
0X BARE
CMPSC 0XC8 ALLEGHENY COLLEGE 0X7E7
C8 METAL

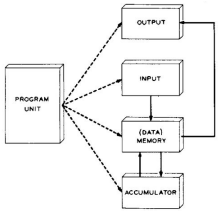
Activity

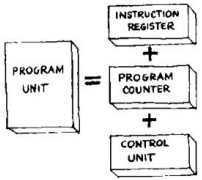
For your designated table:

- look up the machine assigned to you, identify what you take to be its historical significance and list 3 facts that you find curious or interesting

Atansoff-Berry	Altair 8800	MANIAC
DEC PDP-8	Manchester Mark I	Apple][

Activity





Atansoff-Berry	Altair 8800	MANIAC
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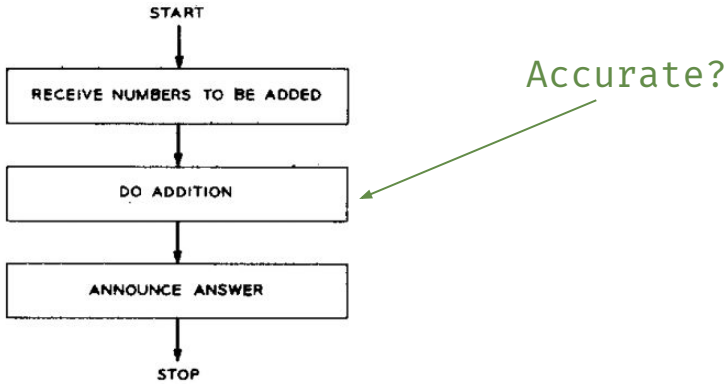
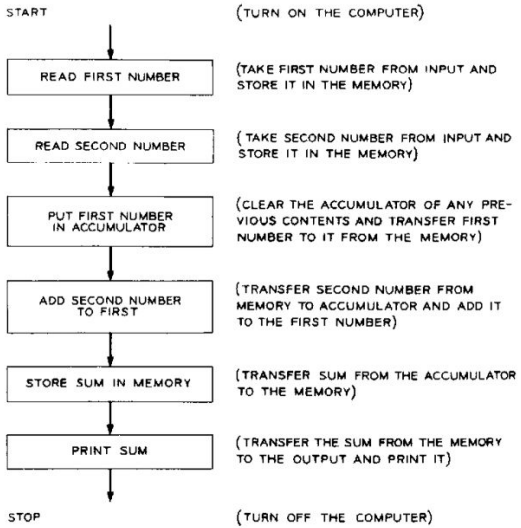
Add me some numbers



Add me some numbers



Accurate?

Instruction set architecture (ISA)

Set of architecture-based on processor architecture (short definition).

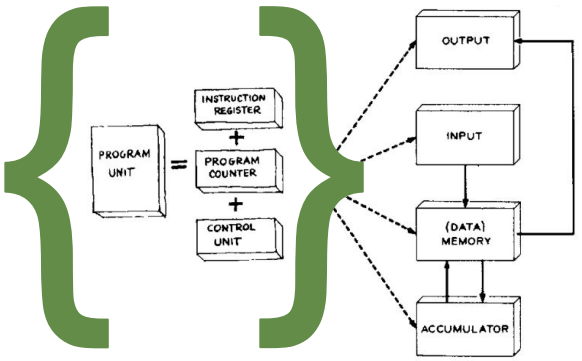
Input

Clear accumulator and add

Add ← Adds number to current accumulator

Output

Halt



Instruction set architecture (ISA)

What's the program to add 2+2 and 4+4, given this ISA?

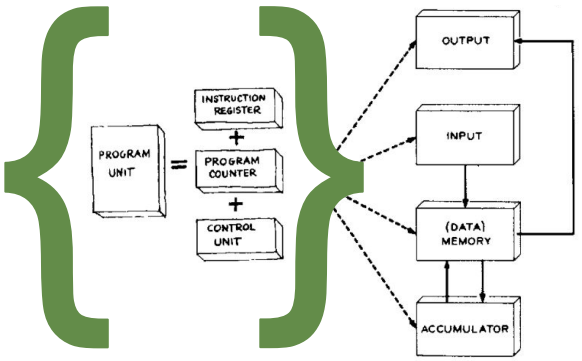
Input

Clear accumulator and add

Add ← Adds number to current accumulator

Output

Halt



Instruction set architecture (ISA)

What's the program to add 2+2 and 4+4, given this ISA?

