

Computers, Software, and Data

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1 Administrivia

Announcements

How do I switch printers in the Lab?

Assignment

Read 1.6–10.

Be able to answer these questions from pp. 40–42: 12, 21, 25, 28, and 31.

From Last Time

Syllabus, survey.

Outline

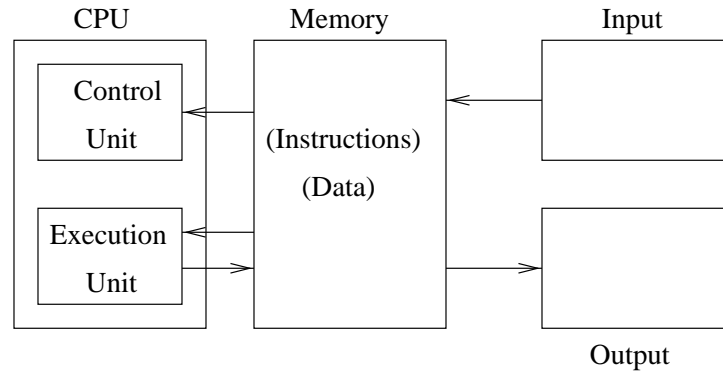
1. Computers, Software, and Data.

Coming Up

Inside a computer.

1.1 What's a Computer?

A block diagram:



1. What is memory? How does it differ from storage?
2. What parts of a PC are considered input devices? Output devices? Both?

1.2 How is Software Run?

Consider the following simple program:

```
1:  let sum = 0
2:  print "How many numbers? "
3:  read count
4:  let loopCount = count
5:  if loopCount equals 0 goto 11
6:  print "Next number: "
7:  read input
8:  let sum = sum + input
9:  let loopCount = loopCount - 1
10: goto 5
11: let average = sum / count
12: print "The average is:", average, "."
13: end
```

1. Where do we begin?

2. After completing one step, where do we proceed?
3. Operations: assignment, arithmetic, decision, branch, I/O.
4. Operands: Variables, constants (numeric and string).

1.3 How is Data Kept?

1. Computers use the binary system. Why?
2. Binary digits.

Conversion between binary and decimal is fairly simple, but tedious — write/use a program.

3. Bits, bytes, words.
4. Memory locations: cells with addresses.
5. How do we represent characters? ASCII code:

(a) A: 01000001

(b) 4: 00110100

6. How does the computer know if a memory location contains numbers, characters, variables, or instructions?