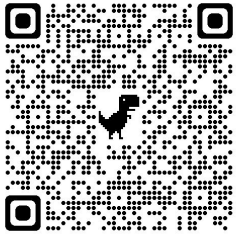
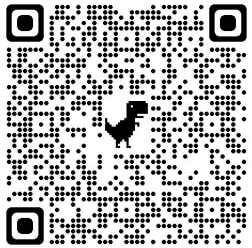


Briefing: Programming Assignment 2

CS5229 Advanced Computer Networks

TA: Khooi Xin Zhe

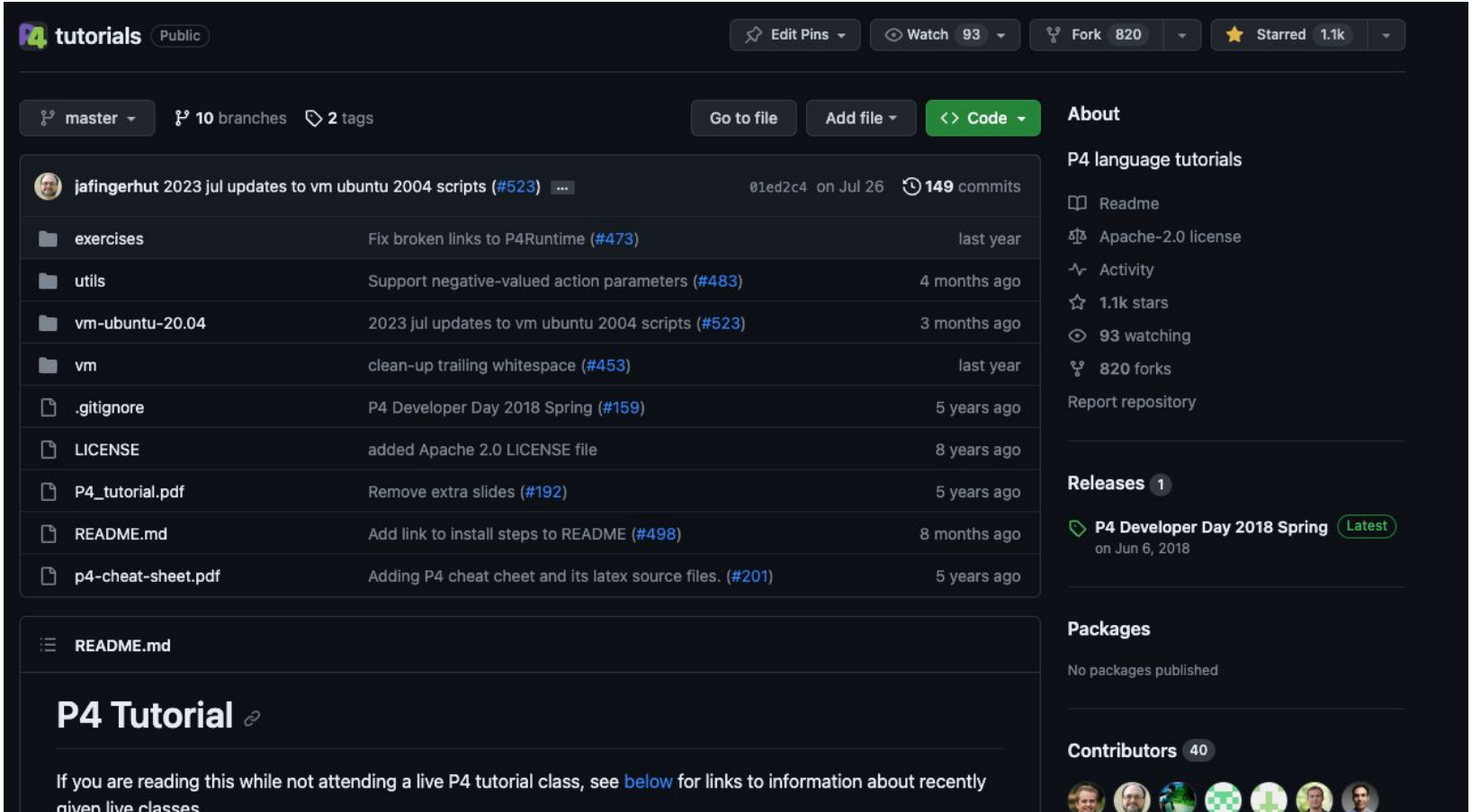
Group Registration



- Up to 2 per group
  - Can work on the assignment individually as well
- Register by 7 OCT 2023 at https://forms.gle/YT7cxmVWELgfBKKo9