Input

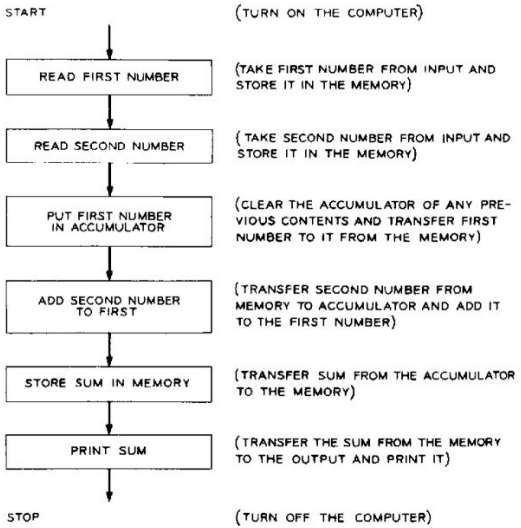
Clear accumulator and add

Add ← Adds number to current accumulator

Output

Store ← Store number from accumulator

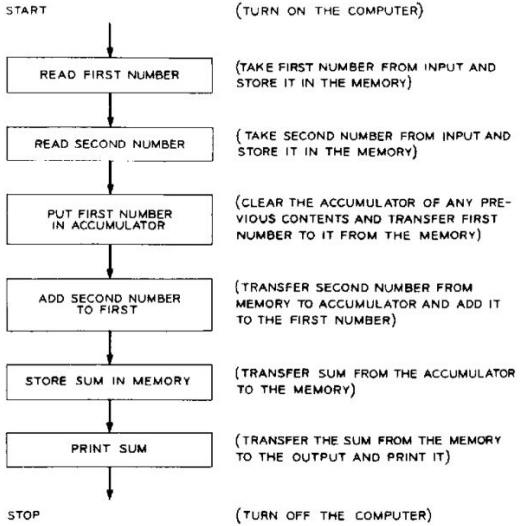
Halt



A complication: registers

New rules, same problems:

- Memory can't be written to except by input
- You cannot output from the accumulator
- Operations have to use "registers" to perform actions
  - numbers have to have an open, unoccupied space to go (accumulator can be stored; spaces cannot be reused)
  - Instructions call the "register" where the number lives to use it
- Can only use the amount of registers given to you on paper

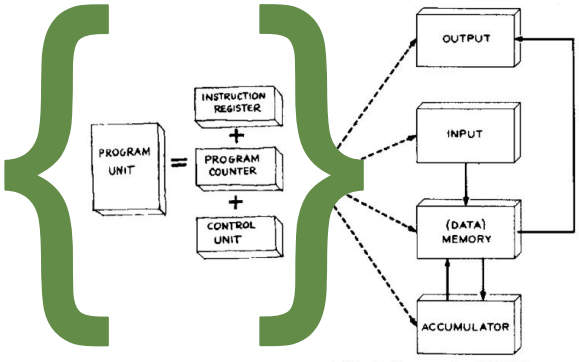


Instruction set architecture (ISA)

Now, imagine that you can't use the full words; we can only use numerical data. How would you represent this ISA?

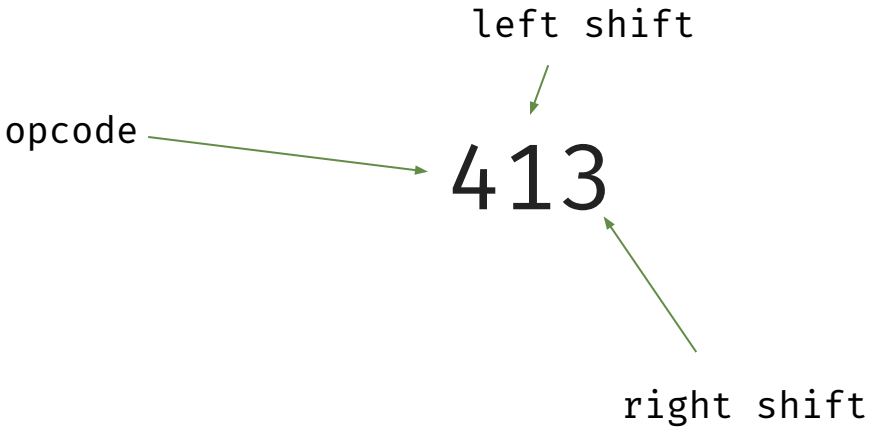
"opcodes"

