

2 OCT 2015 wk1 - 10am

Jed Cobbs  
for  
Charlton  
Rooda

Early computing  
with Kirk Martinez

## COMPUTER SYSTEMS

micro programming

then local storage for common actions  
such as cosigns

### Punched Cards

Jacquard Loom 1725 for weaving patterns

Hollerith Punch Card 1890 stats about people  
+ tabulator

Sorter

then IBM Punch card

1952 first IBM 701

Commercial scientific  
computer

2k 36b words

36bit accom

would be rented with technicians to the  
company.

(see slides for more details)

Fortran + LISP developed for it  
very different from each other but developed  
at the same time

## IBM 650

DRAM memory \$500,000 for 2k words

1956 5MB £50,000 50 actual disks  
multiplexer

Early microprocessors

intel 4 bit computer  
on a chip

Intel 4004 in 1971

add to a cash register

(see slide)

2,250 transistors (!)

108 kHz clock speed

memory 640 bytes

Intel 8008 in 1972

8 bit version

interrupts

3500 transistors 16k bytes  
address → memory

no direct access to RAM



## 1975 The Altair

'first mass produced' personal computer

2 MHz 8080 lights for output

Cover of Popular Electronics magazine

16 bit microprocessors avoid issues where numbers  
over 255 are an issue! (ASCII ok)

Moscola 68000 in 1978

Intel 8086 / and 8088 in 1978

Moscola 68020 (internal 32 bit) 1984

Intel 80286 (OS support) 1982

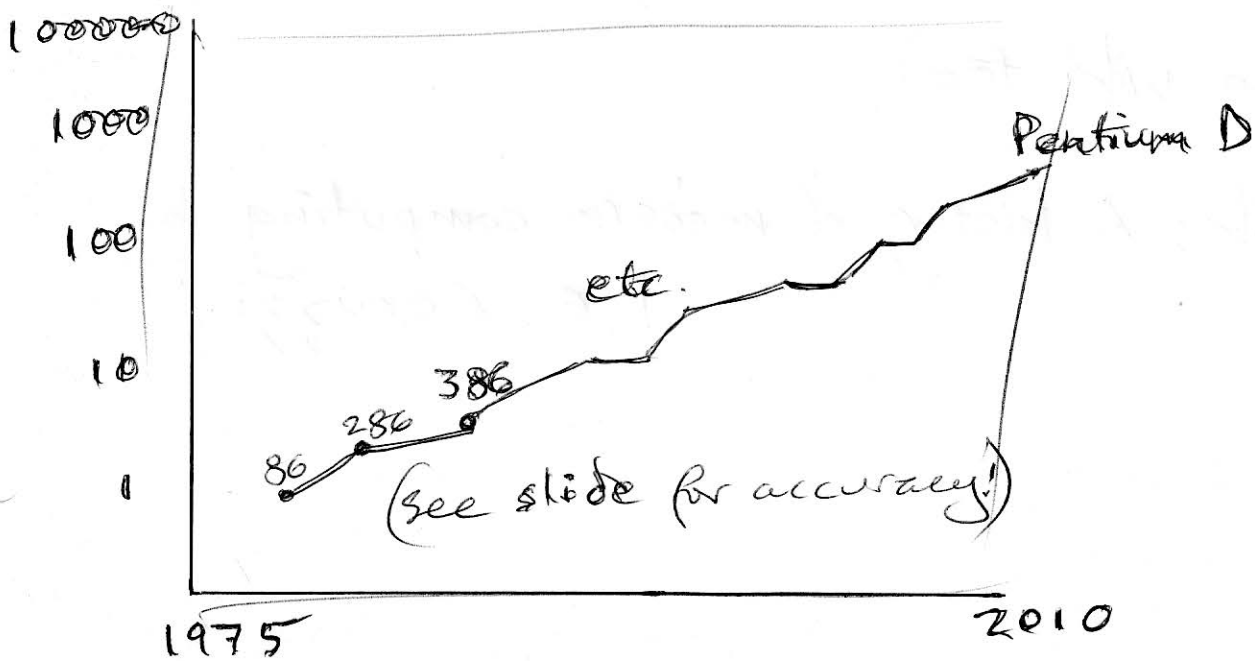
IBM PC

early personal computers 1977

Apple II

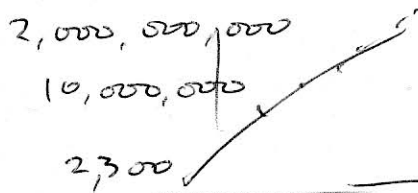
Commodore PET

Intel microprocessor performance in MIPS  
(millions of instructions per second)



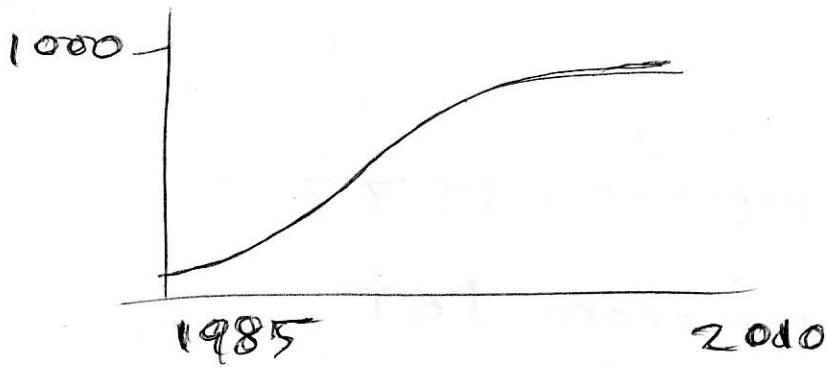
Gordon Moore - Moore's Law  
of Intel transistor count doubling  
every 18 months

CPU transistor counts 1971 → 2008



(see slide for accuracy)

# Clock frequency history of CPUs



electricity slower than light, distance too far across PCBs

Reading and watching list on last slide  
(see wiki too)

Book: A history of modern computing by  
P. E. Ceruzzi

(back at 4pm)