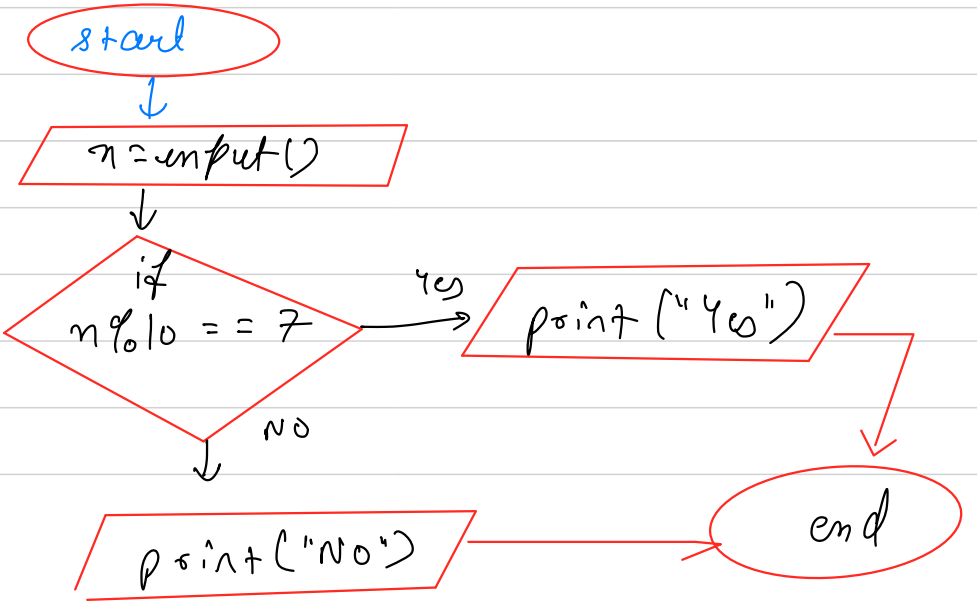
Agenda → Problem solving on loops

Q. Draw a flowchart to check if a number ends with 7 or not.

→ Just extract the last digit of the number and check if it is 7 or not.



Q⇒ Draw a flowchart, to input a no. & check if it's second last digit is 7 or not ??

n ⟶ n%100 ⟶ last 2 digits

1278

⟶ 1278 % 100

⟶ 78 ⟶ 78//10

⟶ 7

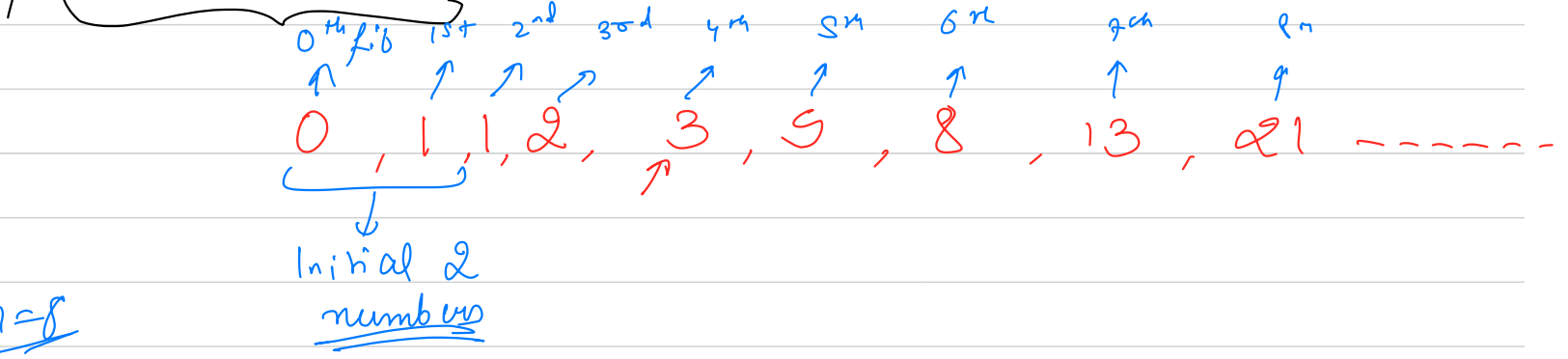
· Integer divide by 10

↓

send us

Q ⇒ Draw a flowchart, to print first n fibonacci numbers

Fibonacci series → special series



n = 8

0	1	1	2	3	5	8	13	- - - - -
0^{th}	1^{st}	2^{nd}	3^{rd}	4^{th}	5^{th}	6^{th}	7^{th}	