0	Input
1	Clear accumulator and add
2	Add
5	Output
6	Store
9	Halt

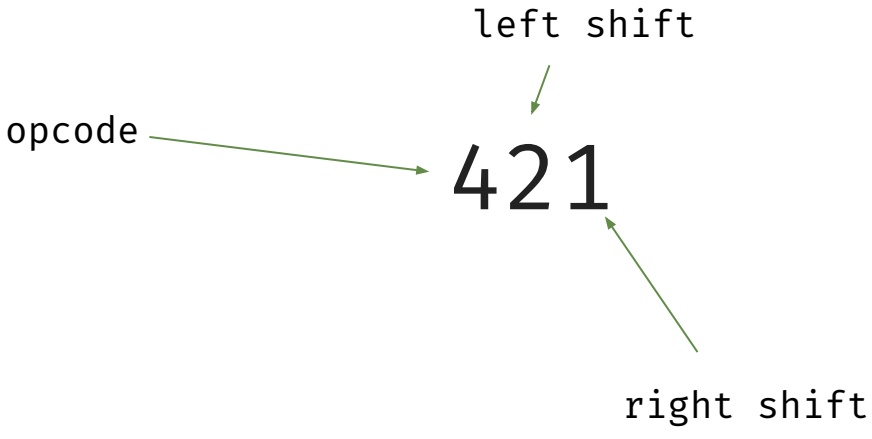


The SFT instruction

“Shifts” the Accumulator

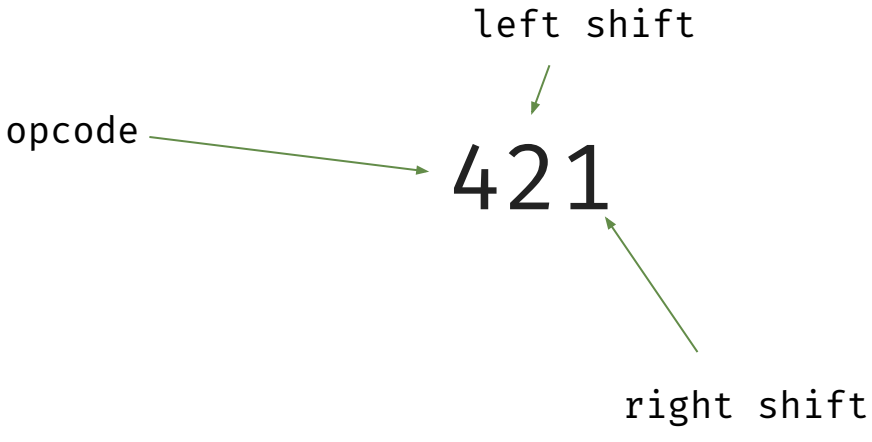


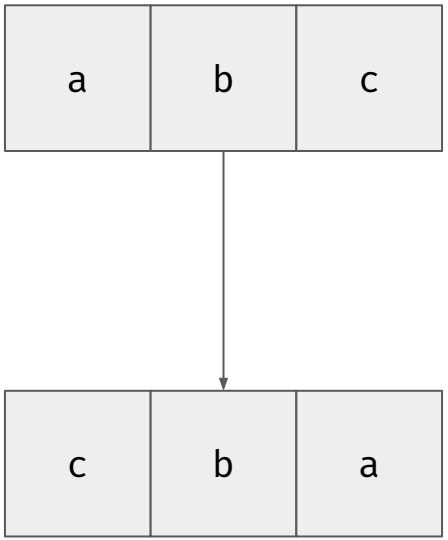
The SFT instruction



