Programs = Data Structures + Algorithms

Recipe

Set of instructions to follow

Procedural programming

1) Sequence
2) Selection
3) Iteration

Set x to 1
Add 1 to x
Stop

If x > 2 then print x else add 1 to x
stop

Mid-test

do
  print "what is your name"
  read name
  exit if name is empty
  print name
end

while x < 10 do
  print x

pre-test

do
  print x
  add 1 to x
until x >= 10

post-test

Computer

User Interface
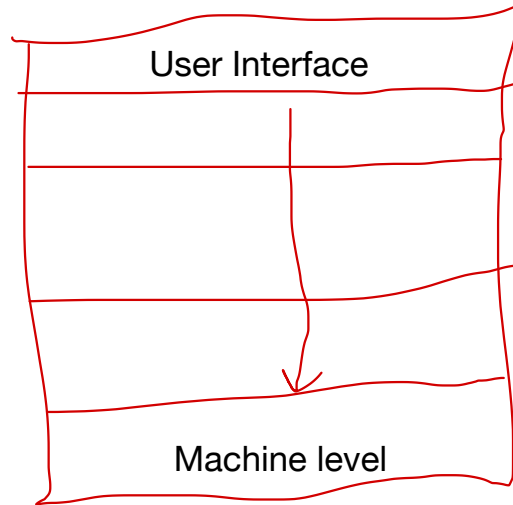
Human oriented
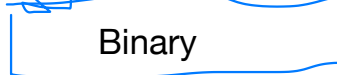
Programs

Machine level

Binary

Interpreted languages

Compiler languages

Python
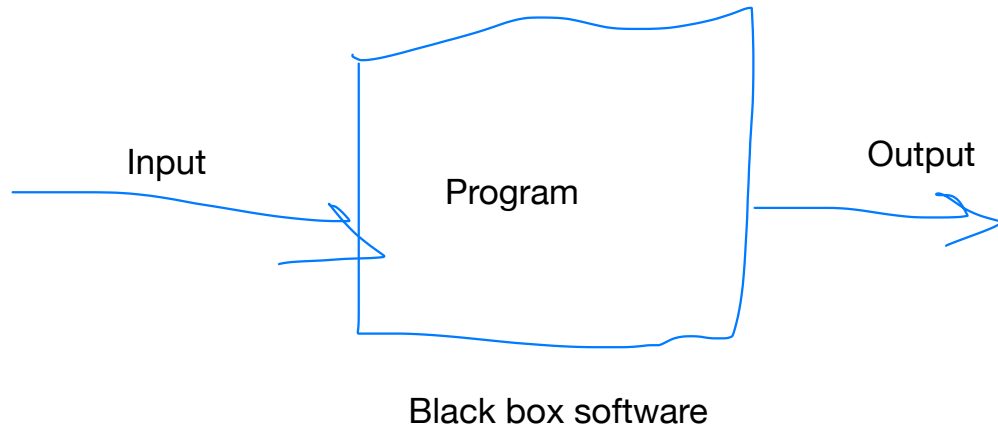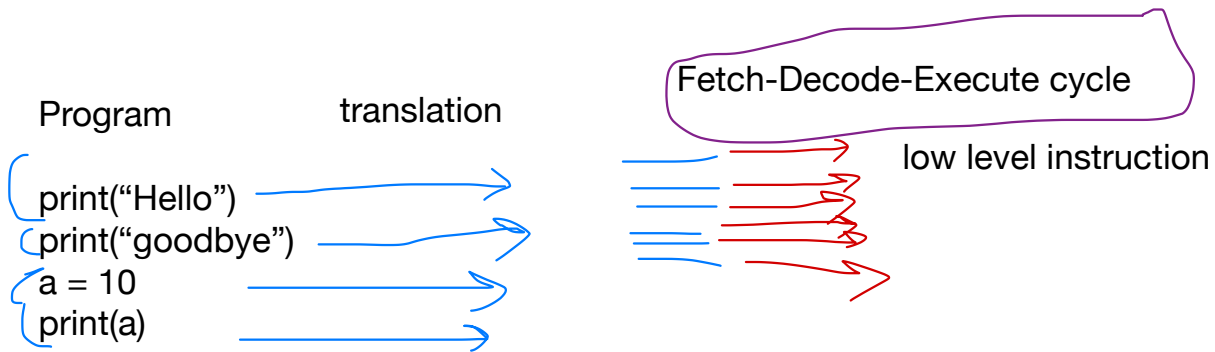
Java

Line at a time

Binary

The whole program

Input

Program

Output

Black box software

Program

translation

Fetch-Decode-Execute cycle

low level instruction

print("Hello")
print("goodbye")
a = 10
print(a)

Abstraction

a = 10

load 10 into memory location 00
move contents of memory location 00 to register A
move the contents of register A to memory location 10

10

memory
locations