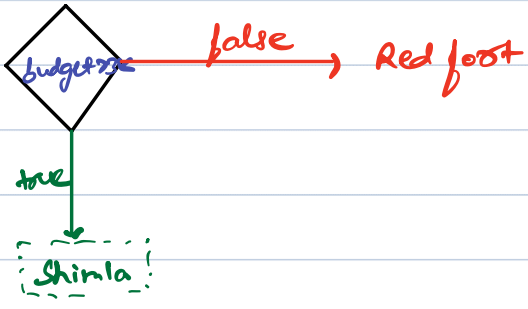
Today's agenda

- if / else
- while loop
- for loop

// If - else

↳ budget > 3K → Shimla

budget < 3K → Red fort



↳ if we want to do something when cond^n is true and something else if Cond^n is false → if /else.

```
if (Condn) {
    //Statement 1
}
else {
    //Statement 2
}
```

if Cond^n : : true : Statement 1

if Cond^n : : false : Statement 2

Quiz 1:

```
if (15 > 7) {        // true
    s.o.p ("if");
}
else {
    s.o.p ("else");
}
```

→ if

Quiz 2:

```
int n = 70;
if (n > 70) {        // false
    System.out.println ("if");
}
else {
    System.out.println ("else");
}
```

→ else

Q) Read a number and check if number is even or odd?

even no: divisible by 2 → remainder is 0
↳ n%2==0

odd no: not divisible by 2

```
Scanner scn = new Scanner(System.in);
int n = scn.nextInt();

if (n%2 == 0){
    System.out.println("even");
}
else{
    System.out.println("odd");
}
```

// logical operator → && (and), || (or)

and operator (&&)

&& is false dominated

Condn1 &&	Condn2	ans
T	T	T
F	T	F
T	F	F
F	F	F

→ 3 Condn

Condn1 &&	condn2 &&	condn3	answer
T	T	F	F
F	F	T	F
T	T	T	T

```
int x = 50;
int y = 30;
if ( x>60 && y>20 ){        // false
    s.o.p ("if");
}
else {
    s.o.p ("else");
}
```

→ if

OR operator (||)

|| is true dominated

Condn1	||	Condn2	ans
T		T	T
F		T	T
T		F	T
F		F	F

→ 3 Condn

Condn1	||	Condn2	||	Condn3	answer
T		T		F	T
F		F		T	T
T		T		T	T

Q) Read a number. If number is divisible by 2 or 3 Print "divisible", otherwise Print "not divisible".

```
Scanner scn = new Scanner(System.in);
int n = scn.nextInt();

if (n%2==0 || n%3==0){
    System.out.println("divisible");
}
else{
    System.out.println("Not divisible");
}
```

