Lecture #8

Operand Locations

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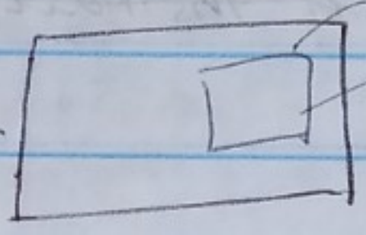
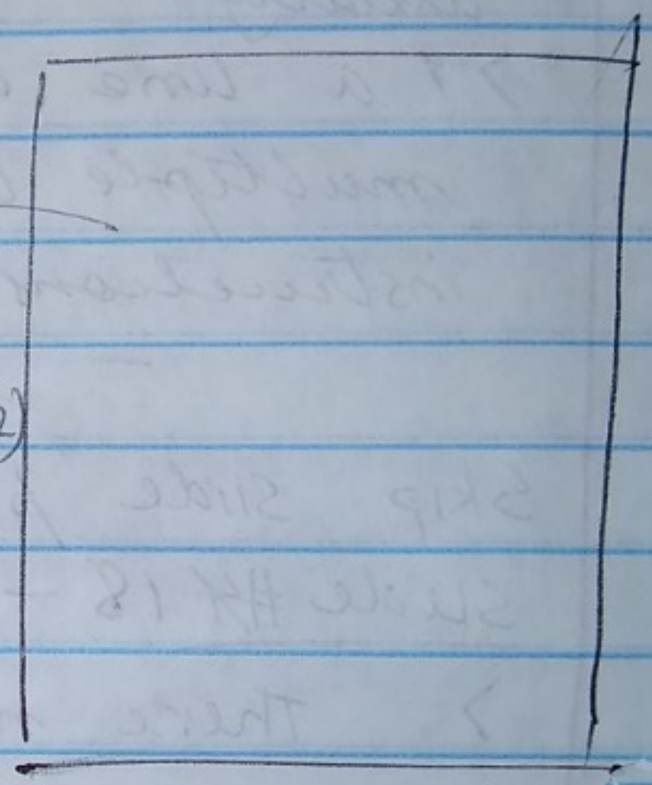
In x86 → 8 regs.

In MIPS → 32 regs.



Processor

Register file: containing a set of registers (#32) (each ~~taking 32 bits~~ of size 32 bits)



memory (8GB/16GB/32GB)

(1) In C all vars are located in the memory.

Explain as you draw.

(2) Accessing memory is expensive.

(3) To avoid repeatedly accessing memory, move values from memory to register

(4) MIPS, ~~in fact,~~ instructions, in fact, require operands to be register values only.

(5) So, registers are used as a scratchpad.

(6) Note register file is much smaller than the memory.

Tradeoffs

(7) less registers fo more expensive data transfer, more registers means more expensive resources on the processor (real estate)

add, & sub