$a = 0$

$b = 1$

$Sum = a + b \Rightarrow 0+1 \Rightarrow 1$

$a = b \rightarrow a = 1$

$b = Sum \rightarrow b = 1$

$Sum = 1+1 = (a+b) = 2$

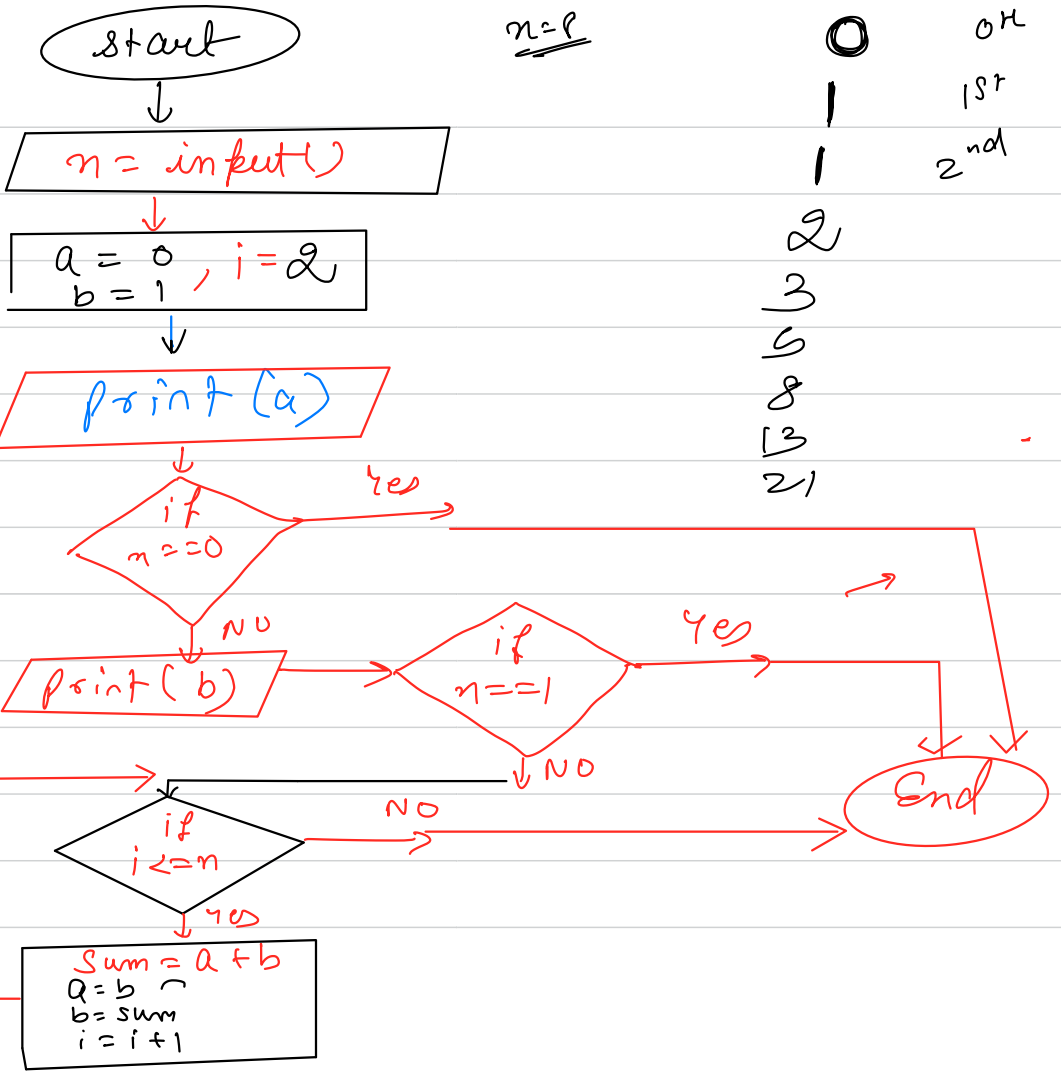
$a = b \rightarrow 1$

$b = Sum \rightarrow 2$

$Sum \rightarrow a+b \rightarrow 1+2 \rightarrow 3$

