→ conditionals

if, if-else, if else if else, Nested

Ternary operator

Switch

Loops } Repeating }

concept } what } why } how

Loop

Hello students!

Repeat multiple times

```
console.log("Hello World");
console.log("Hello World");
console.log("Hello World");
```

3 times

300 times

Loop → Execute code a defined no of times

1. for loop
2. while loop
3. dowhile loop

→ when

13 → 1 line of code

65% of code

Mandatory

keyword

initialization

boolean condition

counter

Run

```
for(i=0;i<10;i++){
    console.log("Hello Students")
}
```

① ② ③

Optional (important)

① $i = 0$ → initialize the condition

② $i < 10$ → condition

Boolean (True)

How many times?

1) $i = 0$ Hello student $i \to i{+}{+}$

2) $i = 1$ Hello student $i{+}{+}$

3) $i = 2$ Hello student $i{+}{+}$

10) $i = 9$ Hello students $i{+}{+}$

11) $i = 10$

1 — 20

{2, 4, 6, 8, 10, 12, 14, 16, 18, 20}

20 times

```
// 1 to 20, print all the even numbers
for(i=1; i<=20;i++){
    if(i%2==0){
        console.log(i)
    }
}
```

{print = 10 times}

10 times

increment by 2

```
for(i=2;i<=20;i=i+2){
    console.log(i)
}
```

1

```
for(i=1; i<=20;i++){
    if(i%2==0){
        console.log(i)
    }
}
```

20 times

half the time

10 times

Efficiency

No of times loop executes

2

```
for(i=2;i<=20;i=i+2){
    console.log(i)
}
```

for (i=0 ; ; increment

(key) initialization

must

conditional

optional

condition forloop to run

i = i+1

j = j-1

```
for(i=0,j=10; i<j; i++,j--){
    console.log("Hello Students , i,j :" + i + ","+ j)
}
```

print

```
Hello Students , i,j :0,10
Hello Students , i,j :1,9
Hello Students , i,j :2,8
Hello Students , i,j :3,7
Hello Students , i,j :4,6
```

