Lec 2

Linux, Editors, Compilers
Today

• Finish course setup
  – Enter your programming experience
  – Buy the book
  – Enroll in piazza

• Discussion CENTR 212. 5:00 – 5:50
  – Bring laptops

• HW1 online
```bash
for i in `awk '{print $1}' file1| uniq`; do
grep $i file2 | head -1 | \
    awk '{print $1 "\t" $2 "\t" $3}' | tr '\n' '\t';
for j in `seq 4 50`; do
grep $i mpi_app_results-16.csv | \
    awk "{print "$j\"}" > z1.out;
    python ../..//nearest_3.py; done | tr '\n' '\t'; echo;
done;
done >> zmpi16
```
Navigation
Directories

• / - The root directory
• . – Current directory
• ../ - one directory up
• ~/ - your home directory (unique to each user)
Key commands

• cd <directory> - change directory
  – Absolute path
    • cd /home/cs11/cs11wb/HW1/
  – Relative path
    • cd ../../HW2/submit/
• mkdir <path/dir_name> – make directory
  – mkdir ../HW3
• ls <directory> - list contents of directory
  – ls /home/cs11/cs811wb/
• pwd – which directory am I currently in
  – /home/ieng6/linux/cs11/cs11wb
Running `pwd` returns

/home/linux/ieng6/cs11e/cs11ezz/HWs/HW1

Which command(s) would navigate you to "junk"

A) `cd ..../junk`

B) `cd ../../../junk`

C) `cd /home/linux/ieng6/cs11e/cs11ezz/HWs/../junk`

D) A & C

E) A, B, & C
Useful commands

- **cp** `<path/file1> <path/file2>` - copy file1 to file2
  - `cp /home/cs11e/cs11ezz/Test.java ../Test.java.bk`
  - `cp /home/cs11e/cs11ezz/Test.java ../`
- **mv** `<path/file1> <path/file2>` - move file1 to file2
- **rm** `<path/file>` - remove file
  - `rm ../HW2/README`
How could you rename a file

I want to rename the file “adam.java” to “hw1.java”. Which command(s) could I use?

A) cp adam.java hw1.java
B) rm adam.java hw1.java
C) mv adam.java hw1.java
D) rename adam.java hw1.java
E) (a) and (c)
Editors

Classical learning curves for some common editors

http://mrozekma.com/editor-learning-curve.png
Key commands

• emacs
  – Ctrl-x Ctrl-s – save file
  – Ctrl-x Ctrl-c – close file

• vi(m)
  – i – insert text
  – “esc” :w – save file
  – “esc” :q – close file
  – “esc” :wq – save and close the file
0000
Programming Levels

- Machine code

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Programming Levels

• Machine code

```
55
89 e5
83 e4 f0
83 ec 20
c7 44 24 1c 00 00 00
```

• Assembly languages

; Example of IBM PC assembly language
; Accepts a number in register AX;
; subtracts 32 if it is in the range 97-122;
; otherwise leaves it unchanged.

```
SUB32 PROC
    CMP AX, 97
    JL DONE
    CMP AX, 122
    JG DONE
    SUB AX, 32
DONE:    RET
SUB32 ENDP
```

FIGURE 17. Assembly language
Programming Levels

- Machine code

- Assembly languages

- High level languages
Programming Levels

- Machine code
- Assembly languages
- High level languages
You compile a non-java program on your desktop (it uses a Intel x86 processor) and then email the program to your friend to run on his system (it uses an AMD processor). Will it execute? Why?

A) Yes. The program is already down to machine code and can execute anywhere

B) Yes. Your friend’s system will automatically translate the program into a format it can execute

C) No. The machine code will be different on the 2 systems

D) No. Your friend’s system may not have the compiler/assembler installed.