Goal: Get comfortable with coding. (Java)

Java
↓
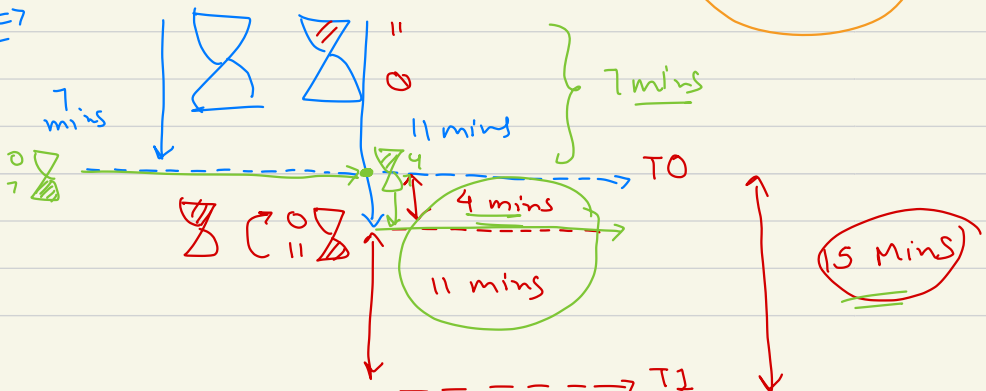" Problem Solving "

#1   Hour Glass Puzzle

11 mins   ↓   7 mins
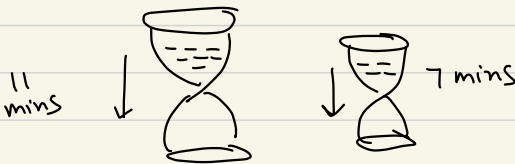
Rotate
Flip 180°
Use 2-3 times

Measure: 15 Mins ?

Total time
22 Mins

Sol = 7

7 mins

11 mins

7 mins

0
7

4

11 mins

4 mins

11 mins

TO

T1

15 Mins

Optimised approach

7mins   11 mins

→ TO

Total
time

(15) MINS

7mins

7mins

4mis

4 mins

11mins

11+

4

= 15 Mins

4mins   4 mis

1st Approach

7
mins   11mis

Start

4mis

11 mis

15 Mins

End

2nd APP

7mins   11mis

15 Mins

11mis

4mis

Logic

1st — Diagramtic Flowchart → 2nd — Pseudo code (plain english) → 3rd — Program p Lang (C++, Java ....)
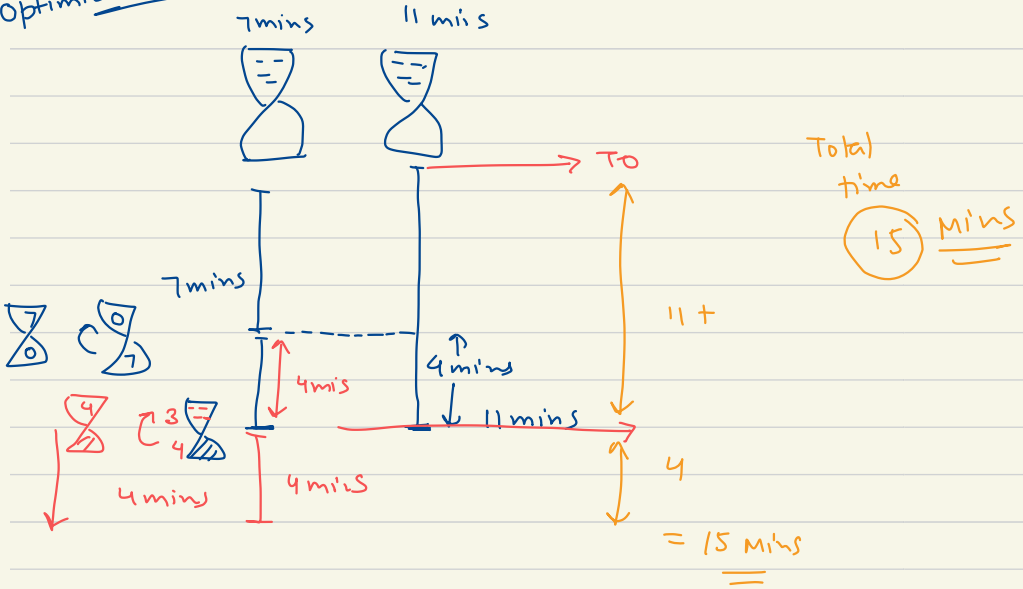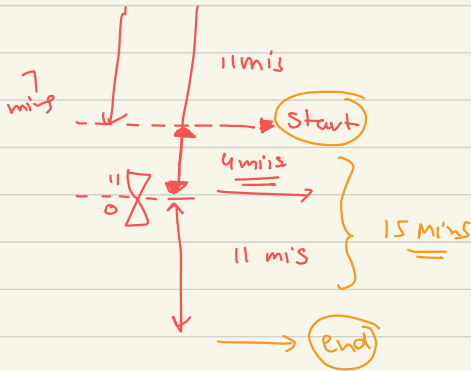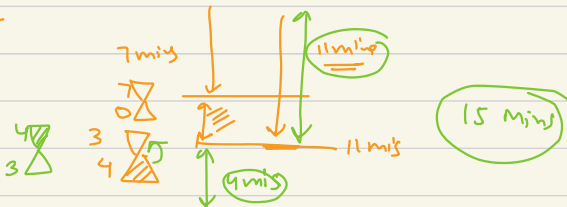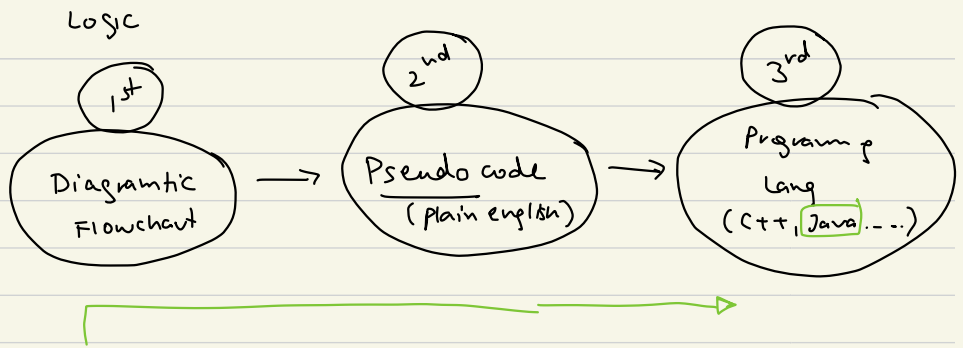
(a) Make coeffee for the guests