for loop

loop

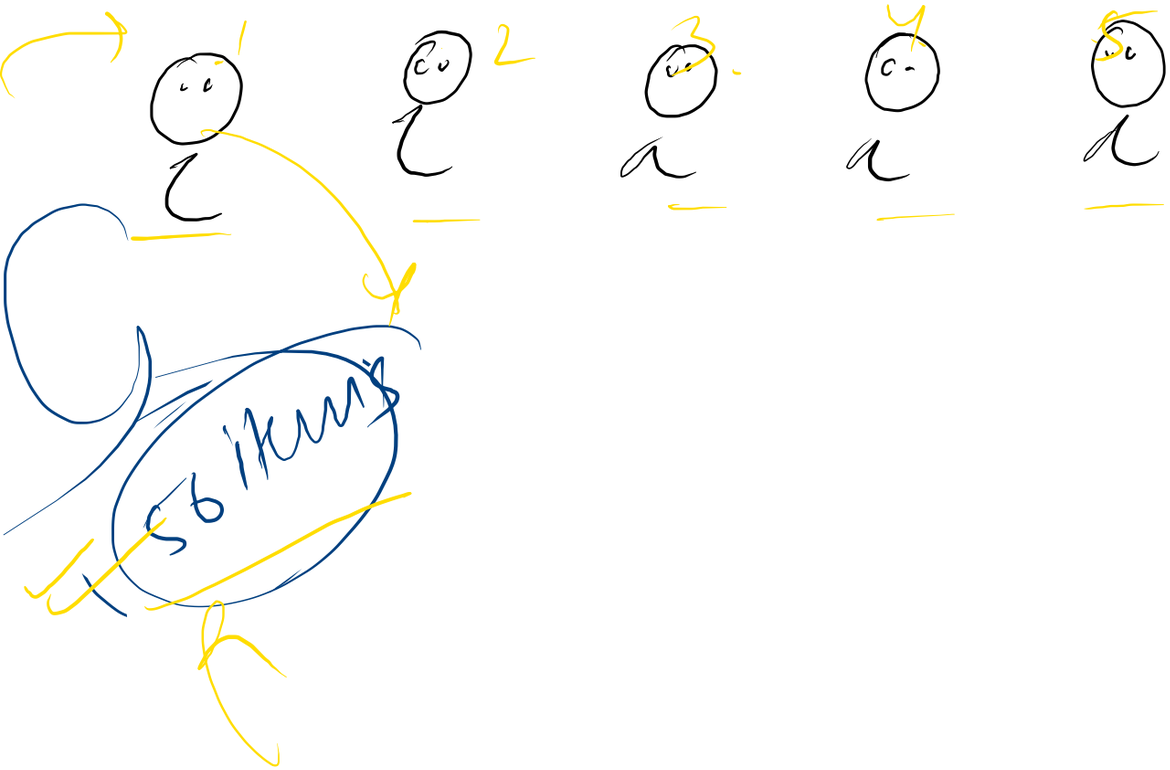
loop

Nested loop

if

(item) / situation

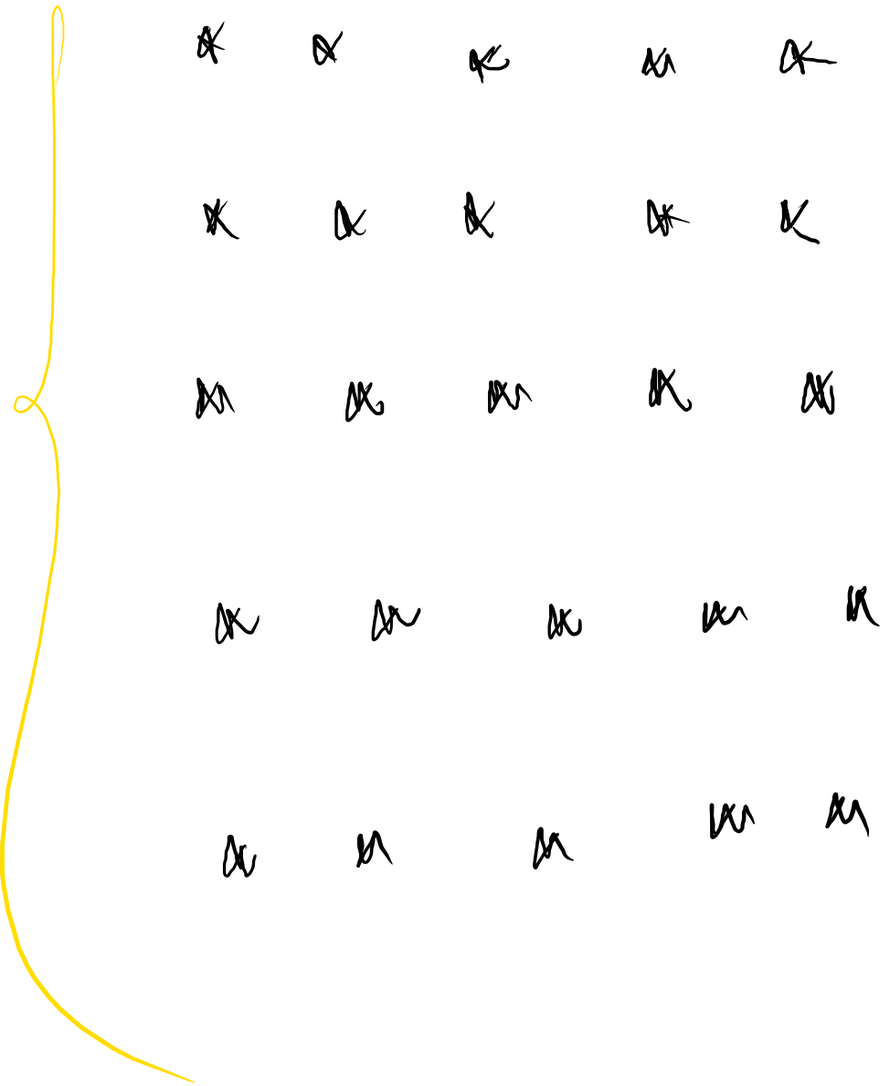
situation

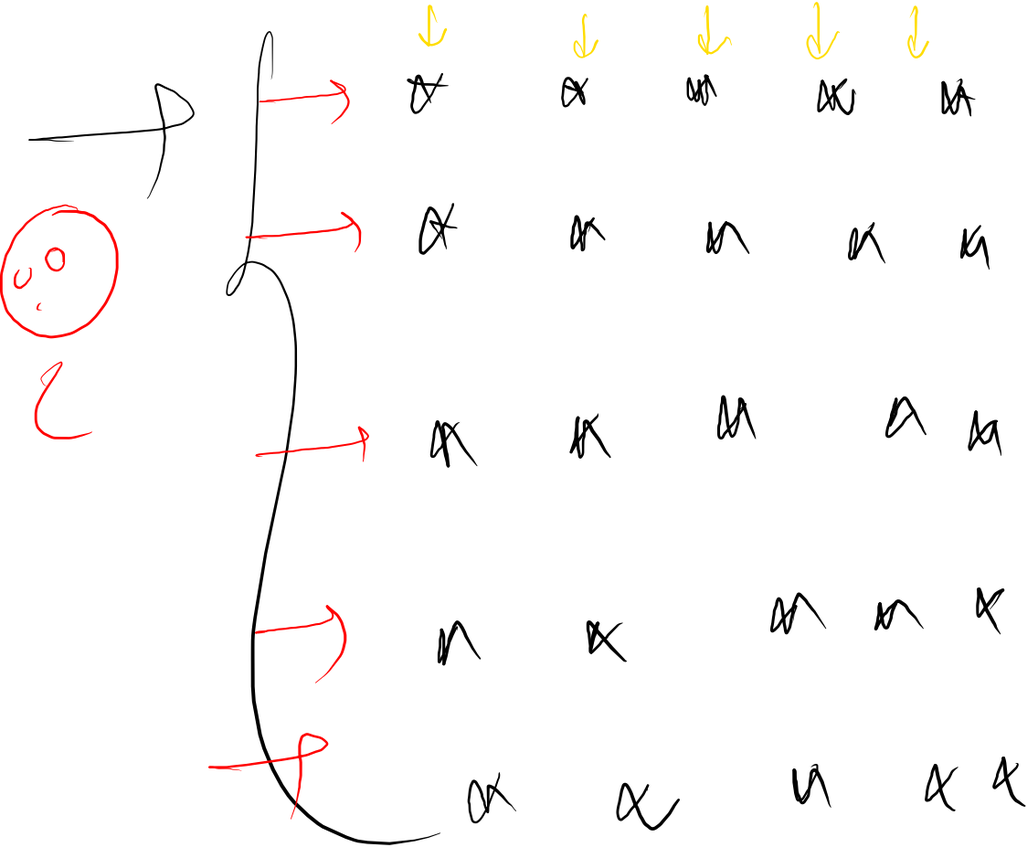

1
2
3
4
5
56 items

```
for ( person=1 ;person<=5;person++){
    console.log("Welecome person " + person)
    //Feed the 7 food items to person 1
    for(food=1;food<=7;food++){
        console.log("Feeding food item "+ food)
    }
}
```

for (person=1, food=1 ; condition ;

```
Welecome person 1
Feeding food item 1