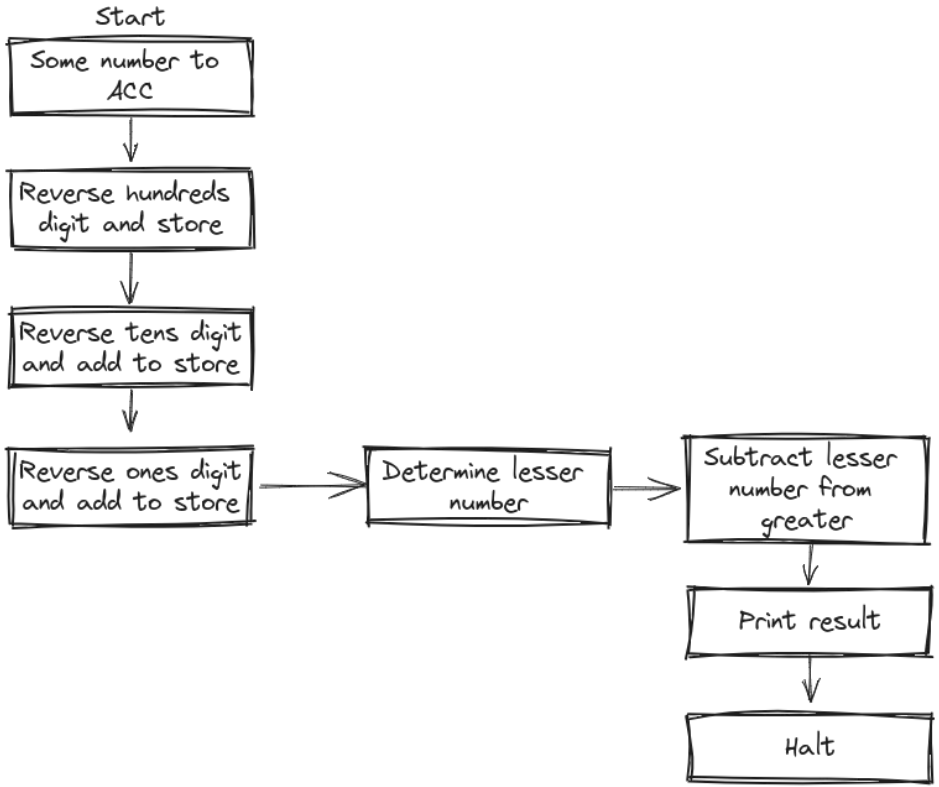
a	b	c
c	0	0
0	c	0

The SFT instruction

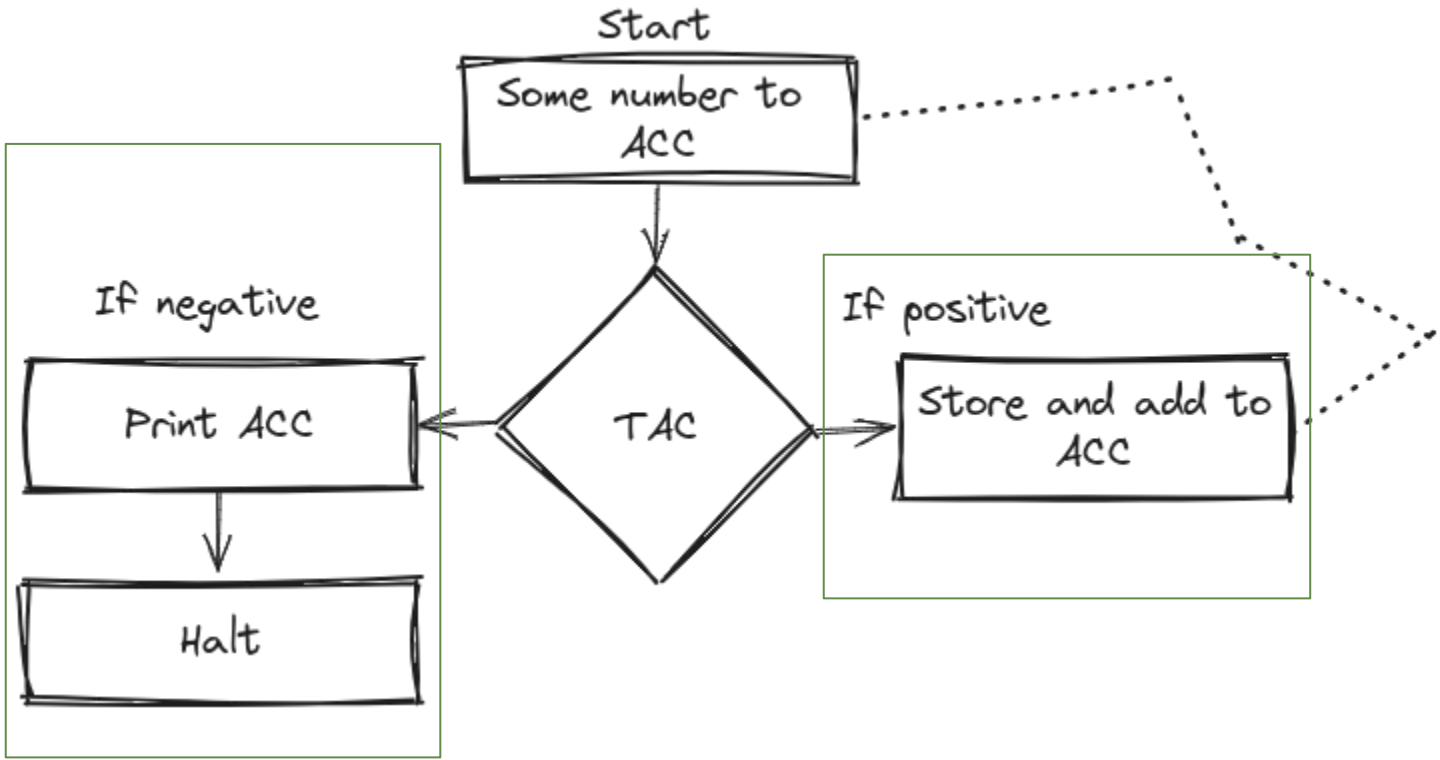




Magic 9 Decoder



Subroutines



High dimensional adder

What happens if we add

in the CARDIAC?

413 4

,123

HOLE IN THE WORLD NEVER DO THIS

BUT WHAT IF WE DID IT ANYWAY