① Take Input → N guest

② Milk N cups
         N coeffee

③ Stir it

④ Steam

Simple interest
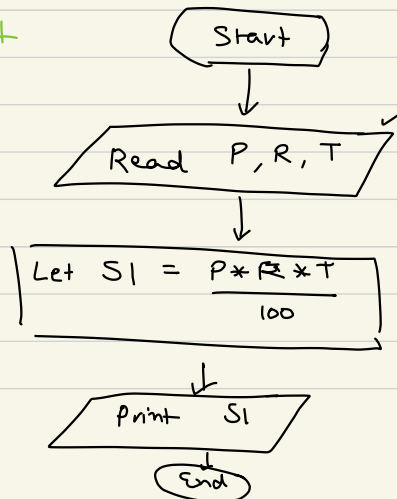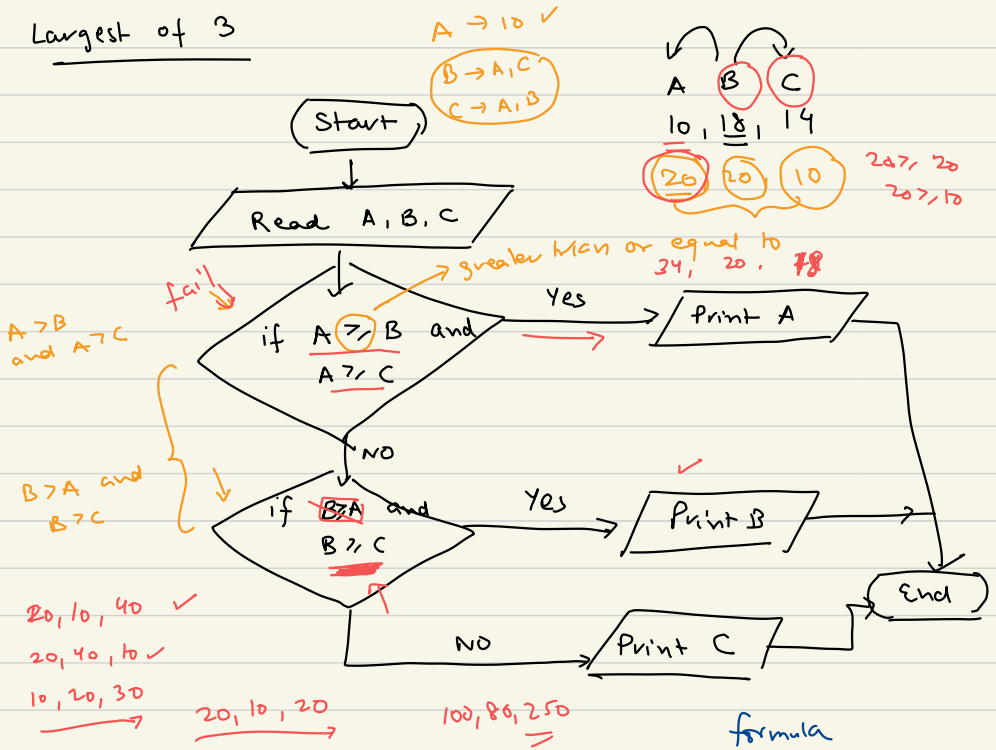
Start
↓
Read P, R, T
↓
Let SI = $\dfrac{P * R * T}{100}$
↓
Print SI
↓
End

