ECE 391 Discussion Week 1

Announcements & Reminders

- Make sure you have access
  - The ECE391 lab (ECEB 3026)
  - Both V and Z drive
  - Course Webpage/Piazza/Canvas
- MP0 is due next Wednesday (Aug 31) before OH ends
  - Demo to a TA in office hour before the due date
  - Must complete on a EWS lab computer
  - Start (and finish) early

Announcements & Reminders

- x86 Assembly reference sheet is available on the course website
- Setup an environment at home
  - https://courses.grainger.illinois.edu/ece391/fa2022/secure/references/doc-workhome_novpn.pdf
  - Post all related questions to pinned Piazza post
  - This is not officially supported by the staff, if you need help please grab a TA that knows ☺
  - If you want to do MP1 on this setup you must do part of MP0 on this setup too (detailed information is included in the link above)
  - Don't worry about the cifs_open break point not working on the WFH setup

Machine Problems (MP) & Problem Sets (PS)

- 2 PSs, 1% total grade each
  - Groups of at least 4
- 4 MPs
  - MP0: Environment setup (5%)
    - At most 2 hours (if you RTDC)
    - Lock computer and return (must leave note, no more than 4 hours)
  - MP1: RTC tasklet based game (x86) (10%) – Missile Command
  - MP2: Device drivers (C) (VGA, TUX) & multi-threading (10%) – Adventure/Phototour