Feeding food item 2
Feeding food item 3
Welecome person 2
Feeding food item 1
Feeding food item 2
Feeding food item 3
Welecome person 3
Feeding food item 1
Feeding food item 2
Feeding food item 3
Welecome person 4
Feeding food item 1
Feeding food item 2
Feeding food item 3
Welecome person 5
Feeding food item 1
Feeding food item 2
Feeding food item 3
```





for → rows

for → columns → same line

new line

Print the pattern

1
2
3
4
5

for → 5 times

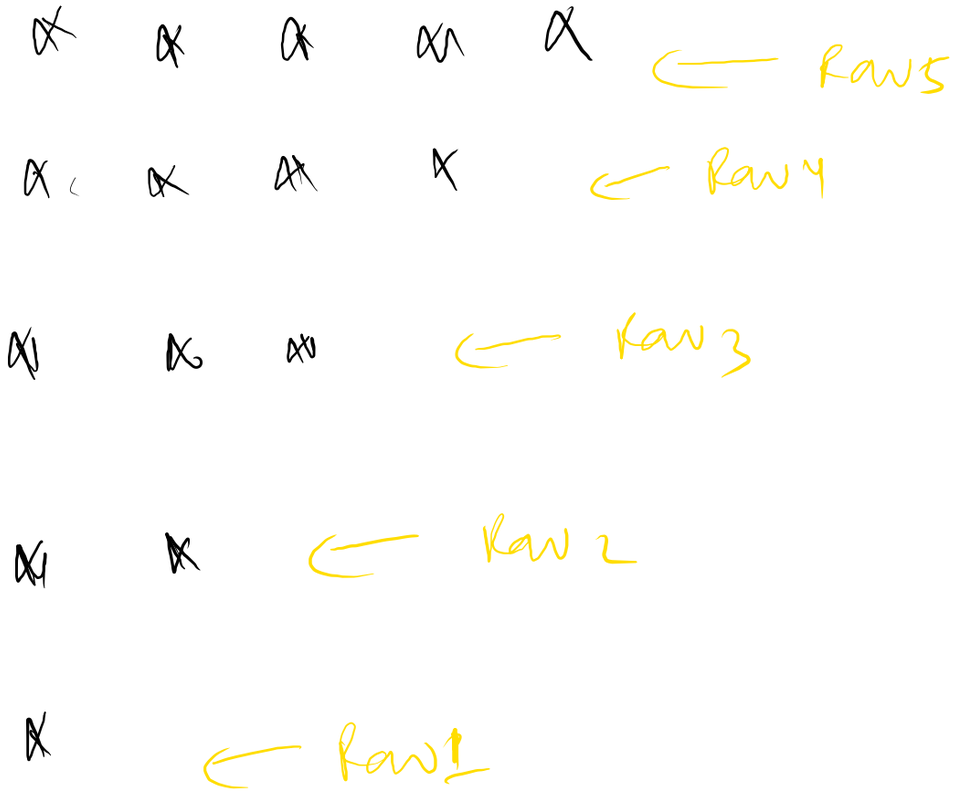
(for)

