

DSA

Day-1

machine/Binary language

↓
0's and 1's

Binary number → Base 2

Decimal no → Base 10

9523
↓

$$9 \times 1000 + 5 \times 100 + 2 \times 10 + 3 \times 1$$

$$9 \times 10^3 + 5 \times 10^2 + 2 \times 10^1 + 3 \times 10^0$$

$$13 \Rightarrow 1 \times 10^1 + 3 \times 10^0$$

1101

Binary to decimal

$$1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 13$$

Compiler/Interpreter → tools which convert source code into machine understandable code.
written by programmer
binary code

1) Assembly Lang (1947)

2) FORTRAN

3) COBALT

4) BASIC

5) C
Linux based system

6) C++

7) JAVA

Eg: Decimal to binary

$$(54)_{10} \rightarrow (00110110)_2$$

$$\begin{array}{r} 2 \overline{) 54} \\ \underline{27-0} \\ 2 \overline{) 13-1} \\ \underline{6-1} \\ 2 \overline{) 3-0} \\ \underline{1-1} \\ \hline \end{array}$$

• Given a number, check whether no is even or odd?

1) Divide the number by 2

2) If the remainder is 0 then number is even else number is odd

• You have a watermelon weights w kg. Cut the watermelon to exactly 2 pieces. both parts should weigh even no of kilos

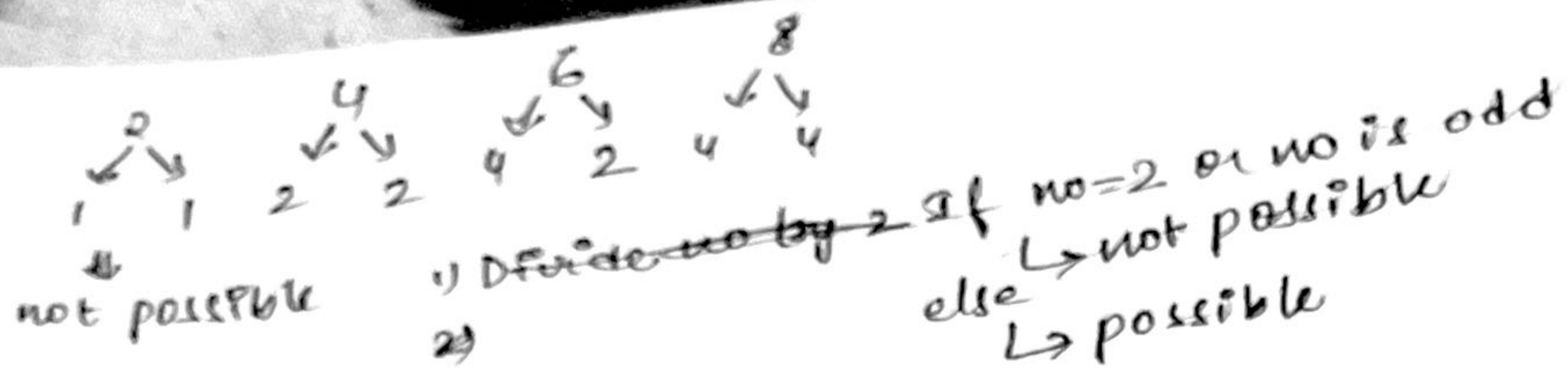
Eg: 12 kg → possible
↳ 6 kg 6 kg
↳ 8 kg 4 kg

