The Green Lab
Lab1 - AndroidRunner & ExperimentRunner

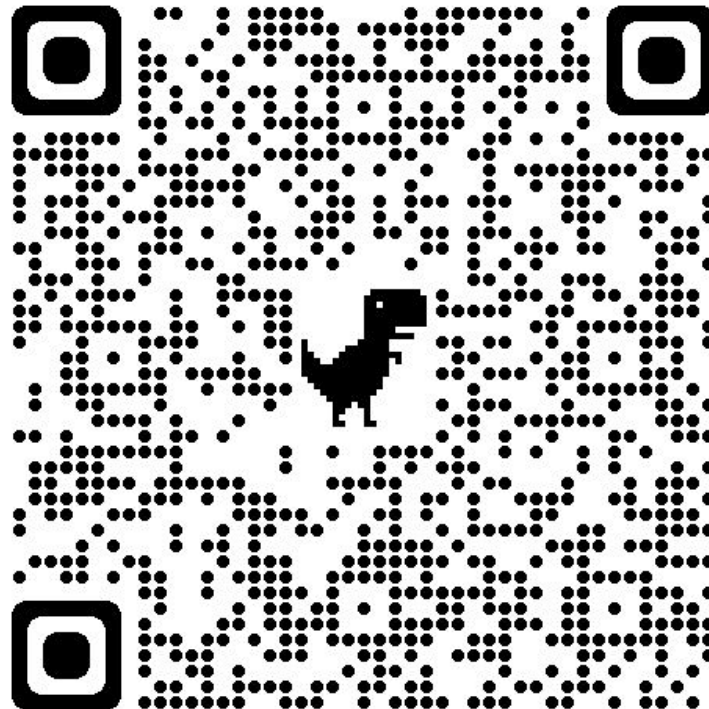### Radu Apsan

VU | VRIJE UNIVERSITEIT AMSTERDAM

LOOKING FURTHER

FOR LAPTOP EXPERIMENT TEAMS

We need to know your CPU specs

https://forms.gle/CMrUgohxqkKPShi16

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Hello, who am I?

- I'm Radu

- 2nd year MSc Computer Science

- been working with Ivano for the past 10 months on AndroidRunner

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So, why am I here?

- Help with understanding and using AndroidRunner and ExperimentRunner

- Tech support if the experiment software is not working as expected

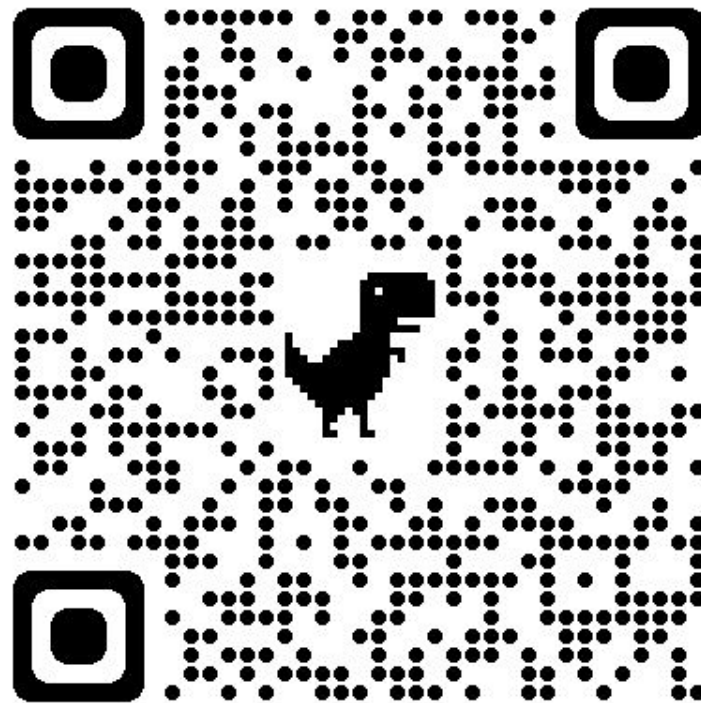- Tell you to read the README.md

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How to contact me?

Ranked from most to least preferred:

1. Email (preferably): r.apsan@student.vu.nl

2. Ask in class (I'll do my best to be there for all the classes)

3. Canvas message

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Follow along

Everything you see here is **available on GitHub**

https://github.com/Raiduy/GreenLab-Lab1

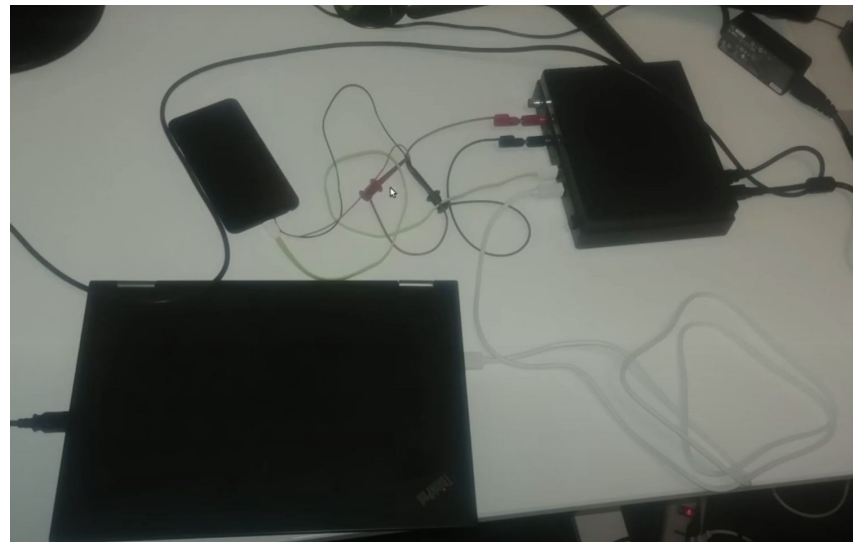

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What's the plan?

