devices
- Layout customizability
  - Reposition command buttons
  - Different sizes for buttons
  - Group buttons together
  - Function to create new pages for buttons
- Cross compatible preset commands



**Thank You!**