

Electricity Bill

0-100 ₹ 5/unit

101-200 ₹ 7/unit

201-300 ₹ 10/unit

301+ ₹ 12/unit

Input . 270

Bill .

Agenda

✓ ~~✓~~ Elec Bill

→ Java

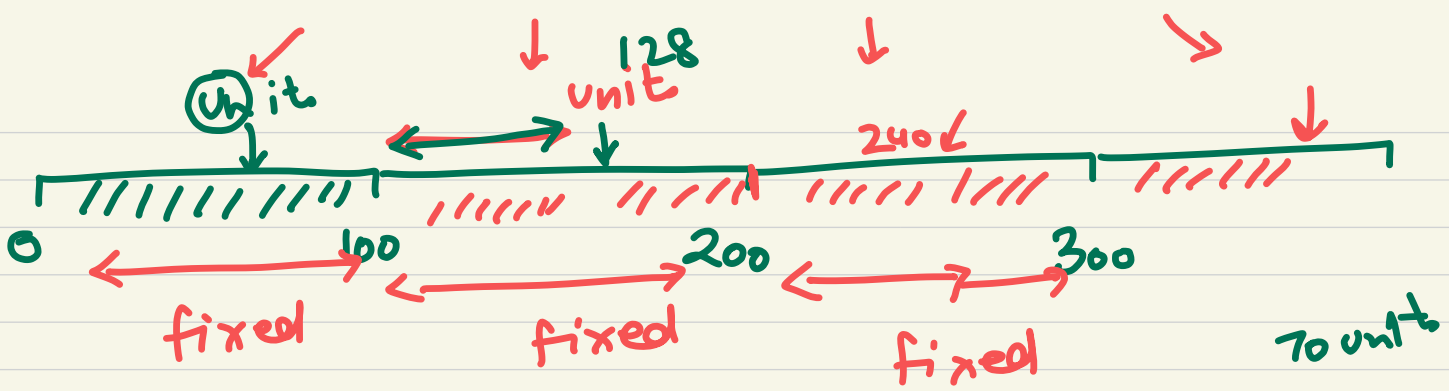
↳ Local

↳ IDE

→ Loops

↳ while

↳ Problems



↳ if (units ≤ 100)

$$\underline{\text{bill}} = \text{units} \times 5 ;$$

× → else if (units ≤ 200) { 101 - 200

$$\text{bill} = 100 \times 5 + (\text{units} - 100) \times 7$$

3

else if (unit ≤ 300) {

$$\begin{aligned} \text{bill} &= 100 \times 5 + 100 \times 7 + (\text{unit} - 200) \times 10 \\ &= 500 + 700 + (\text{unit} - 200) \times 10 \end{aligned}$$

}

else {

$$\begin{aligned} \text{bill} &= 100 \times 5 \\ &\quad + 100 \times 7 \\ &\quad + 100 \times 10 \\ &\quad + (\text{unit} - 300) \times 12 \end{aligned}$$

}

print (bill),

CODE IT
UP

"Java - Local Env & Run on your Machine"

o Basic way (fundamentally)

