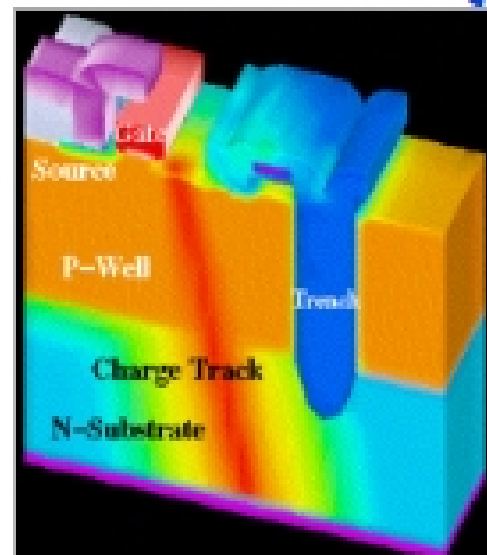

CS 152

Computer Architecture and Engineering

Lecture 13 – Cache I

A cosmic ray hits a DRAM cell ...



2006-10-12

John Lazzaro
(www.cs.berkeley.edu/~lazzaro)

TAs: Udam Saini and Jue Sun

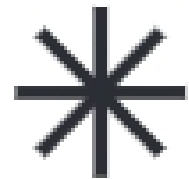
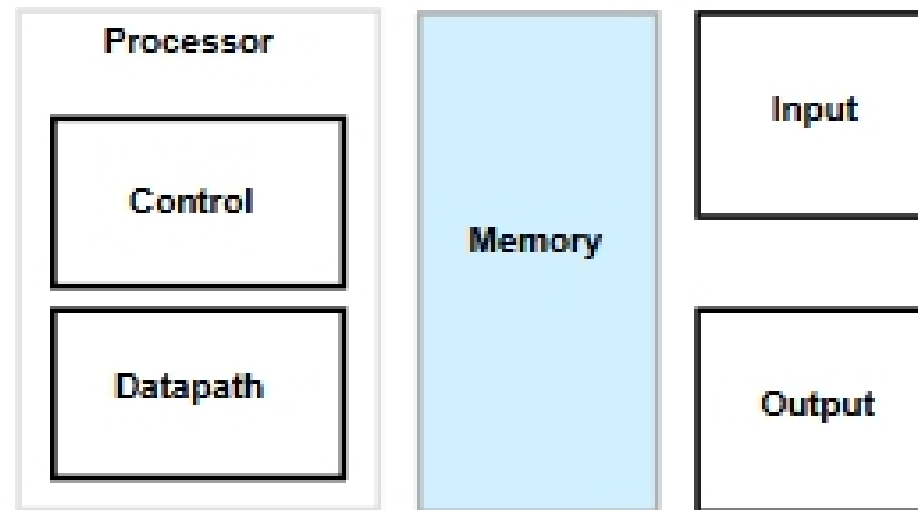
www-inst.eecs.berkeley.edu/~cs152/



Today: Caches and the Memory System



Memory Hierarchy: Technology motivation for caching.



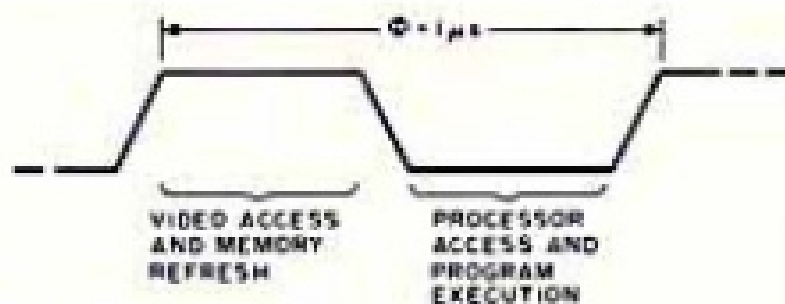
Locality: Why caching works



Cache design: Final project component.