n=4 -> divisible

n=9 -> divisible

maths

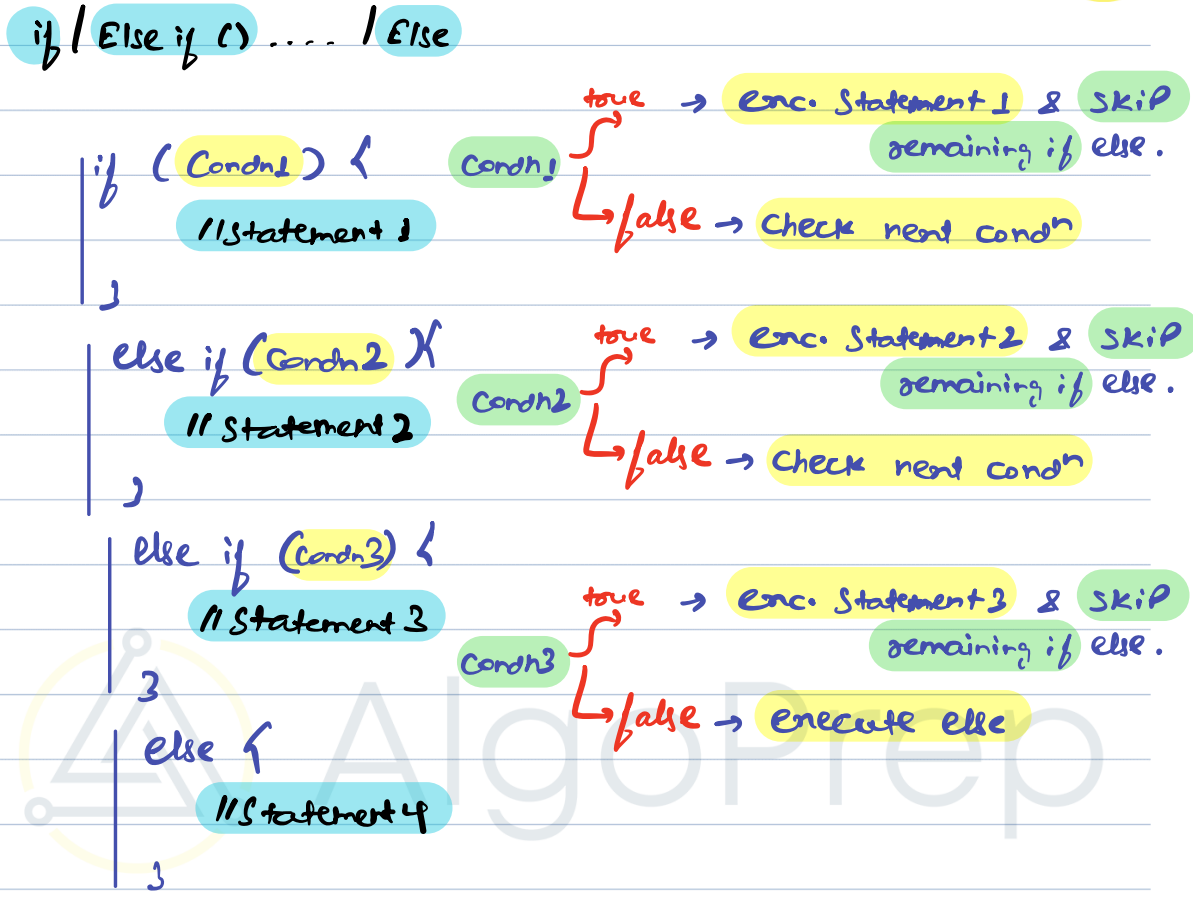
marks = ✓

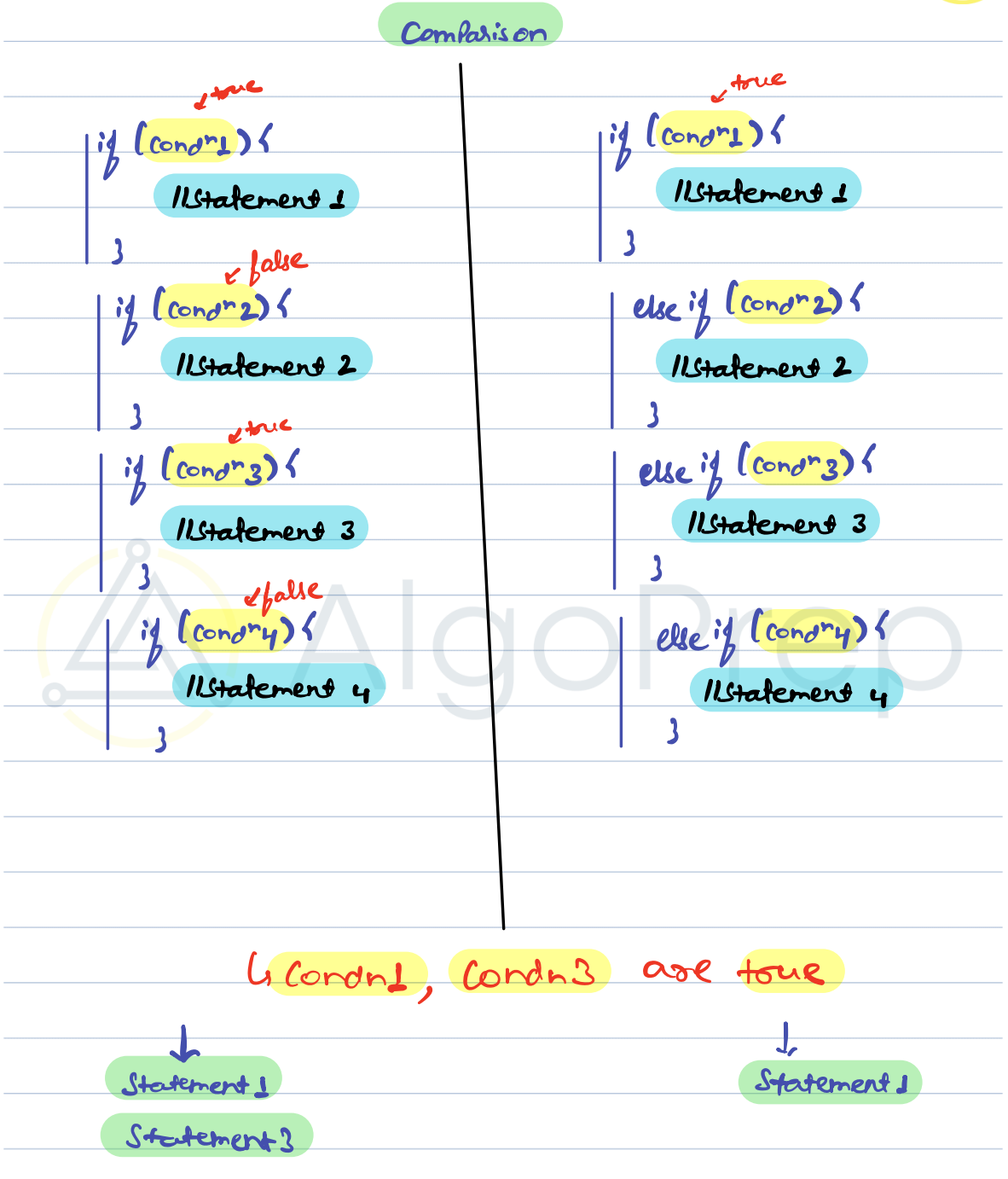
↳ marks >90 → Exc.