↳ Text Editor

↳ JDK

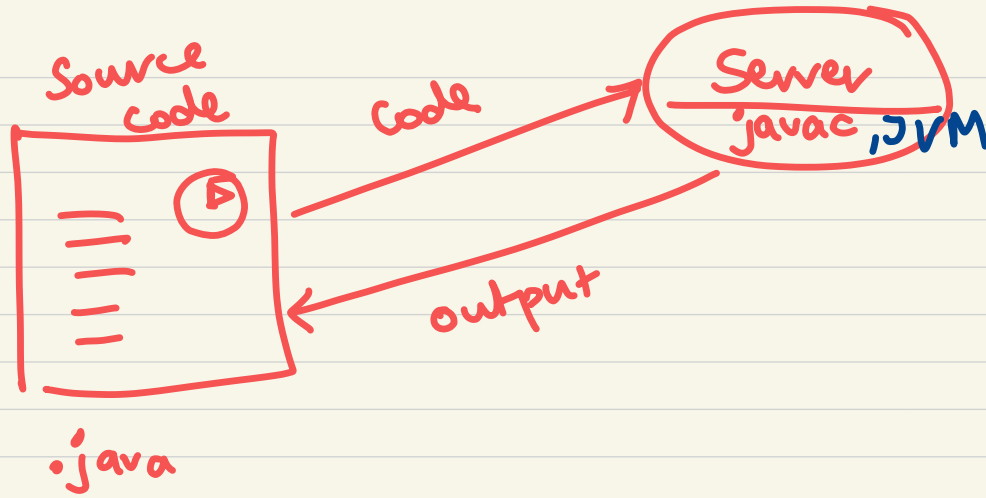
o IDE *

Integrated Development Env.

