

(if you get confused)

OPCODE



• Instruction:

- 1 - add 000
- 2 - subtract 001
- 3 - scale 010
- 4 - multiply 011
- 5 - Transpose 100
- 6 - unused 101
- 7 - write to mem 110
- 8 - stop 111

[1 read from reg/mem
1 write to reg]

maybe read?

3 bits + 2 bits

total opcode = 27 bits

9 27-bit blocks

Instruction memory size (opcode = 27 bits)

- 1 - Add
- 2 - store (needed iff "store" implies store in MEMORY)
- 3 - Transpose
- 4 - store
- 5 - sub
- 6 - store
- 7 - scale (store in reg)
- 8 - multiply
- 9 - store

$27 \times 9 = 243$ bits in instruction memory.

9, 27-bit blocks \Rightarrow 4 bits for addressing

Data Memory size

- 6 matrices $\rightarrow 1536$ bits $\rightarrow 192$ bytes $\rightarrow \dots$
- Stored as 16, 16 bit variables, $\dots \rightarrow 96$ words (16-bit words)
R0C0, R0C1, R0C2... \rightarrow at least 7 bits for addressing
- need $6 \times (16 \times 16)$ bit blocks in memory
 \rightarrow total of 96 16 bit registers