Prelude: P4 Tutorial

Repository: https://github.com/p4lang/tutorials (Included in the VM)



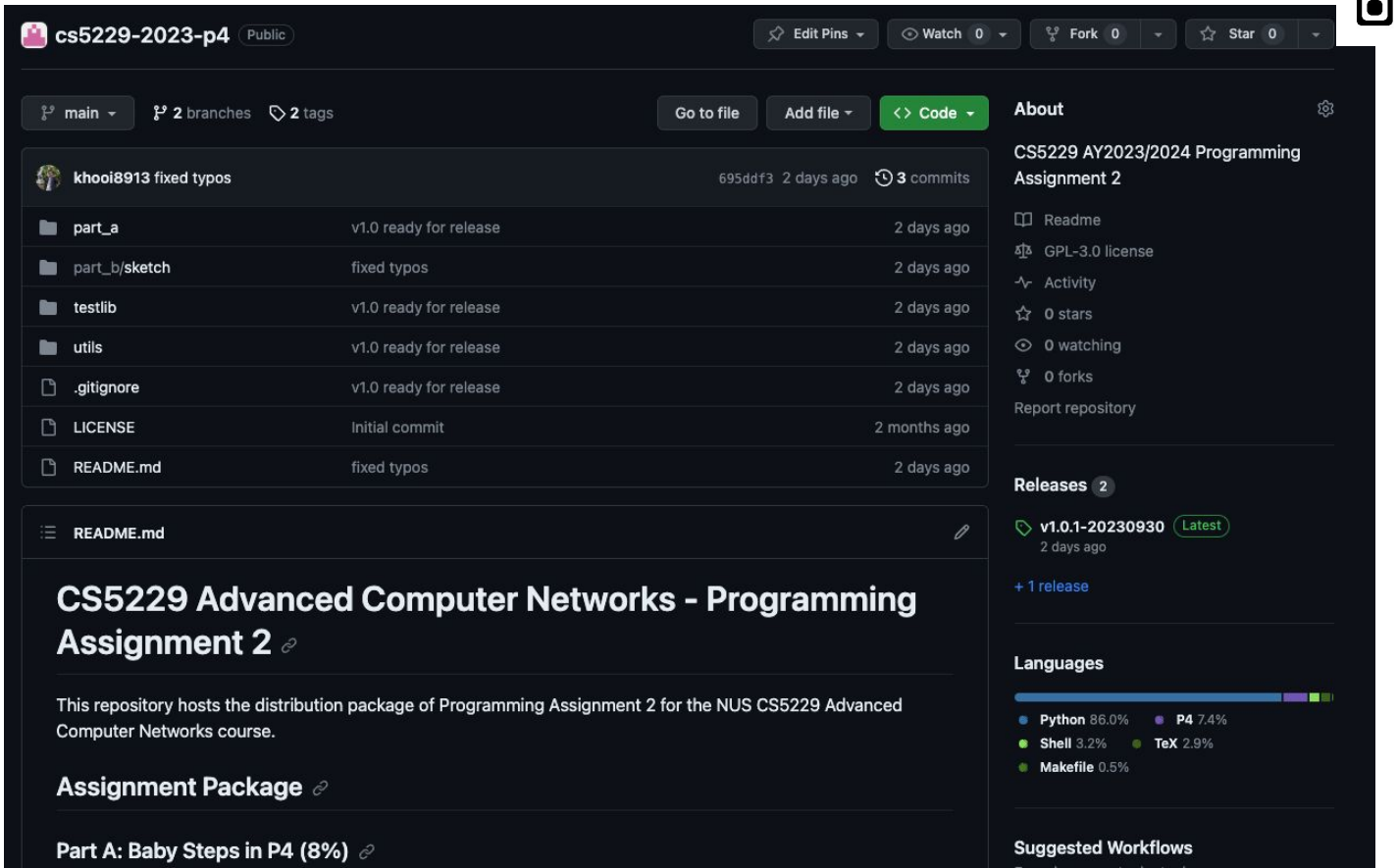
Important Dates!