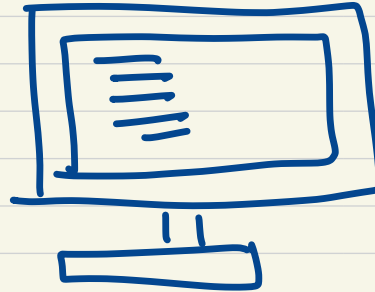
↓
Single GUI



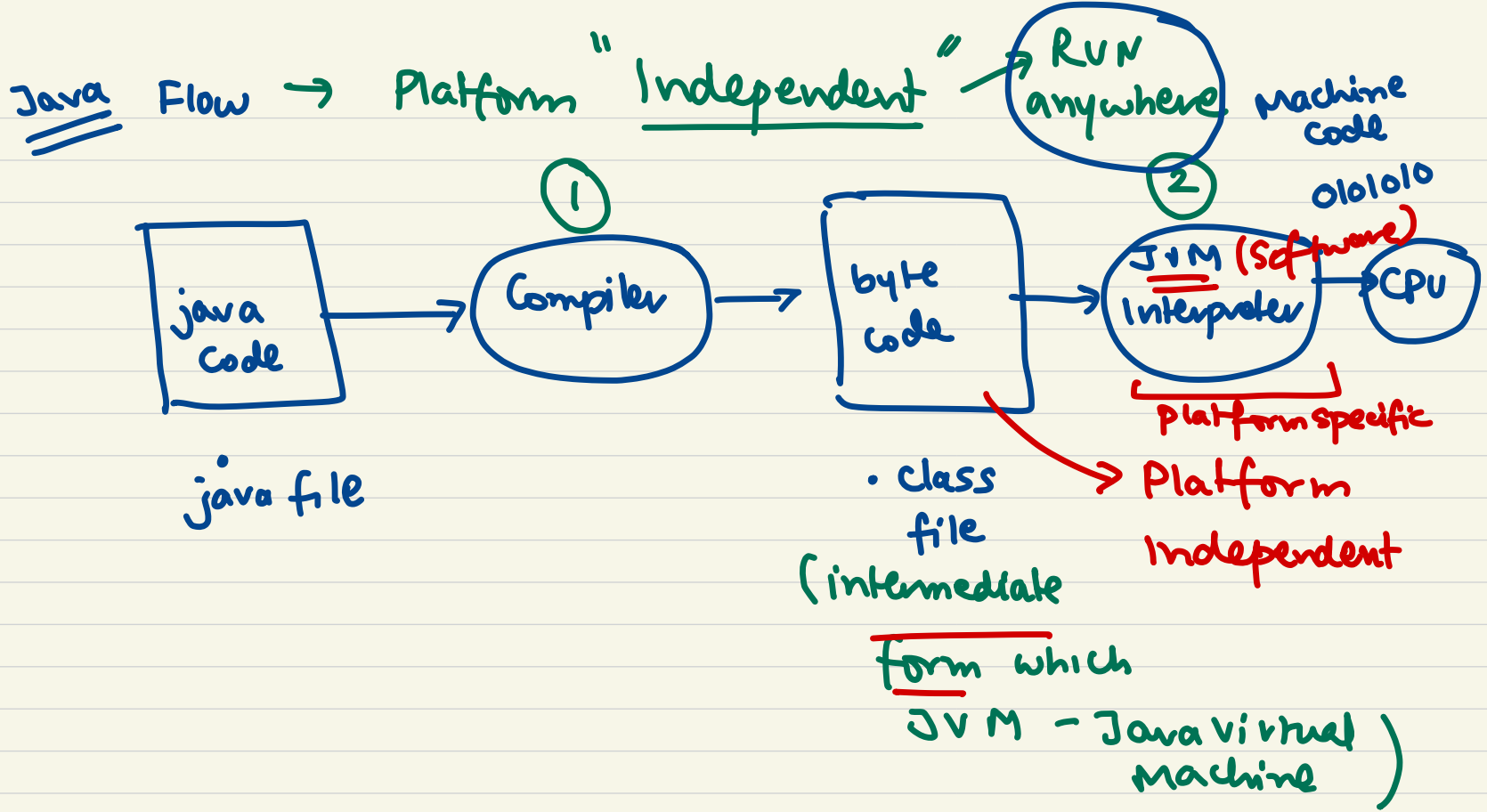
↳ IntelliJ Idea



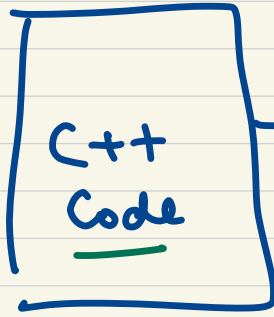
Local Machine



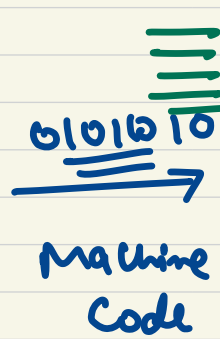
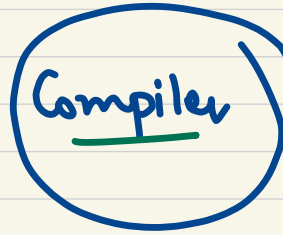
- Text Editor
- java Compiler + JVM



C++ → Platform "Dependent"



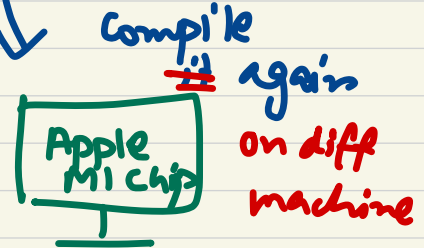
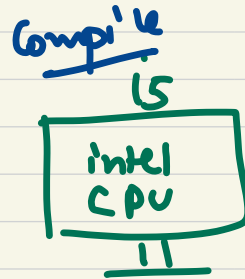
- cpp file