$R_1 \to 1$
$R_2 \to 2$
$R_3 \to 3$

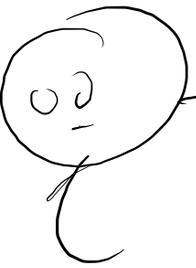
```
for( row =1 ;row<=5;row++){
    for ( col=1;col<=row;col++){
        process.stdout.write("* ")
    }
    console.log()
}
```

class

Print this solution




```
for ( row =5;row>=1;row = row-1){
    for ( col=1;col<=row;col++){
        process.stdout.write("* ")
    }
    console.log()
}
```



watch this again

Write all the code

Matrix Multiplication :-

① $\begin{bmatrix} 3 & 1 & 2 \\ 5 & 4 & 9 \\ 6 & 3 & 1 \end{bmatrix} \times \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 2 & 3 & 9 \end{bmatrix}$

Maths

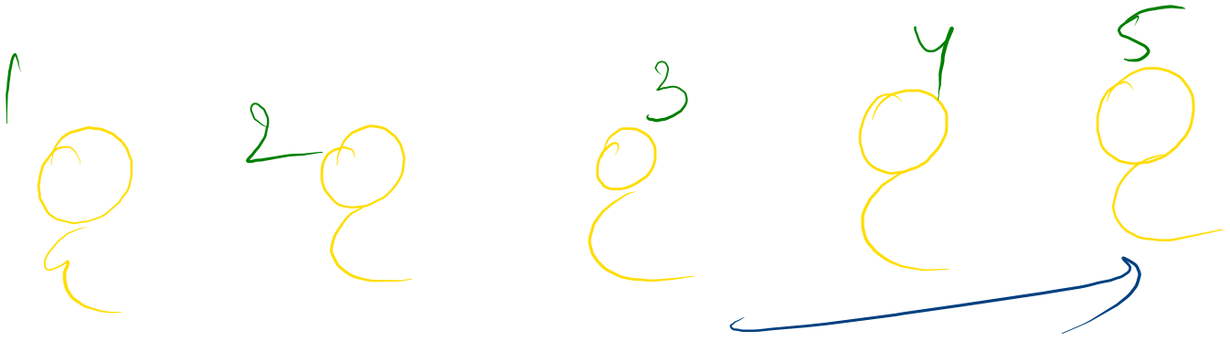
for loops

Assignment

life → smooth, koop

→ Break

loop
{ break }



break } for loop } Exit

[redacted]

```
for( i=1;i<5;i++){
    if(i==3){
      break;
    }
    console.log("Please have food")
}
```