- Part A: Baby Steps in P4 (8%) **DUE: 23 OCT 2023**
  - Fake Ping (4%)
  - Secret Message Exchange (4%)
- Part B: Network Monitoring with Sketches (10%) **DUE: 20 NOV 2023**

QUIZ 3 on P4 Tutorial, W7 and W8 Tutorials!
When? 13 OCT 2023

Assignment Package

Repository: https://github.com/NUS-CIR/cs5229-2023-p4



Development Environment

- P4 Development Virtual Machine
- We support AMD64 and ARM64-based machines
  - AMD64 (VirtualBox): https://www.comp.nus.edu.sg/~khooixz/cs5229/p4-dev-x86_64-build-220823.zip
  - ARM64 (UTM/QEMU): https://www.comp.nus.edu.sg/~satis/cs5229/p4-dev-aarch64-build-220823.zip

SETUP YOUR ENVIRONMENT EARLY!

Part A: Baby Steps in P4 (8%)

- Fake Ping (4%)
  - Generate responses to ICMP echo replies received
  - Do not generate responses if matches with an entry in the pre-defined filter table
- Secret Message Exchange (4%)
  - Sender: Drops off secret message(s) to the switch
  - Receiver: Picks up the secret messages(s) from the switch
    - Compute checksum of messages to verify integrity!

PLEASE, READ THE READMEs

DUE: 23 OCT 2023

Part B: Network Monitoring with Sketches (10%)

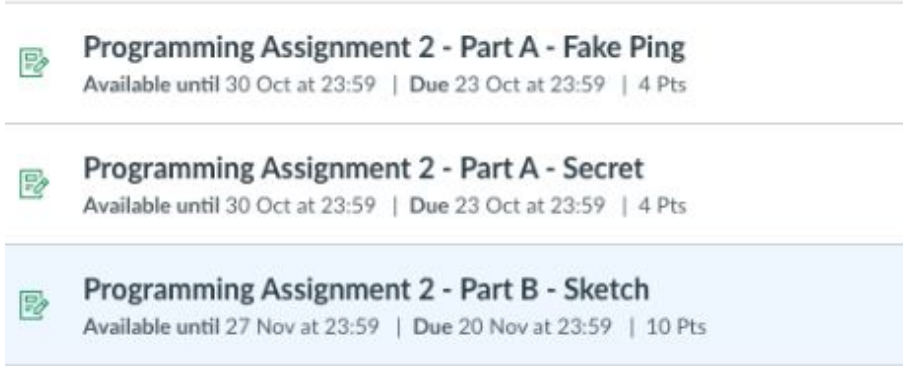
- Sketches
  - Report heavy hitters to an external collector if the HH threshold, x, is exceeded
  - Drop suspicious traffic if the drop threshold, say y, is exceeded
  - Sample traces are provided

PLEASE, READ THE READMEs

DUE: 20 NOV 2023

Submission Instructions

- Submit **only** the P4 files – **fake_ping.p4, secret.p4, and sketch.p4**
  - 1-pt penalty **<u>per submission</u>** applies if fail to follow the instructions.



Grading

- Make sure you **submit a program that compiles**!
  - If necessary, comment out certain blocks that you are unable to finish, and leave detailed comments on your thought process - partial credit might be awarded.
  - *Programs that cannot be compiled are graded harshly – 0%, and will not be manually inspected – **appeals for this case may not be entertained**.*
- Programs will be testing using the Packet Test Framework (PTF) with our predefined test cases to evaluate your program behavior
  - Similar to Unit Tests.
  - Public test cases are given in the assignment package – make sure to test your program first!
    - Though, not all public test cases will be awarded credit.
  - Additional hidden cases will be used for grading.

Late Penalty

- 20% penalty per day
  - submissions 5 days after the deadline will not be graded, and marked as 0%

Demo

Questions?