010011

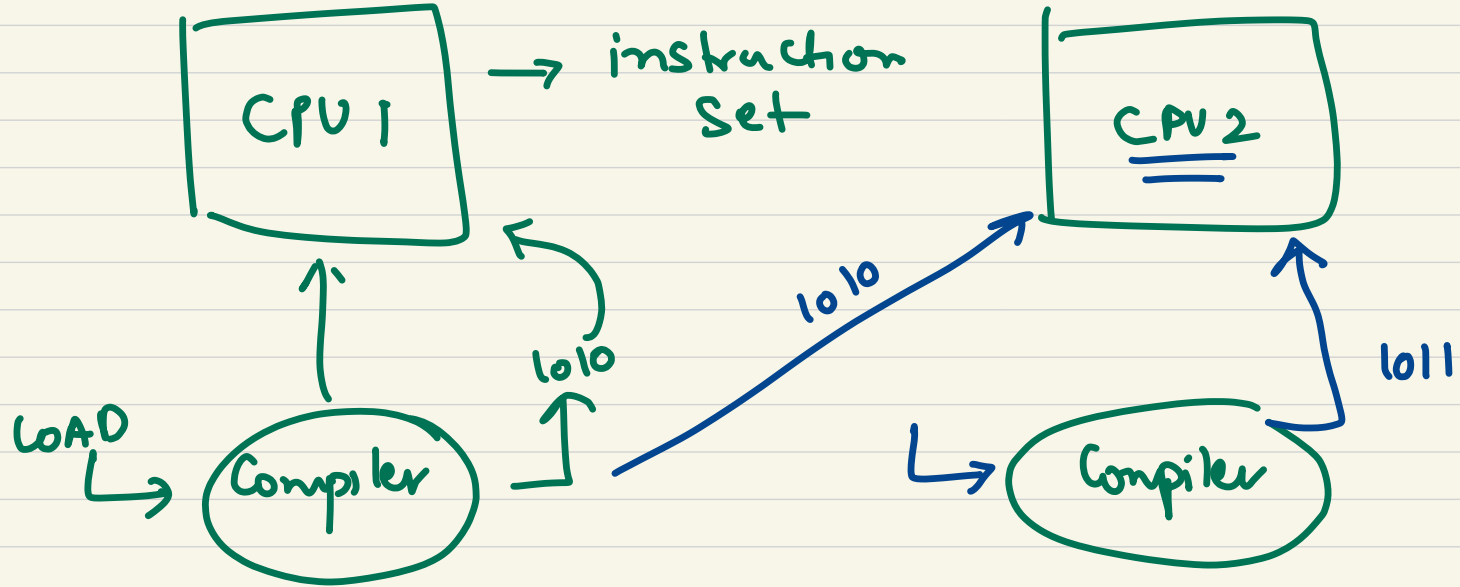


Platform —



LOAD \rightarrow 1010

LOAD - 1011

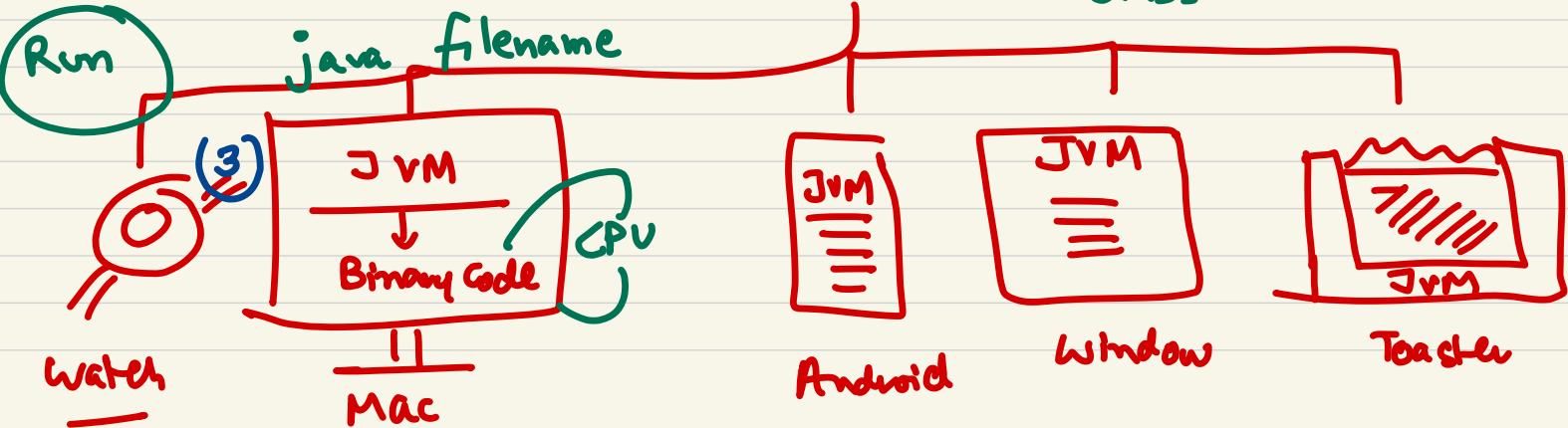
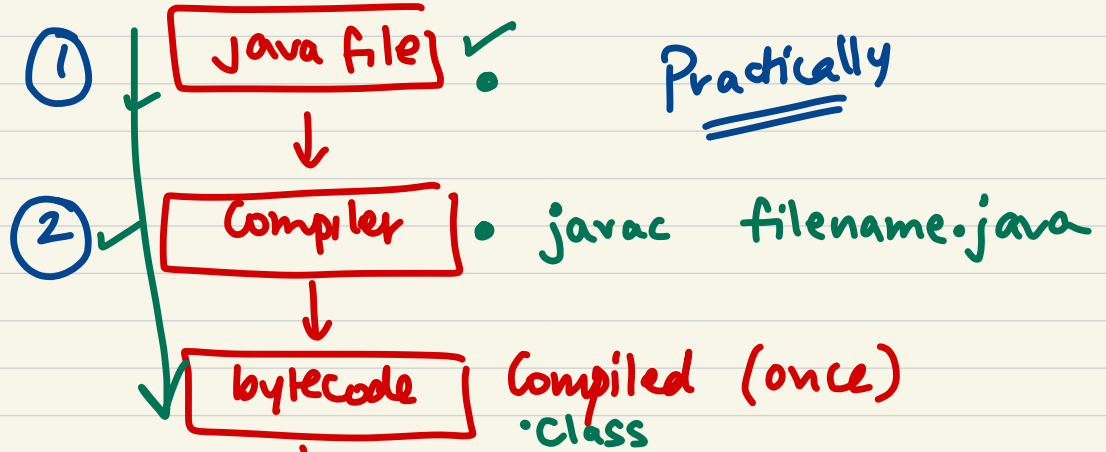


