Recitation 4: Unix I

MIT - 6.033 Spring 2021 Henry Corrigan-Gibbs

Plan * Unix history & context

Logistics * Feedback form feedback henrycg.com * Design project teams

* Discussion: Files, Fols

* Breakout rooms:

* Wrop-up discussion

Unix History Who are the authors? Where are they? Ritchic: c Why are they guilified?

(6.033 recitation notes ... but to 1975)

Counterpoint to Multics - all-encomposing (Project MAC)

to Delays in development in Multics caused Bell to pull out

Computer system designed by programme is busines pargin Biz: More stuff -> \$\$\$\$ (".1. spreadshed file) PDF file...

Prog: More stuff -> More base & nore headlacher

"Small is good" L" Worse is better" -> Show slides <-

IMPORTANT: The system you we taken is influenced by Unix, but is UAY more complicated than Unix.

File I/O in Unix

- What is special / I formt about files in Unix voisus predecesors?

* Special files - encything is a file (elevator)

/dev/random /dev/null Ider/makin, / dev / input / mover

- Simple interface - just R/W La os has no idea what's in your files

-Why is this a good iden? Bad iden?

Other ways it could have Wor hed

Memory - Mapped Files + Simple + Intuitive ptr = mm ap (my_file.txt); - Addr space is smill - Resizing pt, [2] = `a`; - Maybe not eff - Performence?

Key-Value Store + Good for many apps pti = read (filep, "key") write (Silep, "Key", "value") -Not good for all apps -OS has to make choice ... will probably chose wrong 2D Files read (file p, but, xmin, xmax ymin, ymax); + Writing 2D shapes + Fancier APIS - Complex - Not easy to map to devices - App-speific

Exercise

1. Say you run:

Sd = open("/home/henrycg/file.txt", "r")

What are the various disk reads that this Unix machine executes before returning? Is Write out a diagram (see next)

Breakout rooms: 2. In §3.2: "all links to a file have equal Status"

Lo What does this mean? Lo What are pros/cons to this approach?

What is on example of simplicity > generality? 3, * Fle size limit * GUI

i-list

i-node user ID, group ID access b.ts size addresses (<10) times # links type: dir/516/ ----1. Find i-node for root dir 2. Open physical addr with Contents 3. Look for /hone 4. Find i-rode # of /hone S. Look at inde of /home Open physical contents of /home 9 * Find loc = 5 ... (per checks, fines, ofc.)



Wrop-up discussion

1975: Is the lack of objective toy to building successful systems? 1976: How might hele of objectiven contribute to failure?

Consequences of "by programmers"?