10 kg → possible
↳ 6 kg 4 kg
↳ 8 kg 2 kg

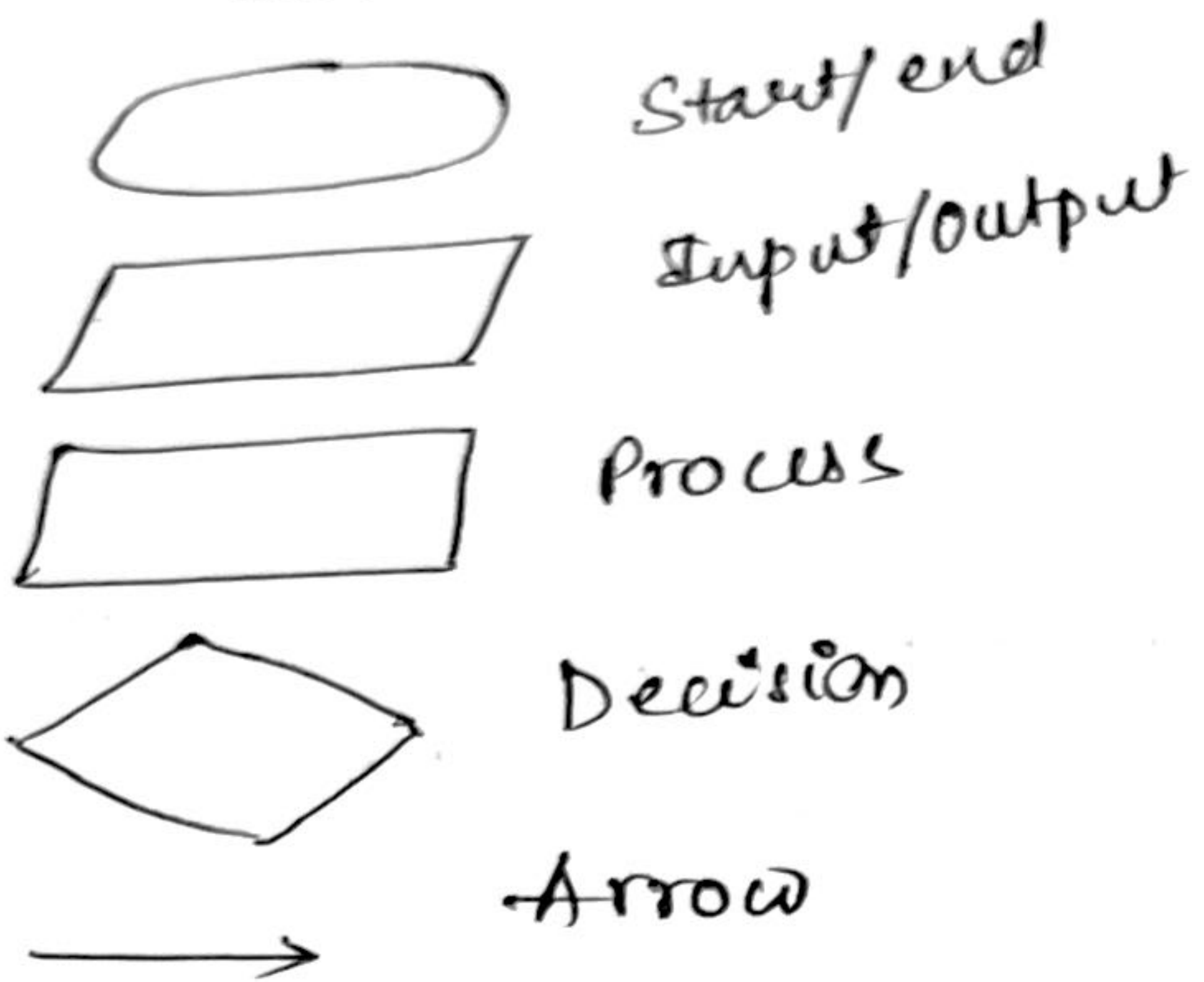
1) Divide w by 2