true

terminate for loop

1.) i = 1

2.) i = 2

3.) i = 3

Please have food

Please have food

terminate

break

situation } Breakup

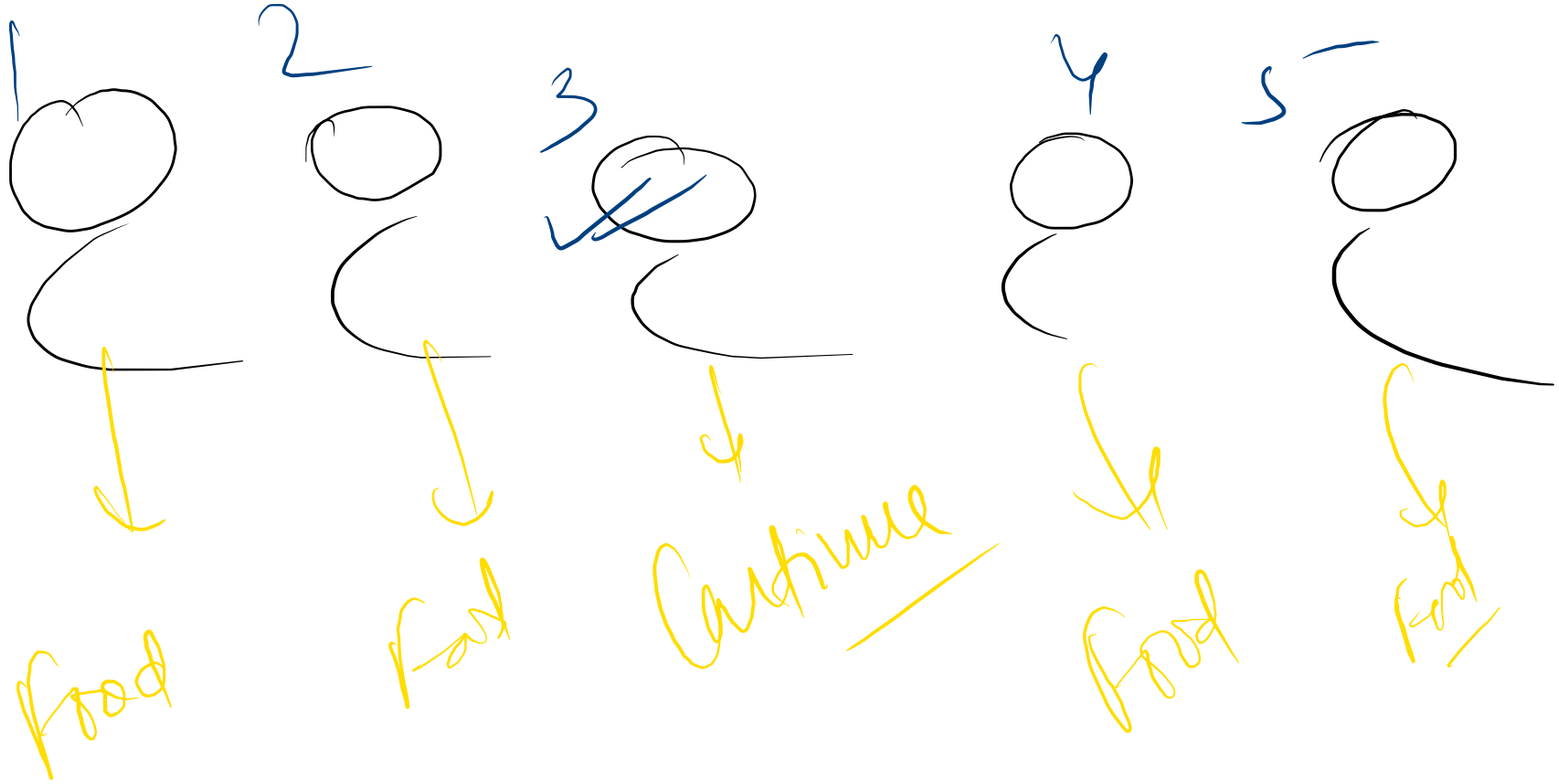
Shahid / Kareena }

Break }

Deepika / RK }

{ for loop }

continue }



continues

```
for( i=1;i<5;i++){
    if(i==3){
        break;
    }
    console.log("Please have food")
}
```

Terminate the entire loop

```
for( i=1;i<5;i++){
    if(i==3){
        continue;
    }
    console.log("Please have food")
}
```

Ignore current iteration

Next iteration continues

```
for(i=1;i<=3;i++){
    console.log("i= "+ i)
    for(j=1;j<3;j++){
        console.log("Inside j, value of j ="+ j)
        break
    }
}
```

break/ terminate the immediate for loop

1 — 10) I should avoid no's divisible by 3

```
for (i = 1; i <= 10; i++) {
    if (i % 3 == 0) {
        continue;
    }
    console.log(i)
}
```

→ 1, 2, 4, 5, 7, 8, 10

for

- Nested for loop
  - break
  - continue

while

```
let age =11
```

Expression → Boolean → false

(keyword)

19 ✗ false → come out of while loop

```
while(age<19){
    console.log("Drinking is not allowed")
    age = age+1
}
```

D is not allow

age → 11
age +12 → age = 18
age = 13
age = 14
age = 15

age = 19

D ' '
' '
' '
' '
'

break/continue

"while as well"

10

```
right_swaps =10  // 3, 7, 9
while(right_swaps >= 0){
    right_swaps = right_swaps -1
    if(right_swaps ==3 || right_swaps ==7 ||right_swaps ==9){
        continue;
    }
    console.log("Keep swiping right")

}
```

9

1

```
right_swaps =10  // 3, 7, 9
while(right_swaps >= 0){

    if(right_swaps ==3 || right_swaps ==7 ||right_swaps ==9){
        right_swaps = right_swaps -1
        continue;
    }
    right_swaps = right_swaps -1
    console.log("Keep swiping right")

}
```

