

CS 208

M, 2 Feb 2026

C program



C compiler
translation

Machine language



Physically drives
computation in
CPU

Each chip type
has its own
machine lang.





Machine language (x86_64)

Kinda
human-readable
synonyms
for Mach lang.
instructions

Assembly
language



Intel — the first "micro computer
on a chip" company
Dominant 1972 — 2010

Big Court
case
~1990

x86_64 is Intel's language

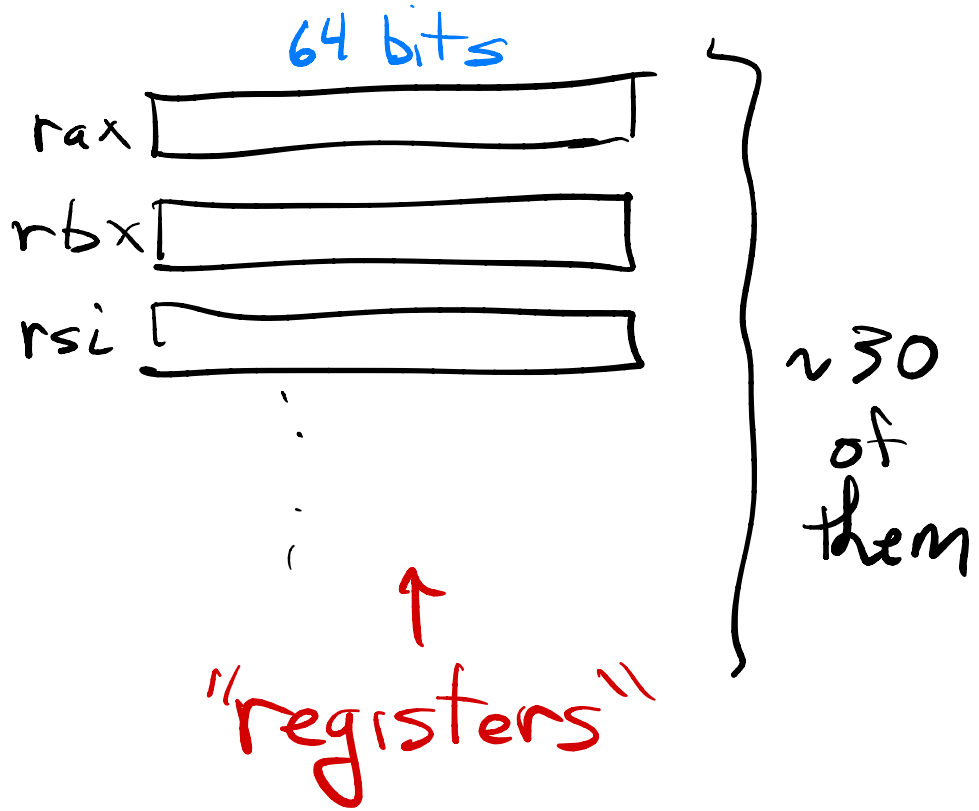
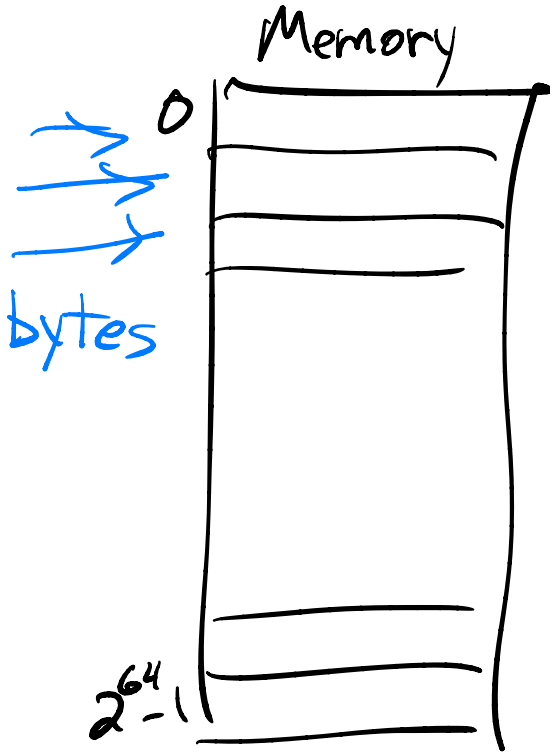
MIPS
RISC

AMD — direct competitor; also use x86_64

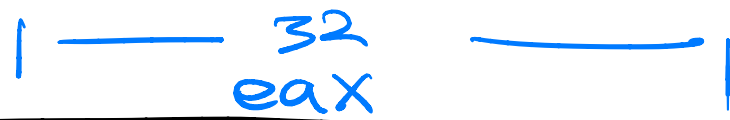
ARM (different machine language, designed
for low-power devices)

Macs since M1 chip; most/all phones

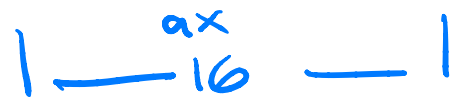
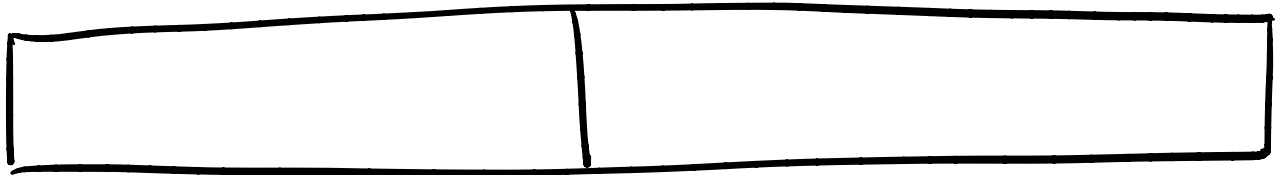
Machine/assembly language — architecture



- Computation happens in registers
- data gets "loaded" from mem.
into regs.
- data gets "stored" from regs
to memory



rax



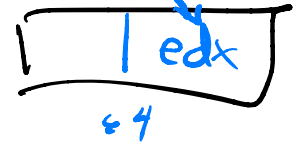
ah

al

edx



rdx



eax



edi



Puzzle 0

function1(int n)
movl %edi, %eax
Copy edi into eax

eax | 10

edi | 10 | n

function1(10)