2) If the remainder is 1
↳ not possible

else
↳ possible

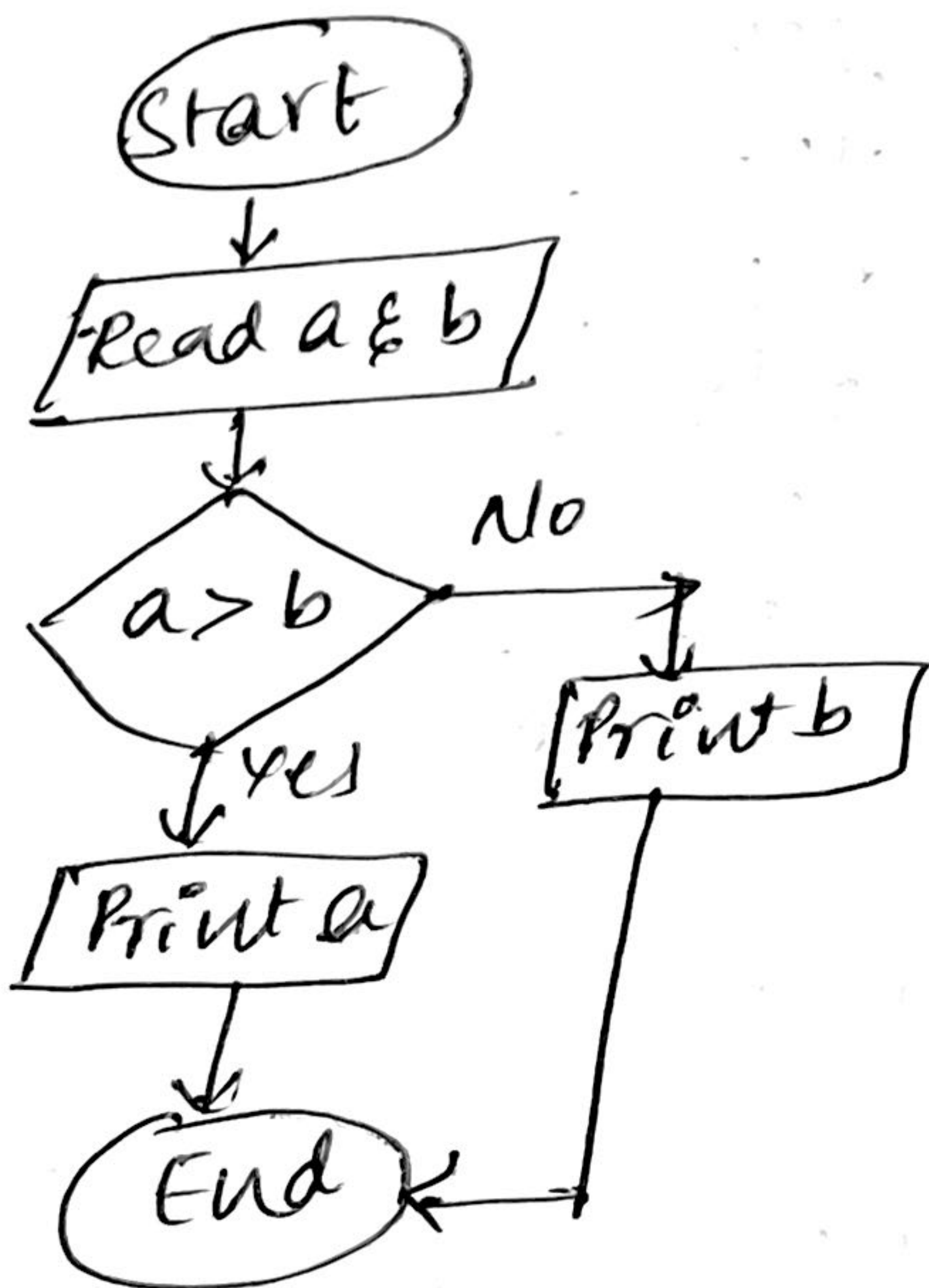