1

2

3

keep swiping

do while

condition

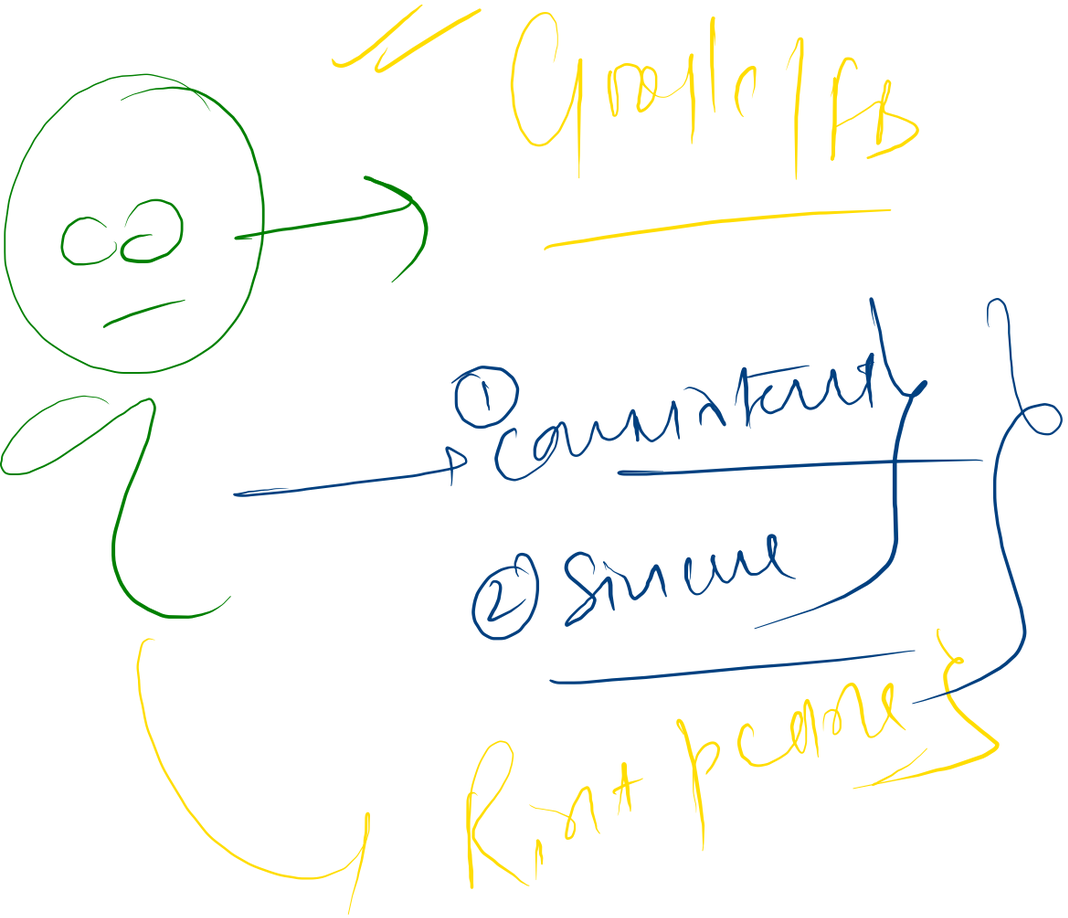
(DS) → it executes at least once

```
do {
    ≡
} while (i>5)
```

```
i=10
do{
    console.log("Hello Students")
    i--
}while(i>5)
```

