Computer Systems Org Recitation 009

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Notes

- Git workshop today
- Hands-on
  - Unix/Linux commands
  - Git
  - Makefile
  - C programs
  - Linserv1

Basic Unix/Linux commands

- **man** - manual
- ls - list
- cd - change dir
- pwd - current dir
- mkdir - make an empty dir
- cp - copy
- mv - move
- rm - remove
- echo - write arguments to the standard output
- cat - output content of a file
- wc - word count
- grep - pattern matching
- touch - create a file

- Google/ man
- https://github.com/jlevy/the-art-of-command-line

Git

- Git config
  - https://stackoverflow.com/questions/35942754/how-to-save-username-and-password-in-git-gitextension
  - git config -- global credential.helper store
  - git pull
- Git commands
  - git clone <url>
  - git status
  - git add
  - git commit -m “<your message>”
  - git push origin <branch>
  - git pull origin <branch>

Linserv1 - copy

- Secure copy
  - scp -r /full/path/to/folder netid@access.cims.nyu.edu:/home/<netid>
  - scp /full/path/to/file netid@access.cims.nyu.edu:/home/<netid>

- Git - copying from local machine to linserv1 (I'd recommend this)
  - local machine > Git add > Git commit > Git push > repo
  - repo > git clone > git pull origin <branch> (master) > cims

- Git - for each new assignment
  - git clone <url>
  - git add file1.c file2.c
  - git commit
  - git push

Makefile

A good Makefile:

```
myprogram: main.o util.o
  gcc main.o util.o -o myprogram
main.o: main.c
  gcc -c main.c -o main.o
util.o: util.c
  gcc -c util.c -o util.o
clean:
  rm -f main.o util.o myprogram
```

- Make supports pattern matching with the %
  - %.c means all .c files
- Make has “automatic variables”
  - The meaning of variables within a rule is contextual
  - $@ is the name of the rule
  - $^ is the list of dependencies
- Example:

```
%.o: %.c
  gcc -c $^ -o $@
```

C basics

- Basic Data types
  - integer - signed, unsigned
  - char
  - float
- Functions
- Loops
  - for
  - while
- Conditions
- Pointers
- Data structures
  - Array
  - Stack

Exercise…

- Create a dummy repo on GitHub
- Clone it onto your system
- Coding: create C files, makefile
- Execution: compile and execute them
- Commit and Push

- Copy into linserv1
- Execute on linserv1