Flowcharts



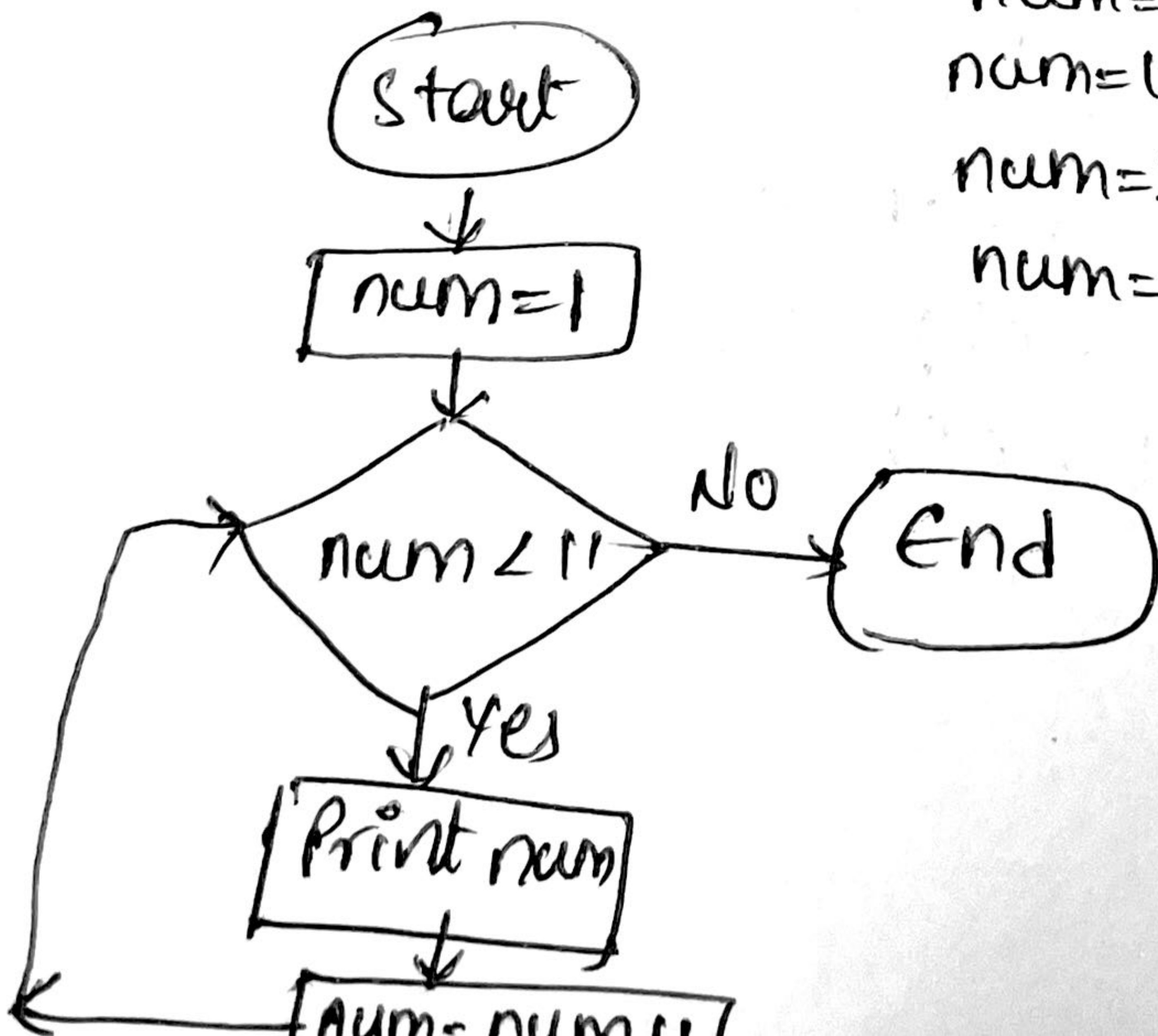
• Get 2 no's and print the max
 eg: 7, (12) 8, (15)