⋮

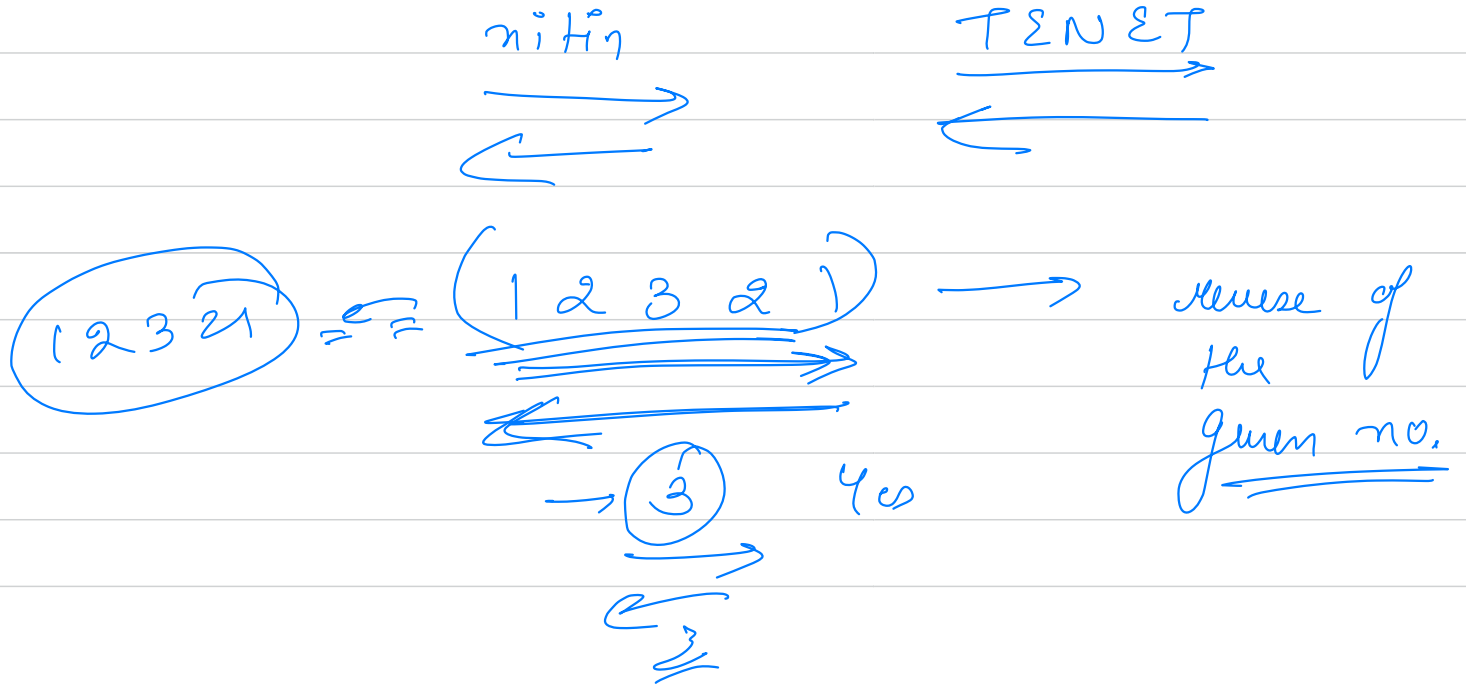
a	b	sum	i
0	1	—	2
1	1	1	3
1	2	2	4
2	3	3	5
3	5	5	6
5	8	8	7
8	13	13	8
13	21	21	9



n=8

0 OR
1 1st
1 2nd
2
3
5
8
13
21

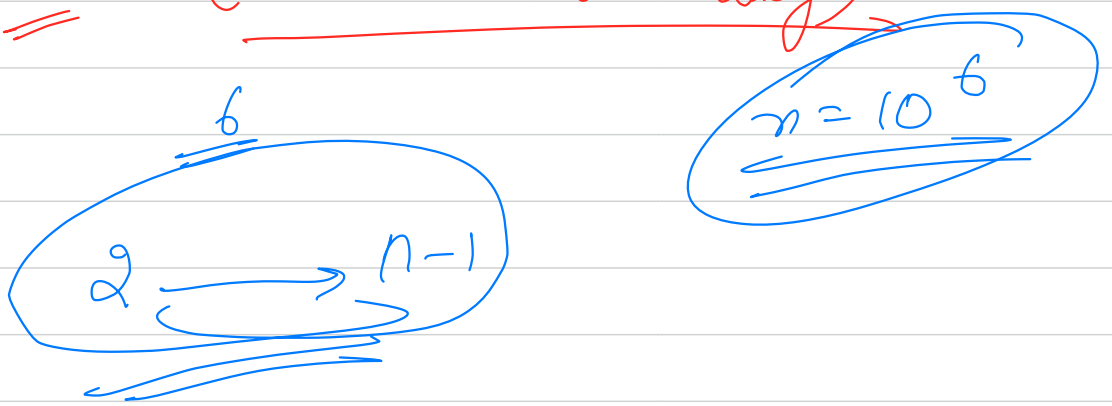
Q. Draw a flowchart, to check if a number is palindrome or not ??