    - 2 checkpoints
  - MP3: Operating system (C and x86) (25%) - IllinX
    - Linux style OS
    - 5 checkpoints
    - Group of 4

MP0

- Environment Setup
- **Must** be completed on a Lab machine
- Login to UIUC gitlab before your demo!

- Demos will be in the lab during office hours
- The TA will give you instructions
- Prepare for Git!
  - You will be asked questions about git commands during the demo
  - Learn how to do basic operations (command-line interface, not a GUI)

Lab & Office Hours

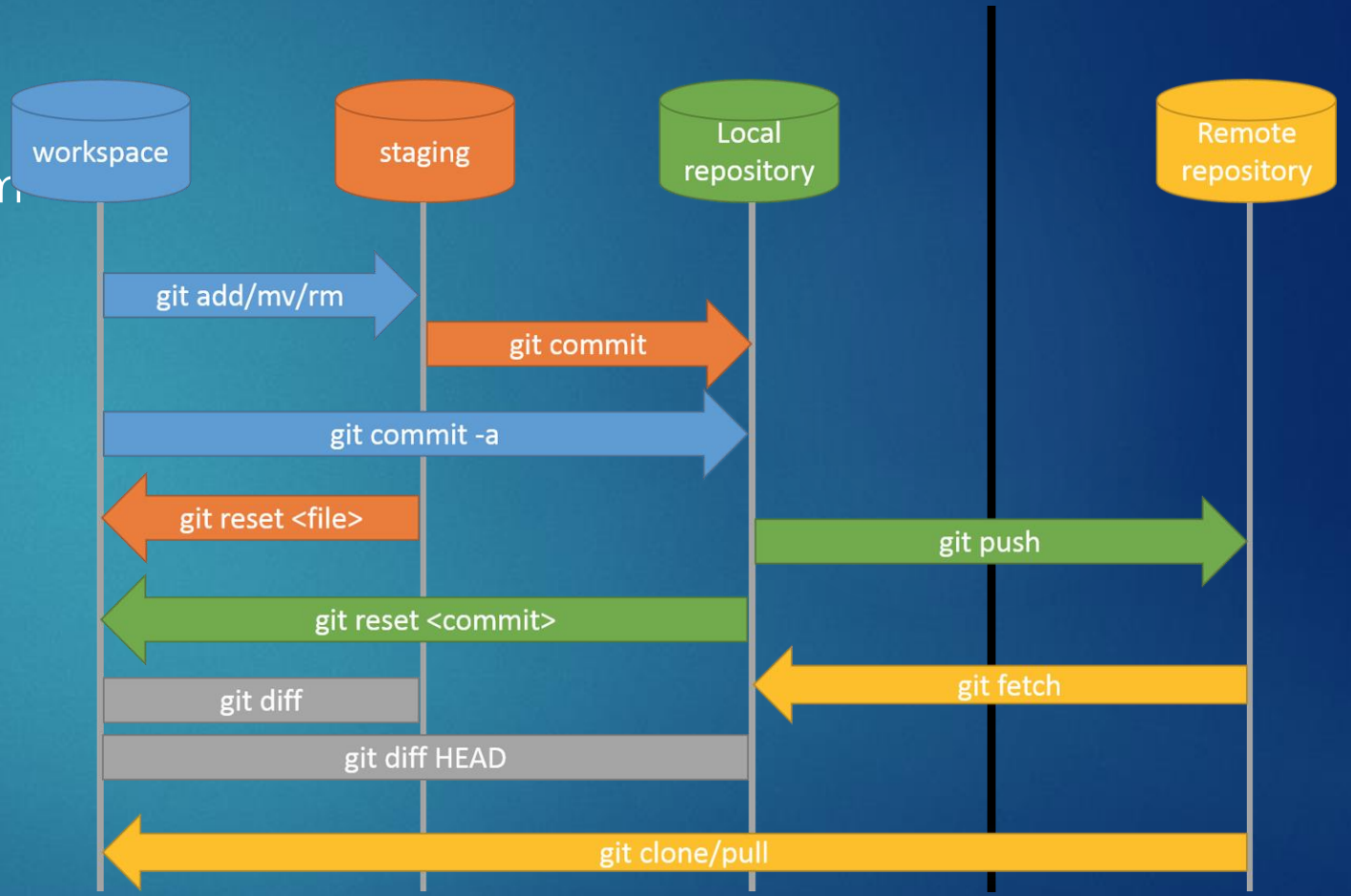
- ECEB 3026 is dedicated to ECE 391 only
  - If you see students from other class and the lab is full, tell them to leave (be nice)
  - Only lab with office hours!
- Machines in ECEB 3022 and ECEB 3070 are also configured as EWS machines so you can use them, but they are not private to 391.
- You may lock your machine AND leave a note for up to 30 minutes (except for MP0, which is 4 hours max)
- Trash must go outside the lab
- Do **NOT** block the door (either open or close)
- Windows (the physical ones) don't open so stay fresh
- Write your name on the queue if you want to ask questions
  - Queue is on the course website
  - Be prepared for questions from the TA
  - You must be in ECEB 3026 when we call your name