code executes atleast once

for | while | do while


Graph of fs
① constant
② sine
Right parame

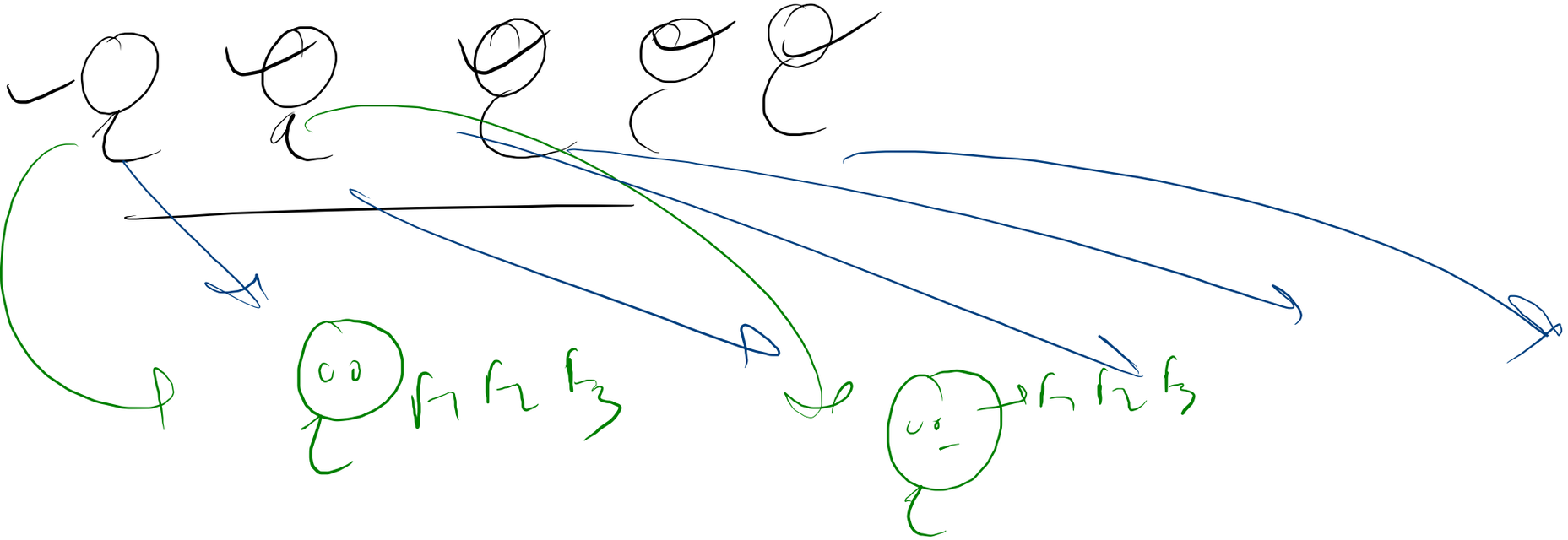
① for loop

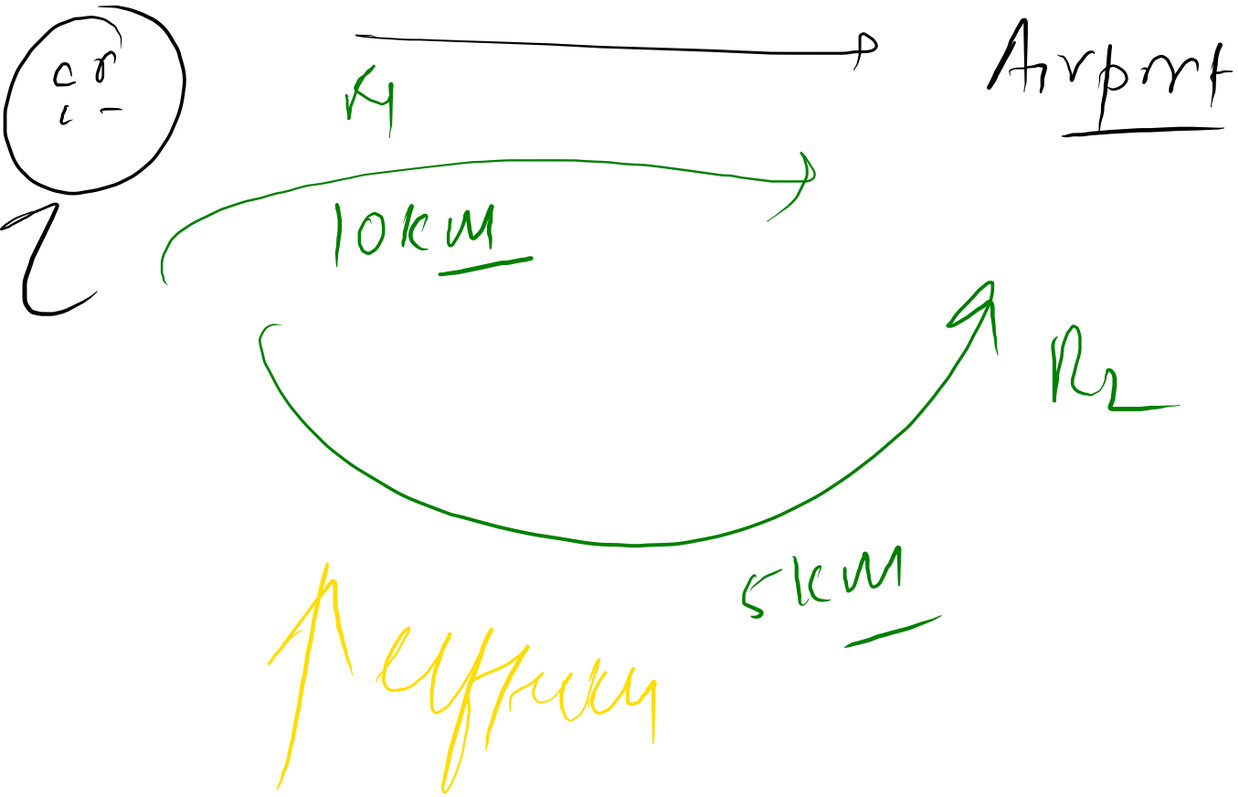
② while loop