Java - Platform Independent

JVM is
Platform "specific"

JVM installation
once

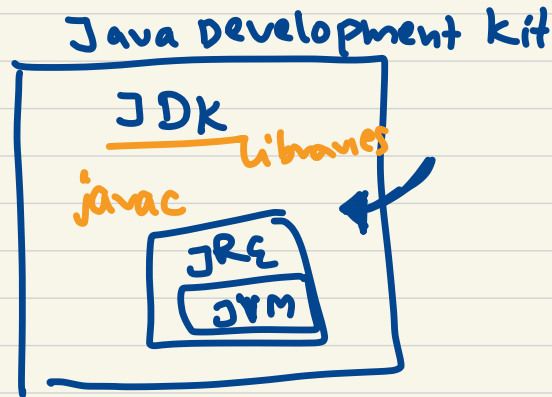
Practically



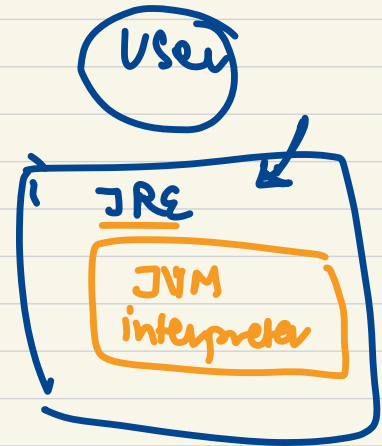
~~200~~ Developer: ① Text Editor + javac + ② JDK + JVM interpreter

User: JVM

Oracle



Dev.