- Introduction

- Tools for experimenting

- Android Debug Bridge Demo

- AndroidRunner

- AndroidRunner demo

- ExperimentRunner

- ExperimentRunner demo

- **EXPERIMENT PACKS!!!**

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Why test (mobile) apps?

- Increase energy awareness

- Improve the usability of the device

- Understand the key factors of an inefficient application

Testing on real devices:

- more accurate than simulators
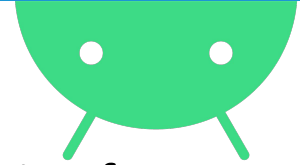
- actual real-world

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How do we test (mobile) apps?

Profilers:

- AndroidRunner:

  - Monsoon, Batterymanager

- ExperimentRunner:

  - PowerJoular
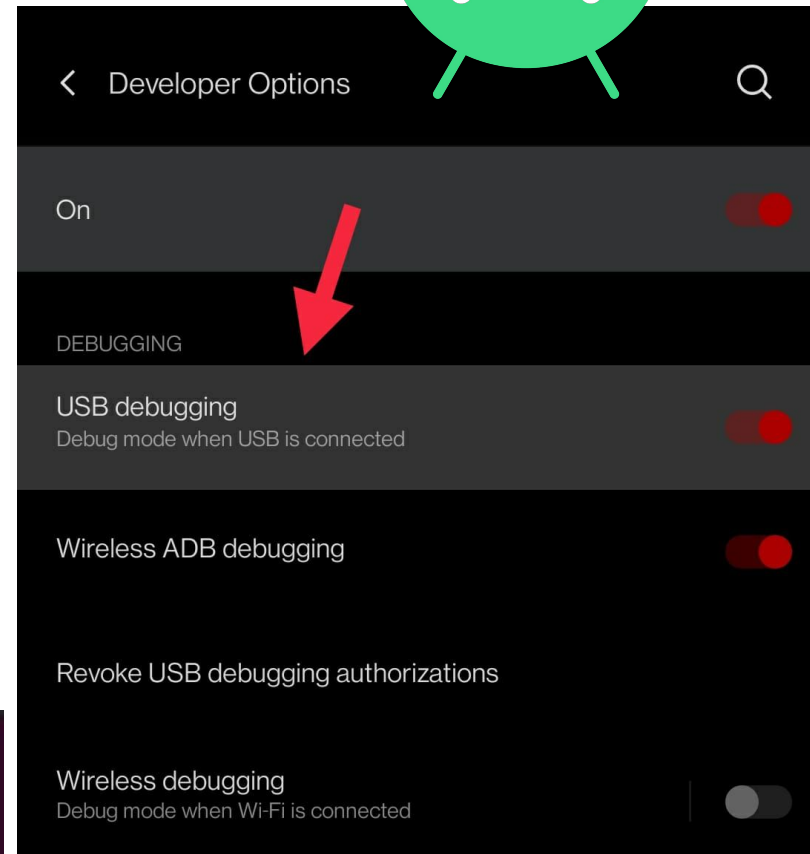
What is ADB and how do we use it?

ADB (Android Debug Bridge)

- allows the user to control and interact with Android device from terminal
- supports functions such as:
  - listing apps
  - installing app
  - running app
  - uninstalling app
  - tracking logs
  - pulling files
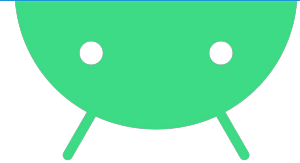 - pushing files
  - shell interaction

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ADB in action

- [Enable Developer Options](#)
- Enable USB debugging in Developer Options
- Plug in the device
- `adb devices` to start the adb server
- [useful commands list](#)


```
radu@radu-OMEN:~$ adb devices
* daemon not running; starting now at tcp:5037
* daemon started successfully
List of devices attached
73c851e9          device
```
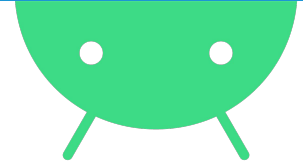
AndroidRunner

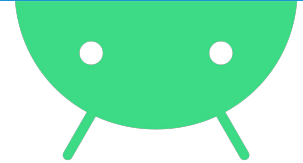- https://github.com/S2-group/android-runner
- Experiment orchestrator that interacts with the connected device
- Uses adb heavily (good idea to get comfortable with it)
- Supports several types of profilers including Monsoon
- Supports phone interaction via MonkeyRunner (how to use video)

BatteryManager profiler
- records information regarding battery consumption
- uses the BatteryManager class in the Android API
- companion app

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THROUGH THE CODE

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DEMO TIME
([before experiment checklist](#))

ExperimentRunner

- https://github.com/S2-group/experiment-runner
- Experiment orchestrator that allows for testing a PC
- Uses Python for experiment setups/runs
- Only supports certain types of CPUs (reason for the form)
- records energy and load information using Intel RAPL
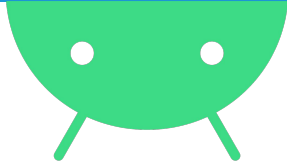
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THROUGH THE CODE

DEMO TIME

Experiment*

The earlier you start, the sooner we'll be able to help you

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Now try it yourselves!

(raise your hand if you run into trouble)