Intro to Computer Science 111

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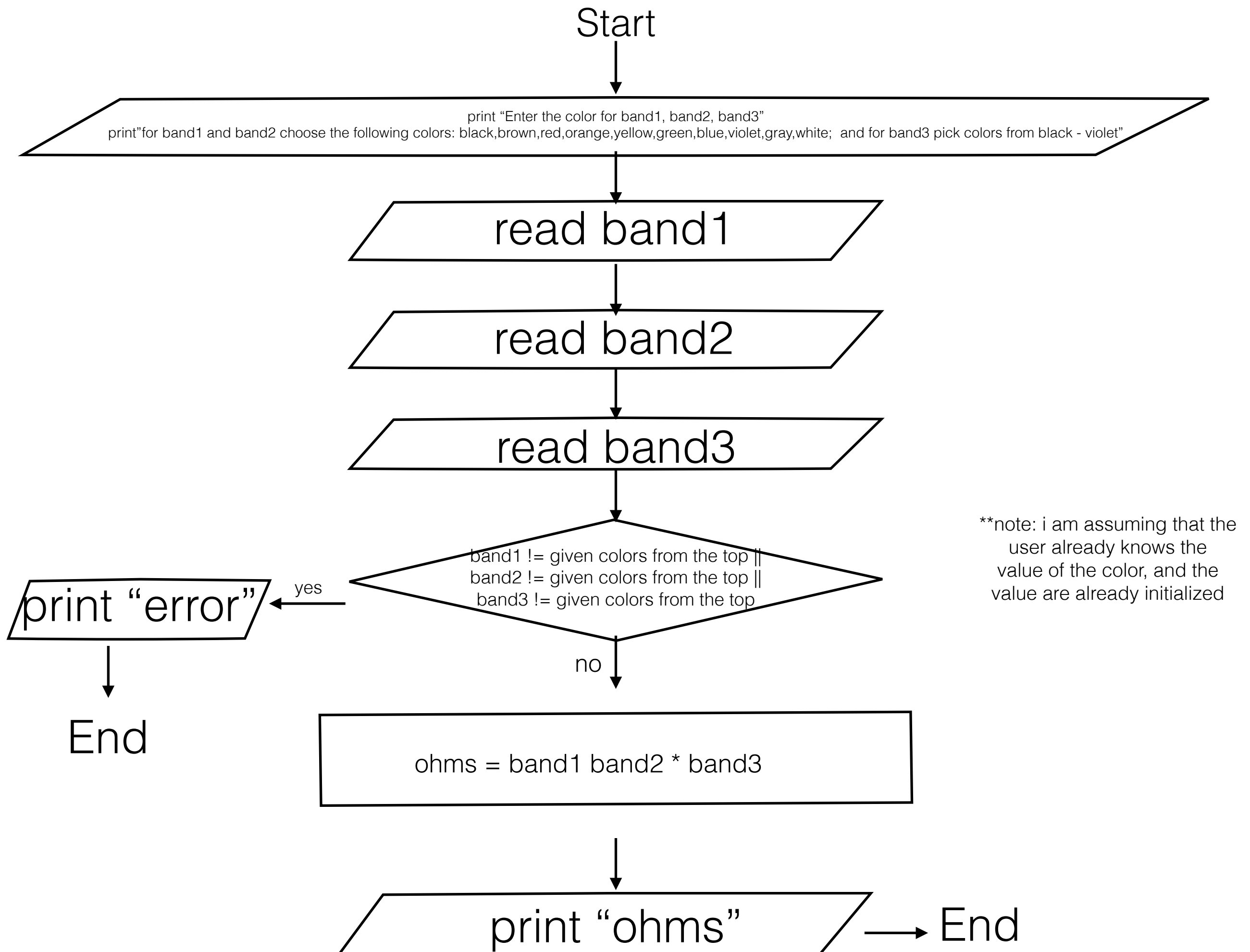Class: 01:198:111 Section 58
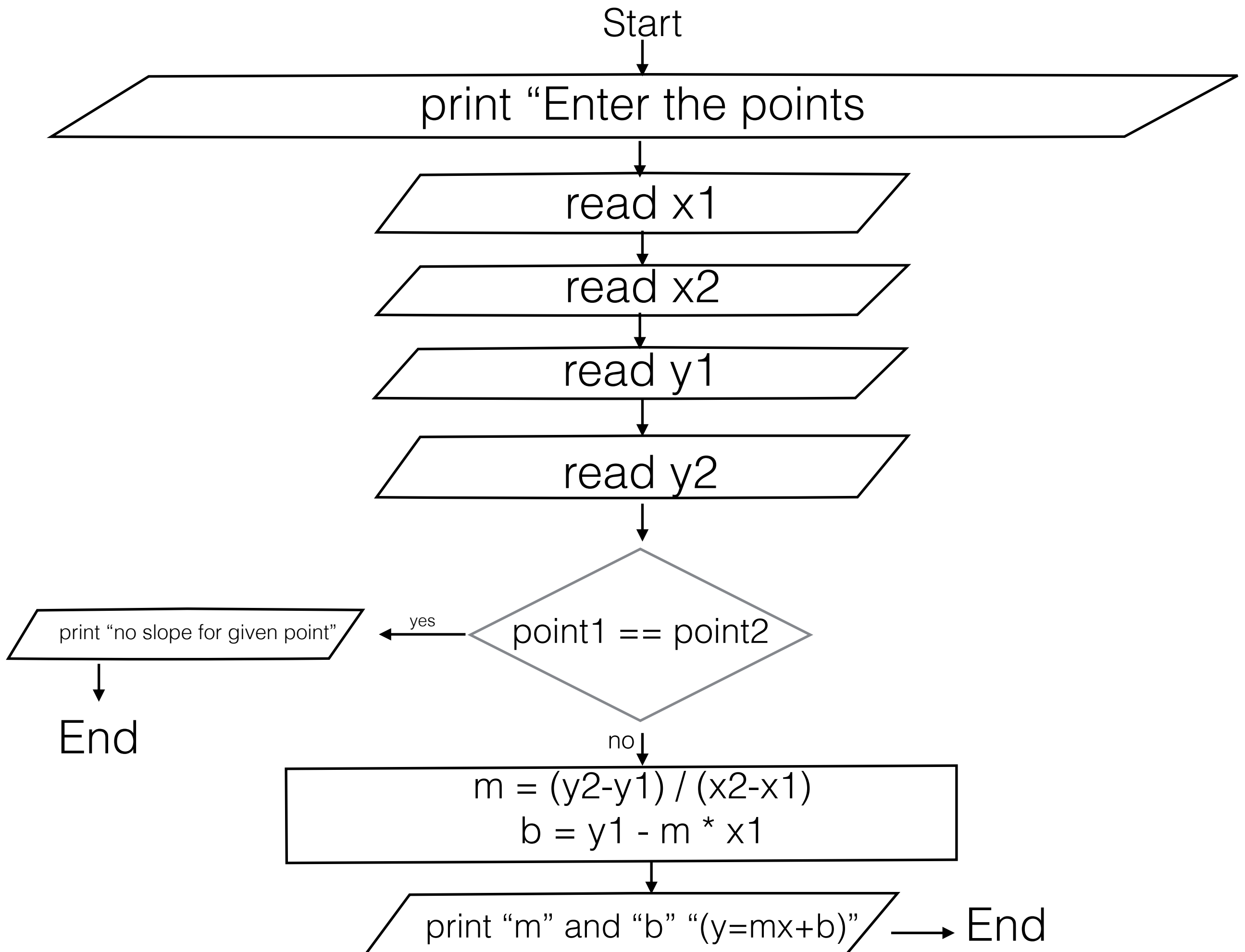Assignment 1
Date: 9/22/2014