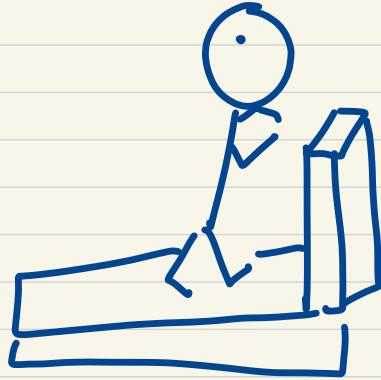
10:30

Loops while loop + Problem

Repeat
certain
task



- IntelliJ
Debugger



50 Calories

→ • Run 1 step
→ : Run 1 step
→ :
→ :
→ :
→ Run 1 step

1
2

50



50 times

$$5 \times 1 = 5$$

$$5 \times 2 = 10$$

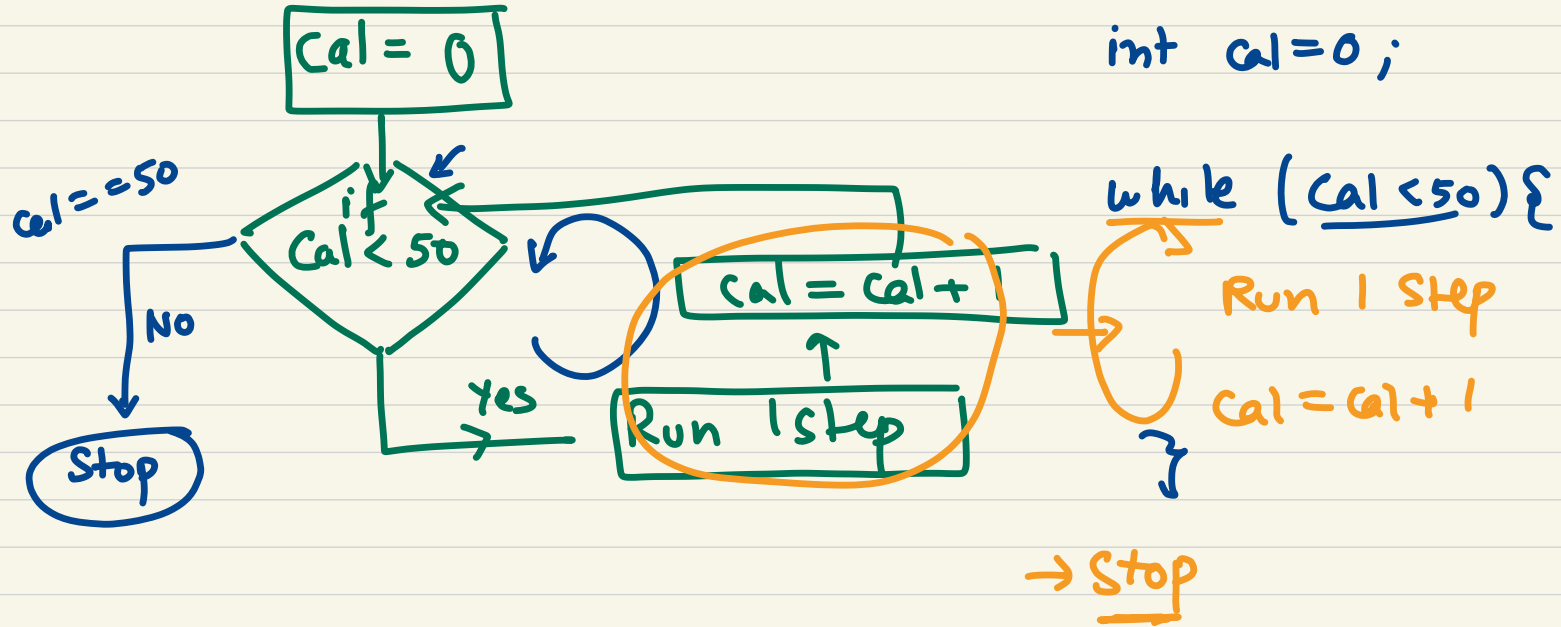
$$5 \times 3 = 15$$

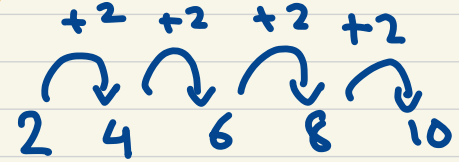
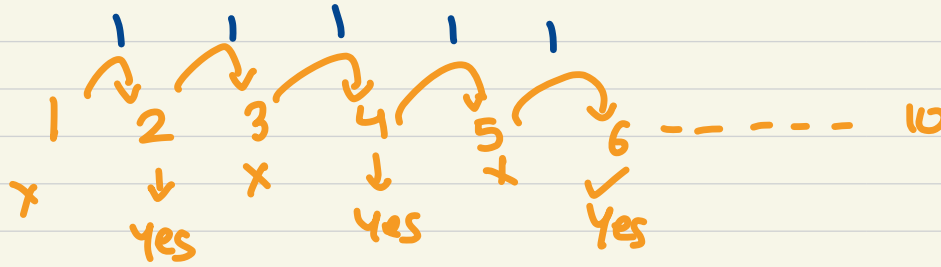
print

⋮

1000 times

Loops → Repeat "certain set of instruction"





```

i = 1,
while (i <= N) {
    if (i % 2 == 0) {
        print(i);
    }
    i = i + 1;
}

```

(I)

```

i = 2,
while (i <= N) {
    print(i);
    i = i + 2;
}

```

(II)

• Powers of 2

①, 2, 4, 8, 16, 32, 64, ~~128~~

$i = \underline{1};$

while($\underline{i \leq 100}$) {

print(\underline{i});

$i = \underline{i \times 2};$

}

1
↳ 2 x 2
↳ 4 x 2
↳ 8 x 2
↳ 16 x 2
↳ 32 x 2
↳ 64 x 2
↳ 128 stop

Factorial of a Number

$$5! = \underbrace{1 \times 2 \times 3 \times 4}_{6 \times 4} \times \underline{5} = 120$$

$$N! = \underbrace{1 \times 2 \times 3 \times 4 \times \dots}_{24} N = N!$$

$$5!$$

$$\begin{aligned} \text{ans} &= 1 \\ i &= 1 \end{aligned}$$

while ($i \leq N$) {

$$\begin{aligned} \text{ans} &= \text{ans} * i; \\ i &= i + 1; \end{aligned}$$