1977: DRAM faster than microprocessors

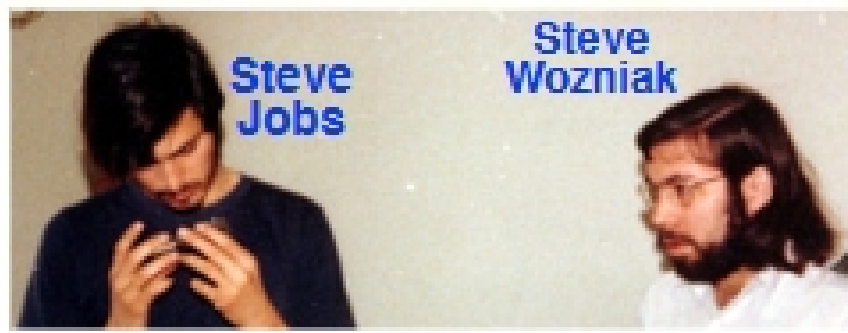
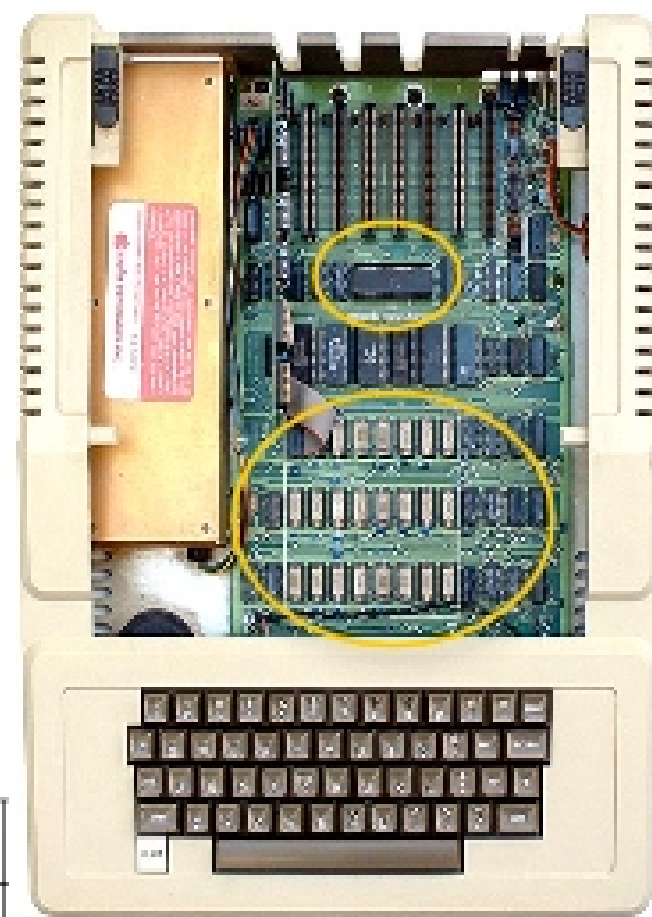
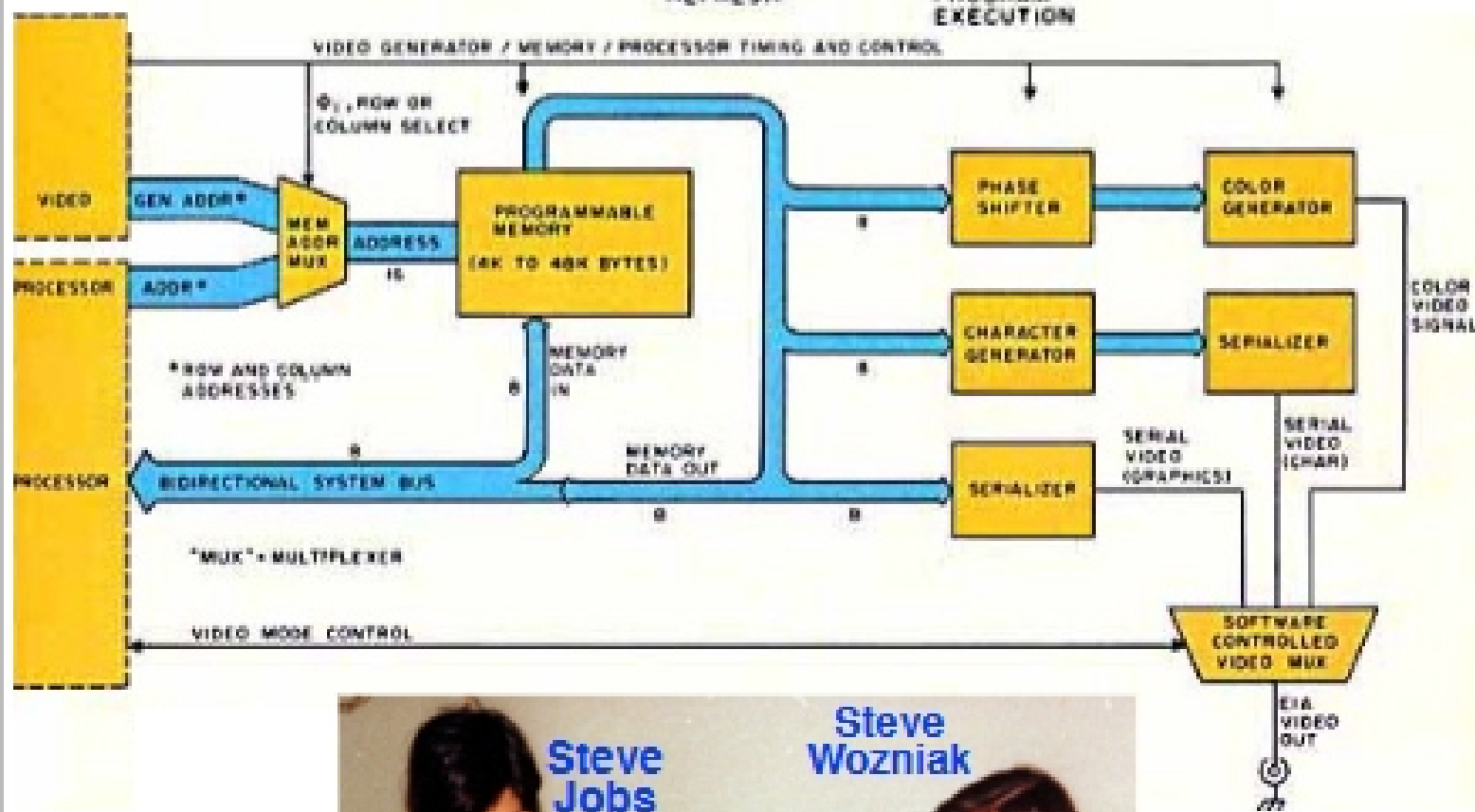
TIMING:
6502 PROCESSOR'S
 Φ_1 CLOCK SHOWING
WHEN AND BY WHOM
MEMORY IS ACCESSED



Apple II (1977)

CPU: 1000 ns

DRAM: 400 ns



RAM Complement	Apple II System
4K	\$ 1,298.00
48K	2,638.00