GNU Debugger (GDB)

- Some useful commands
  - Ctrl+c: interrupt the current running program so you can use other commands
  - info reg (ir): show all current values of the registers
  - continue (c): continue to run the program you interrupted
  - run (r): run the program
  - step (s): executes the next instruction, if the next instruction is a function, this will step into it
  - stepi (si): execute the next machine instruction (useful for inline assembly)
  - next (n): executes the next instruction, if the next instruction is a function, this will execute the entire function
  - breakpoint (b): allows you to set breakpoints, either function names or line numbers, you can also specify file names too.

Git

- Distributed version control system
- Useful commands
  - git pull
  - git push
  - git commit
  - git log
  - git add
  - git status
  - git reset
  - git diff
  - ……



Make & Makefile

- A **Makefile** is a set of dependencies that make parses and then executes in order to make a target file
  - Basically you put the compilation command you normally run in the terminal in this file and give the target a name
  - Example:

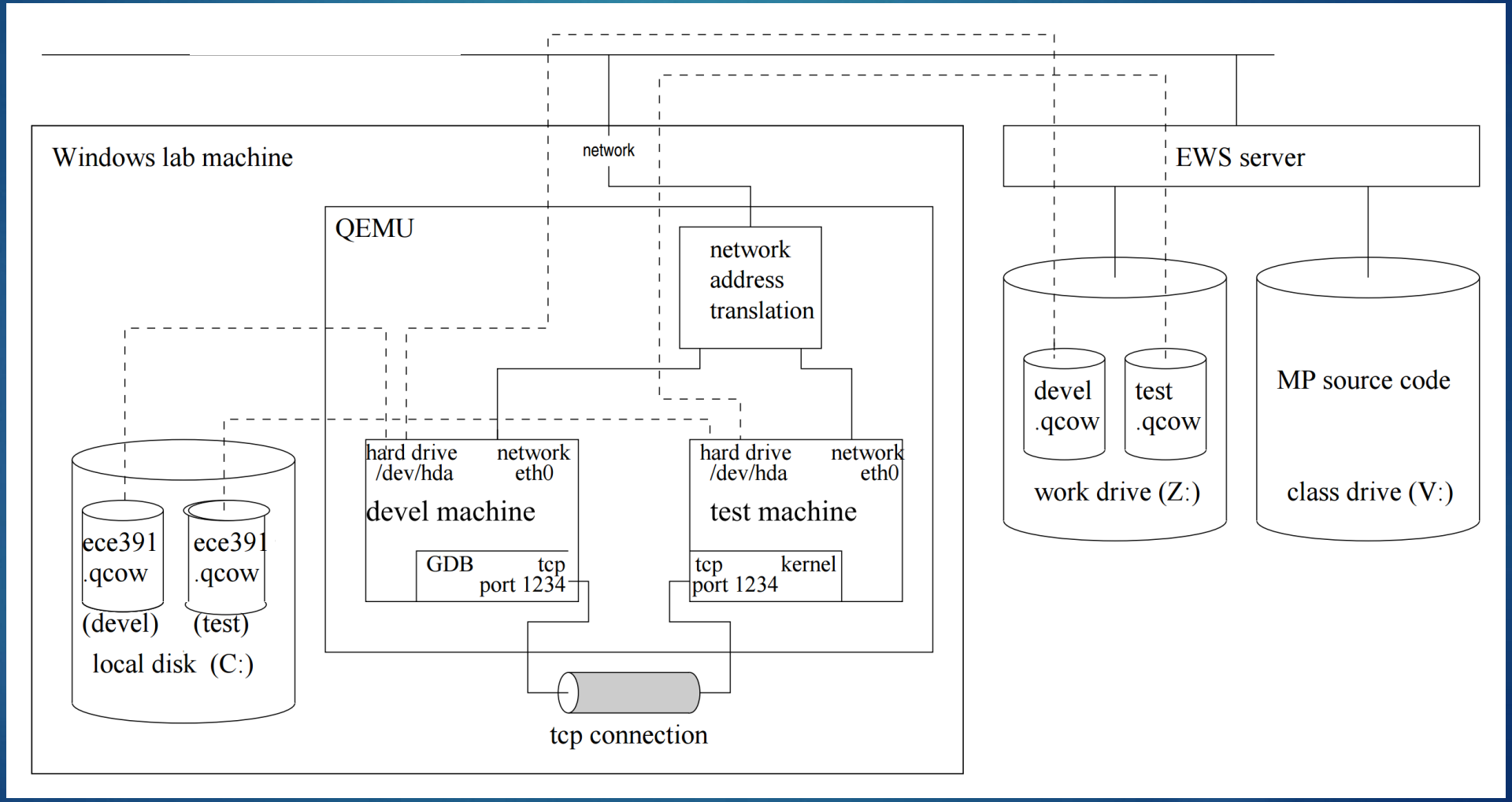
```
hello: other.o
    gcc other.o hello.c -o hello
other.o:
    gcc -o other.c
```

  - Running "make hello" to execute that target. Necessary dependencies will also be run automatically
  - Running "make" with no arguments will run the target "all:" if it exists
- We do not cover this in the lectures / discussions

Environment

- V: class drive, where you find your MP0 materials
- Z: work drive, your VMs and your source codes go here, mounted as /workdir/ inside the VMs (not mounted in working from home)
- U: EWS Windows home drive, do **NOT** use this one
- Shortcuts
  - devel
  - test_nodebug
  - test_debug
- QEMU troubleshooting
  - Check file "C:\qemu-1.5.0-win32-sdl\stderr.txt" if VMs are not starting

Environment



Some useful suggestions

- Always attend lectures and discussions as long as you don't have conflicts (which you shouldn't).
- Use Piazza
  - Everything course related will be posted
- Take full advantage of the course website
  - homework and MP doc, OH information, syllabus, practice exams and other useful references.
- Learn Git!
  - We use Gitlab for MP code distribution and submission. Make sure you have access to Gitlab through your netID.
- For office hour, we have a website to keep track of question queue and TA's effort to guarantee fairness.

Some useful suggestions

- Make sure to start early on MPs.
- Think and read before you raise any questions.
  - Questions are highly welcome, but we will be more glad to help if we know that you've already put some effort looking for answers. (***RTDC*** = Read The Document Carefully)
- Kind feedbacks to the course are always welcome.
- Do **NOT** cheat
- Have fun!