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


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?