Largest of 3

A → 10 ✓
B → A, C
C → A, B

A B C
10, 18, 14

20 20 10

24 7, 20
20 7, 10

Start

Read A, B, C

greater than or equal to
34, 20, 78

if A ≥ B and
A ≥ C

fail

A > B
and A > C

Yes → Print A

NO

B > A and
B > C

if B > A and
B ≥ C

Yes → Print B

20, 10, 40 ✓
20, 40, 10 ✓
10, 20, 30

NO → Print C

20, 10, 20   100, 80, 250   formula

End

N   N = 4

$$\frac{N(N+1)}{2}$$

Loop

$$\frac{1 + 2 + 3 + 4}{1,} = 10$$

$$= \frac{4 \times 5}{2}$$

$$= 10$$

Start

Read N

Print $\frac{N(N+1)}{2}$

End
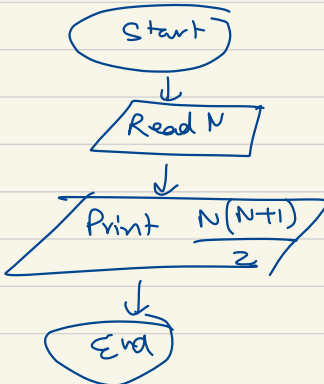
Loop → Do something repeatedly

$1 + 2 + 3 + 4 + 5 + \ldots \ldots N$

N=4

Sum = 0
+ 1
+2
+ 3
+y
Stop

10 ~~至至~~

sum

1, 2,

Start

Read N

4
N

DRY Run

N = 4

Sum = 0+1+2

i = ~~2 3~~ 4 5

i = | 1

Let Sum = 0
i = 1

← init

Loop

Sum= | 0+1

if i ≤ N

yes

work

Sum = Sum + i

check

i = i + 1

Repeated

NO

Print Sum

Sum = ~~5~~ ~~6~~ |10|

Stop

1 ≤ 4

2 ≤ 4

3 ≤ 4

4 ≤ 4

5 ≤ 4   NO

PRIME NUMBER

N
← ↘
1   ⬭   N
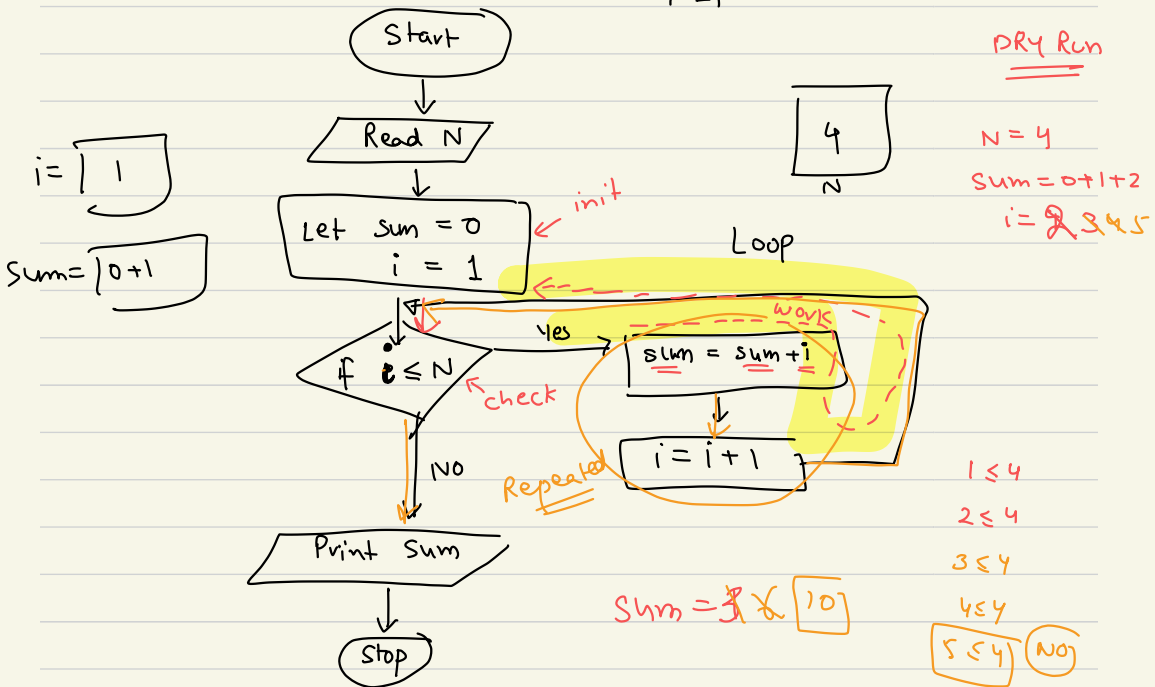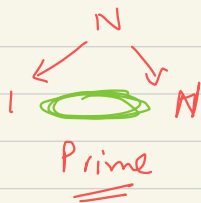
Prime

