CSC104 Winter 2013
Why and how of computing
week 10

Danny Heap
heap@cs.toronto.edu
BA4270 (behind elevators)
http://www.cdf.toronto.edu/~heap/104/F12/
416-978-5899

Text: Picturing Programs
operators and operating systems

networks

Notes
Machines began to take over setting the program counter to a new job, collecting the output, fetching memory... but it was still one job at a time.

As late 1980s—programs waited their turn—batch.
time sharing, version 0.1

chat. spread

\[ \frac{600}{60s} \times 10/s \]

word processor

\[ \approx 20/sec \]

computer switches tasks — multitasking!
one user, one program, one computer

Early 1970, 1980s

PC

Apple

Commodore 64

Run program (e.g. word processor), finished, turned program off + started another.

Mode hardware accessible to user + programs. File -> filename.
Does one task stop, or only appear to stop, for the other?

- wanted multi-tasking,
  like 1960s but personalized
unix (mostly) to the desktop
GUIs, time-sharing, networking, flame-wars

Mac OS
artists, musicians, multimedia

Windows
masses, work-related

Linux
programmers, hobbyists, academics
an operating system should have

- kernel (shell, shielded access to hardware, referee sharing)
- utilities
  - command-line programs, get info
  - GUI - start programs, get user input
  - maintain & install hardware/software
  - backup file
  - between programs
roundly connected
ring topology

wait for the token

given direction
sender gets
back as
confirmation
centrally connected
star configuration

hub could fail.

server runs things
all connected
bus configuration

coop erate and back off

"Talking" - Some time
both stop
back off
- (Random time interval)
network of networks

local networks interconnected by gateways
(click images)
the medieval internet

- email
- file transfer protocol
- Network File Service
- Tim Berners-Lee: WWW impossible without open protocols
now the internet ≈ WWW
antipodal clicking...

- where’s the content?
- how’s it move around
- who’s in charge?