Problem 1

- Problem Statement: Calculate the resistance value (in ohms) of a three band resistor

- Input: band1, band2, band3

- output: ohms

- Error Condition: when numbers are entered, when other colors/words/letters are entered

- operations used: *, =

Start

print "Enter the color for band1, band2, band3"
print"for band1 and band2 choose the following colors: black,brown,red,orange,yellow,green,blue,violet,gray,white; and for band3 pick colors from black - violet"

read band1

read band2

read band3

band1 != given colors from the top ||
band2 != given colors from the top ||
band3 != given colors from the top

yes → print "error"

End

no

ohms = band1 band2 * band3

print "ohms" → **End**

**note: i am assuming that the user already knows the value of the color, and the value are already initialized

Problem 2

- Problem statement: Find the equation for the line that passes through two points

- input: x1, x2, y1, y2

- output: m, b (y=mx+b) (we need to find m and b)

- Error condition: point 1 == point 2

- operations used: *, /, -, +, =

Start

print "Enter the points

read x1

read x2

read y1

read y2

point1 == point2

yes → print "no slope for given point" → End

no ↓

m = (y2-y1) / (x2-x1)
b = y1 - m * x1

print "m" and "b" "(y=mx+b)" → End

Problem 3

- Problem statement: Ask the user to enter series of number until the most recently entered number is sum of all the numbers that were entered previously, and output the the number of positive entries.

- input: num

- output: positiveNum

- Error condition: letters, first num == 0

- operation used: +, =

```
                          Start
                            │
                            ▼
              ┌─────────────────────────┐
             /    print "enter num"    /◄──────────────┐
            └─────────────────────────┘                │
                            │                           │
                            ▼                           │
              ┌─────────────────────────┐               │
             /      read num           /               │
            └──┬──────────────────────┘                │
               │                                        │
               ▼                                        │
             ◆ num == letter ◆                          │
    yes    ╱                   ╲    no                  │
  ┌────────◄       ◆            ►──────►  ◆ num > 0 ◆    │
 / print "error" /                      ╱         ╲  yes │
└───┬───────────┘                      ◄           ►───►┌──────────────┐
    │                                     no │          │ positiveCount ++│
    ▼                                        │          └──────┬───────┘
   End                                       ▼                 │
                                        ◆ num == sum ◆◄─────────┘
  ┌────────────────────────┐        ╱              ╲
 /  print "positiveCount"  /◄──────◄                ►──────►┌──────────────────┐
└───┬────────────────────┘                                 │ sum = sum + num   │
    │                                                       └──────────────────┘
    ▼
   End
```