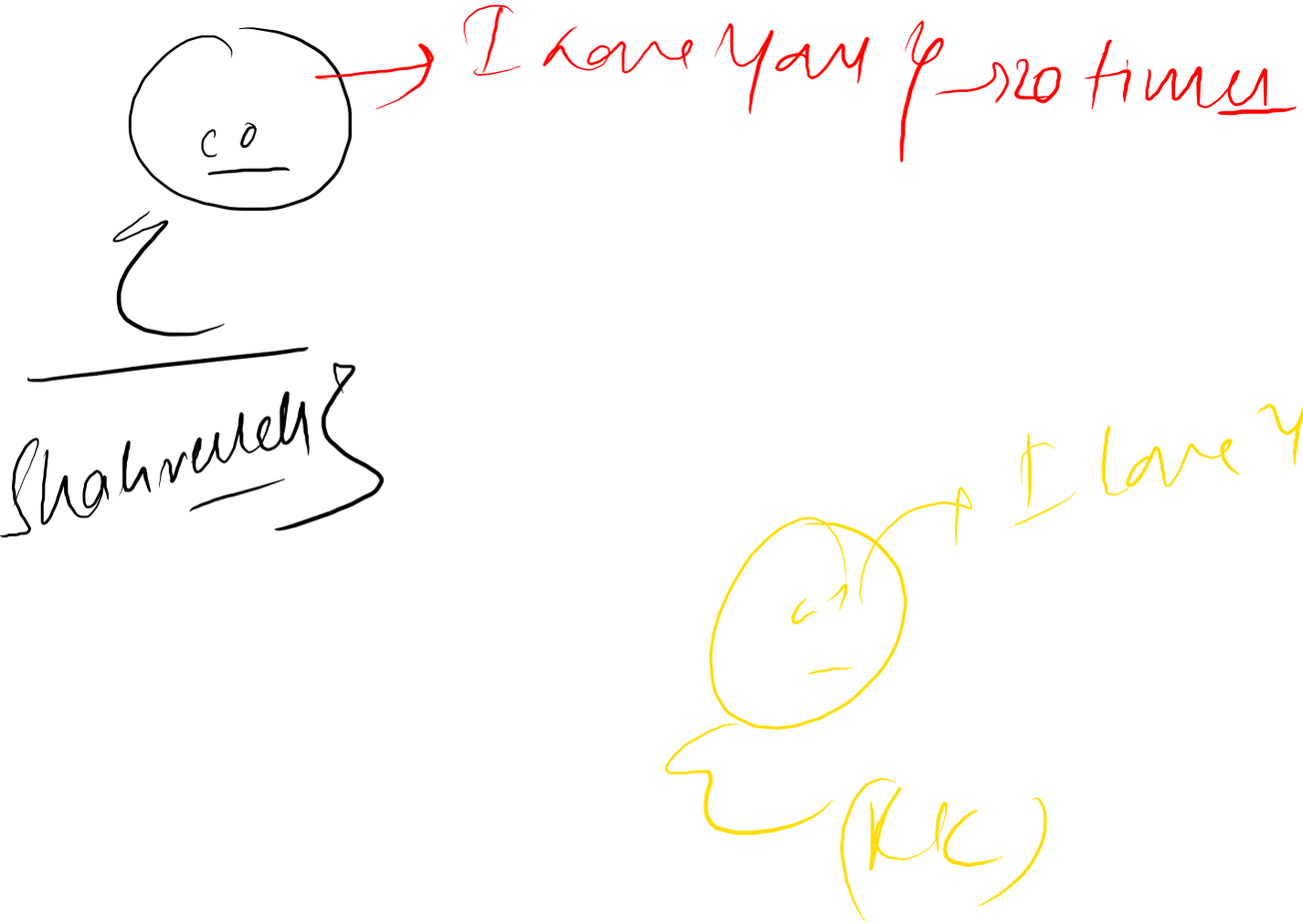
No of times

condition

console.log( ) → print


f1 f2 f3
f1 f2 f3


car
Airport
R1
10km
R2
5km
Affirm


I love you 120 times
Shahrukh
I love you 10 times
(RK)