0 div in
range to
2 to N-1

8   Not Prime
↙ ↓ ↘
① 2 4 ⑧

at least 1 div
in the range
2 to N-1
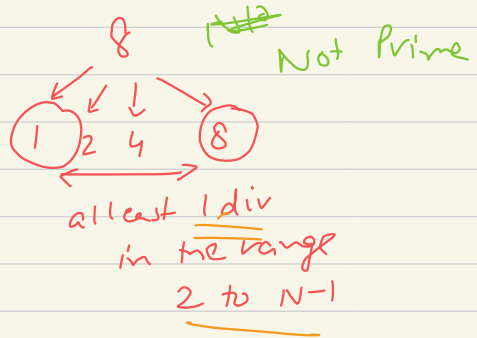
N = 10	2, ---- 9 ↑	Not Prime
N = 15	2, 3, ---- 14 ✗ ✓	Not Prime
N = 13	2 ------- 12	PRIME

Start

Read N

Let i = 2

if i <= N-1

if N%i == 0

i = i + 1

Prime Print Primo

Not Prime

Prime

Exit

Yes

NO

yes

NO

NO

i<N

2 3 4 -- N-1   N

N

7

i=2

2<=6

7%2   NO

3≤6

7%3   No

4≤6

7%4   NO

5≤6

7%5   No

6≤6

7%6   No

7≤6
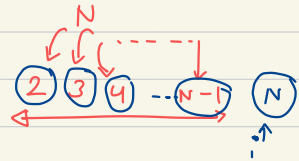
N= 9
2≤ 8
9%2 NO

3≤8   9%3 Yes

Div   %   Modulous (Remainder   a%b)

5%3 =7 2

21%7 => 0

N%i ==0   i divides N

Assignment

$a = 5$

5
a
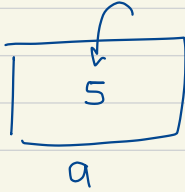
$a = 10$
$b = 10$

Equality

$a = = b$
compare

$10 = = 15$
false

$15 = = 15$
true

Time TO
TRY

Find greatest common divisor
of two Numbers.

$a = 20$
$b = 28$

$gcd \to 4$

$a = 7$
$b = 21$

$gcd \Rightarrow 7$

$gcd \to 1$ to $min(a, b)$

$7 \to 8$

a = 9
b = ~~18~~ 15

i	a = 9	b = 15	gcd
1	✓	✓	1
2	✗	✗	
3	✓	✓	3
4	✗	✗	
5	✗	✗	
6	✗	✗	
7	✗	✗	
8	✗	✗	
9	✓	✗	