↳ marks >80 <=90 → good

↳ marks >70 <=80 → avg.

↳ mark >60 <=50 → below Avg


if / Else if () .... / Else
if (Condn1) {
// Statement 1
}
else if (Condn2) {
// Statement 2
}
else if (Condn3) {
// Statement 3
}
else {
// Statement 4
}
Condn1
true → Exc. Statement 1 & skip remaining if else.
false → Check next condn
Condn2
true → Exc. Statement 2 & skip remaining if else.
false → Check next condn
Condn3
true → Exc. Statement 3 & skip remaining if else.
false → execute else


Comparison
true
if (condn1) {
Statement 1
}
false
if (condn2) {
Statement 2
}
true
if (condn3) {
Statement 3
}
false
if (condn4) {
Statement 4
}
true
if (condn1) {
Statement 1
}
else if (condn2) {
Statement 2
}
else if (condn3) {
Statement 3
}
else if (condn4) {
Statement 4
}
If condn1, condn3 are true
Statement 1
Statement 3
Statement 1

Q) Max of 3 numbers

↳ Given 3 numbers, Print max out of these.

Ex:

a	b	c	ans
6	3	4	6
8	3	10	10
12	4	4	12
13	10	13	13
8	6	8	8
11	11	11	11

Pseudo Code

```
Scanner scn = new Scanner(System.in);
int a = scn.nextInt();
int b = scn.nextInt();
int c = scn.nextInt();

if (a>=b && a>=c){
    S.o.p(a);
}
else if (b>=a && b>=c){
    S.o.p(b);
}
else {
    S.o.p(c);
}
```

a b c

~~13 10 13~~

→ a >= b && a >= c

a wins

→ b >= a && b >= c

b wins

→ c wins

Break till 9:25 pm

//Intro to loops

↳ Print all the numbers from 1 to 5.

```
System.out.println(1);
System.out.println(2);
System.out.println(3);
System.out.println(4);
System.out.println(5);
```

↳ Print numbers from 1 to 10^5.

loop: Do similar thing multiple times.

↳ while loop

↳ for loop

↳ ~~do while~~

Q) Print 1 to 5 using while loop.

loop controlling variable

```
int i = 1;
while (i<=5){
    System.out.println(i);
    i = i+1;
}
```

```
int i = 1;
while (i<=5) {
    System.out.println(i);
    i = i+1;
}
```

↳ i = i+1 & i++ are same

i	i<=5	Print
1	T	1
2	T	2
3	T	3
4	T	4
5	T	5
6	F	

Exit

//Structure of while loop

1. initialize loop variable.
   `int i = 1;`

2. write while with condⁿ

```
while (i<=5) {

}
```

3. The statement you want to run.
   `System.out.println(i);`

4. updation of loop variable.

Quiz 3:

```
int i=5;
while (i<10){
    System.out.print(i);
    i=i*2;
}
```

i	i<10	Print
5	T	5
10	F	
	Exit	

Quiz 4:

```
int i=1;
while (i<5){
    System.out.print(i+" ");
    i=i+2;
}
```

i	i<5	Print
1	T	1
3	T	3
5	F	
	Exit	

Quiz 5:

```
int i=1
while (i>=5){
    System.out.print(i);
    i++;
}
```

i	i>=5	Print
1	F	
	Exit	

Quiz 6:

```
int i=1;
while (i<=5){
    System.out.print(i);
}
```

i	i<=5	Print
1	T	1
1	T	1
1	T	1
⋮	⋮	⋮

Quiz 7:

```
int i=0;
while (i<=5){
    System.out.print("AlgoPrep");
    i=i+1;
}
```

↳ How many times AlgoPrep will be Printed?

i	i<=5	Print
0	T	✓
1	T	✓
2	T	✓
3	T	✓
4	T	✓
5	T	✓
6	F	

↳ Exit