}

$$\text{ans} = \underline{\text{ans}} * \textcircled{i} = \textcircled{1}$$

$$1 \times 2 = 2$$

$$2 \times 3 = 6$$

$$6 \times 4 = 24$$

$$24 \times 5 = 120$$

$$N = 10$$

$$2 + 4 + 6 + 8 + \underline{10}$$

$$= (30)$$

$$2 + \overline{4} + \overline{6} + \overline{8}$$

$$2 + \underline{2} + \underline{2} + \underline{2}$$

>

$$\cancel{(2)} + \cancel{(3)} + \cancel{(4)} + \cancel{(5)} + \cancel{(6)} = \dots N$$

Q Given a series of form $3i+2$,
print first N terms

$N=5$

$i=1$
 $i=2$
 $i=3$
 $i=4$
 $i=5$

5
8
11
14
17

$i=1$
while($i \leq N$) {
 print($3 \times i + 2$).
 $i = i + 1$;

3

$3 \times i$

3i

Q print first N terms of $3i+2$
which are not multiple of 5

N=5

i=1	i=2	i=3	i=4	i=5	i=6	i=7	i=8
5	8	11	14	17	20	23	26
T1	T2	T3	T4			T5	T6

check for N terms
stop early

i=1	5
i=2	8 ✓
i=3	11 ✓
i=4	14 ✓
i=5	17 ✓
i=6	20
i=7	-
i=8	-

i=1
while (i <= N) {

term = 3i + 2;

→ if (term / 5 ! = 0) {

print term;

i = i + 1;

6 <= 5
7 <= 6 No

No of terms printed
(N)

==
!=

X 3! = 0
0! = 0

6 times
First 6 multiple of 5 which
are not div by 3

extra
times

i=1	5	✓
i=2	10	✓
3	15	
4	20	✓
5	25	✓
6	30	
7	35	✓
8	40	✓

No of Terms $< n$
while (~~$i \leq n$~~)