1) Read a and b
 2) If $a > b$
 \rightarrow print a
 else \rightarrow print b

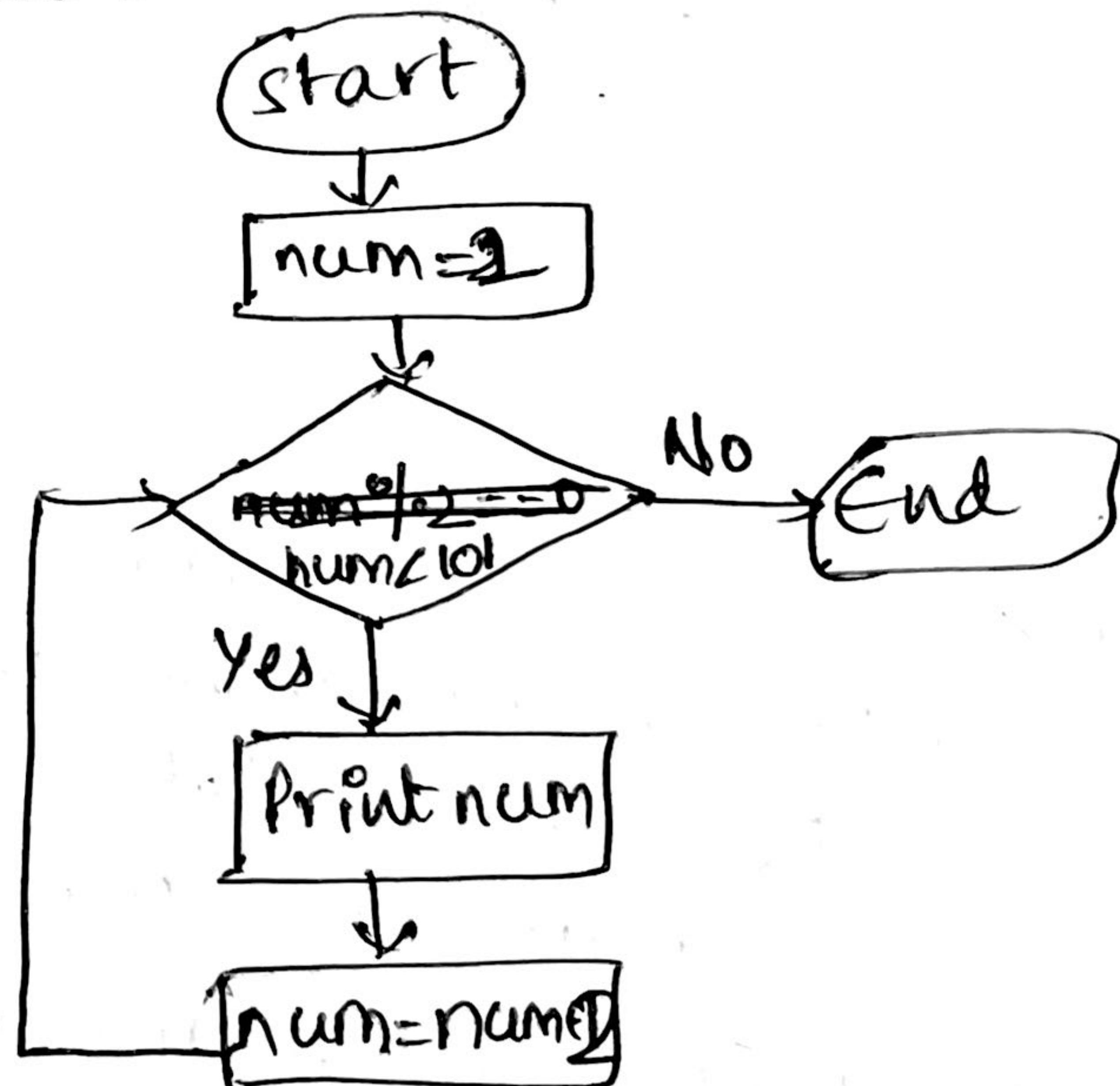


• Print no's from 1 to 10

$num = 1$
 $num = 1 + 1 = 2$
 $num = 2 + 1 = 3$
 $num = 3 + 1 = 4$



• Print all even no's from 1 to 100



check if a number is a prime or not