i = 10

Stop

Start
↓
Read A, B
↓
Let i = 1
↓
is i < min(A,B) — yes → is A%i == 0 and B%i == 0 — yes → gcd = i → i = i + 1
                                                            ↓ No
↓ NO
Print gcd
↓
stop
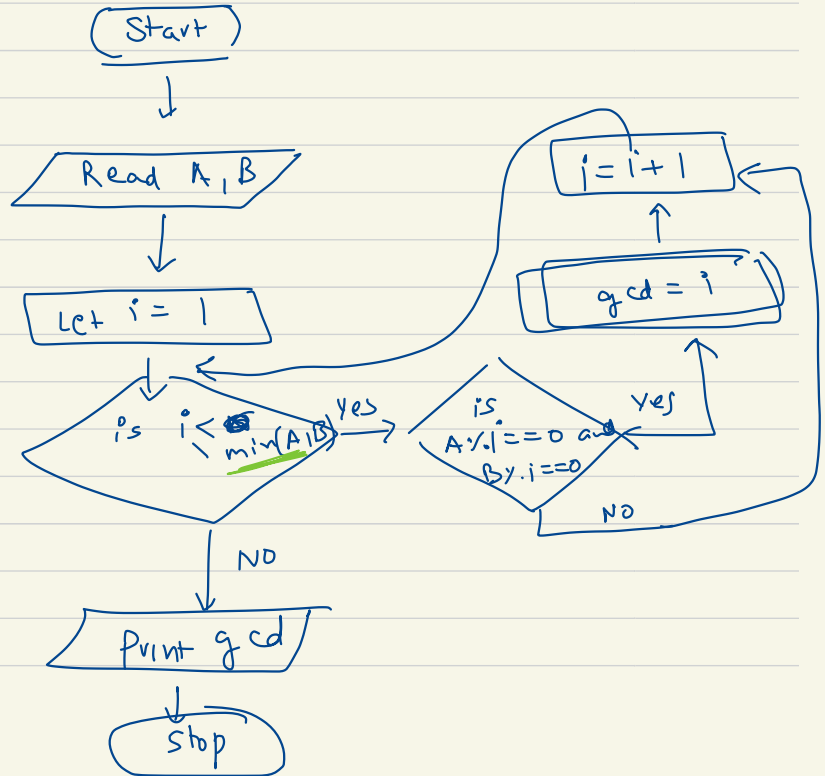
10, 15

$i = \min(10, 15)$

	$a = 10$	$b = 15$	
$i = 10$	✓	✗	
$i = 9$	✗	✗	
$i = 8$	✗	✗	
$i = 7$	✗	✗	
$i = 6$	✗	✗	
$i = 5$	✓	✓	Stop

7,   8
1   ✓   ✓
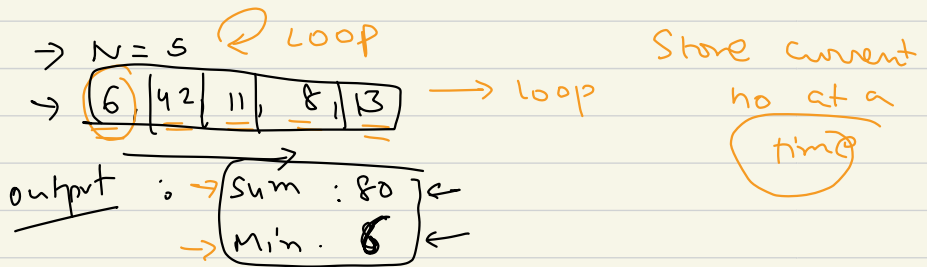
<u>HOME WORK</u>

Q1 → Take input a N, print the value of N!

   N = 5

   5! =   1 × 2 × 3 × 4 × 5 = (120)

Q2 → Take input N, followed by N integers
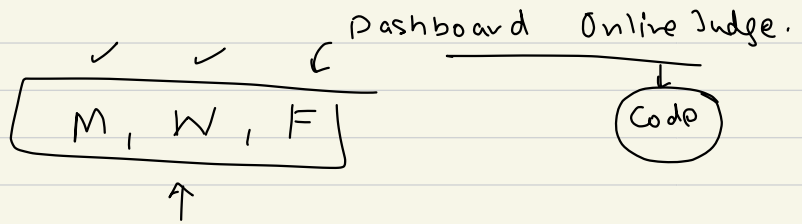   you have print theirs sum &&
   also the smallest No

   → N = 5   LOOP   Store current
   → | 6 | 42 | 11 | 8 | 13 | → loop   no at a
   output : → | Sum : 80 | ←   (time)
        → | Min . 6 | ←

Q3 → Take input 2 No's, swap their values

   A = 10 | B = 10
   B = 20   A = 20

✓ ✓ C   Dashboard   Online Judge.

| M , W , F |

↑

Topics :   Flowcharts
           Pseudocud
           Fundeng
            —1
            — 2
           Function
           Array /
           Songs ✓
           Mathe.
            OOPS

Language
‾‾‾‾‾‾
(API)

Solve
Problem
" Skills "

i = 2 _ _ _ _

{ 5 , 1 }

gcd = 1