Q:- Draw a flowchart to check if a given number is prime or not??

→ n → 6 (not a prime)
→ 7 (prime)

⇒ prime → (1 or number itself)



How many iterations ≈ $10^6 - 2 \approx 10^6$

≈ n iterations

$n = 36$

$\lfloor \sqrt{n} \rfloor \rightarrow$ floor of sqrt

1 x 36
2 x 18
3 x 12
4 x 9
6 x 6
9 x 4
12 x 3
18 x 2
36 x 1

of I have already checked the divisibility by 3 do I need to again check the divisibility by 12 ??

$n = 48$

$\lfloor 6.\ldots\ldots \rfloor$

$\downarrow$

6

1×48

2×24

3×16

4×12

6×8

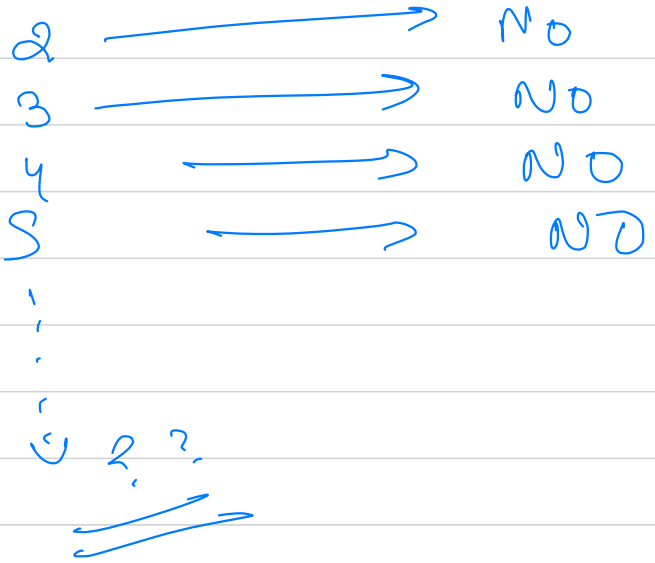
8×6

12×4

16×3

24×2

48×1



$n = 29$

$\sqrt{n}$

$n = 10^6$

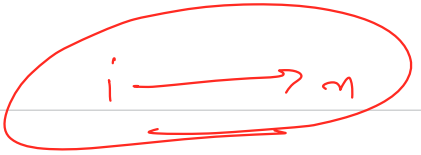
$\sqrt{10^6}$

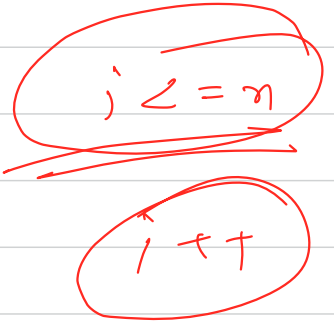
10^{18} $\quad$ $\sqrt{10^{18}}$

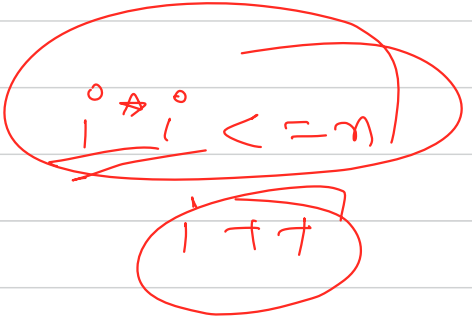
$\frac{10^6}{2}$

$n = 10^n$

$n/2$ $\Rightarrow$ 5×10^5

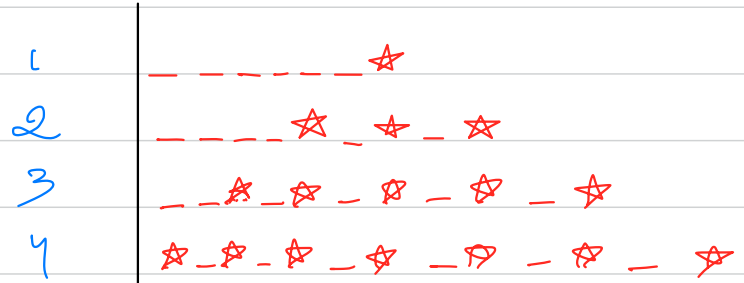






i * i <= n

i <= √n



$n = 4$

row	space	star
1	6	1
2	4	3
3	2	5
4	0	7

space = 2 * (n - row)

star = 2 * row - 1