Today's agenda
↳ if / else
↳ while loop
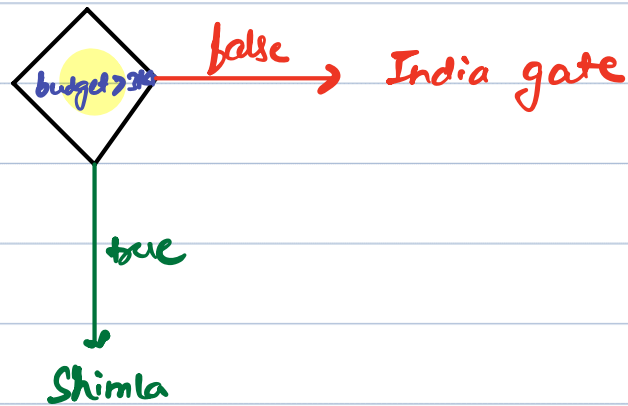
// If - else

↳ budget > 3K → Shimla

budget < 3K → India gate

$$budget > 3K \xrightarrow{false} India\ gate$$

true

Shimla

↳ if Cond^n is true → do task 1

↳ if Cond^n is false → do task 2

```
if (cond^n) {

        //Statement 1

}

else {

        // Statement 2

}
```

if Cond^n :: true : Statement 1

if Cond^n :: false : Statement 2

Quiz 1:

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

→ if

Quiz 2:

```java
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 → 0

odd no: not divisible by 2

```java
// "static void main" must be defined in a public class.
public class Main {
    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int num = scn.nextInt();

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

Finished in 142 ms

even

stdin

26

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// logical operator → && , ||

and *or*

→ and operator (&&)

&& operator is false dominated

Cond^n1	&& Cond^n2	ans
T	T	T
F	T	F
T	F	F
F	F	F

→ 3 cond^n

Cond^n1	&& Cond^n2	&& Cond^n3	ans
T	T	F	F
T	T	T	T
F	F	T	F

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

→ or operator (||)

or(||) is true dominated

Cond^n_1 || Cond^n_2	ans
T	T	T
F	T	T
T	F	T
F	F	F

→ 3 cond^n

Cond^n_1 || Cond^n_2 || cond^n_3	ans
T	T	F	T
T	T	T	T
F	F	F	F

```
int x = 50;
int y = 30;
if ( x > 60   ||   y > 20) {        T
        s.o.p ("if");              → if
}
else {
        s.o.p ("else");
}
```

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

```java
// "static void main" must be defined in a public class.
public class Main {
    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int num = scn.nextInt();


        if(num % 2 == 0 || num % 3 == 0){
            System.out.println("divisible");
        }else{
            System.out.println("not divisible");
        }

    }
}
```

Finished in 158 ms
not divisible

stdin ▣
29

→ marks = (input)

    → marks > 90   → exc.

    → marks > 80 && marks <= 90 → good

    → marks > 70 && marks <= 80 → avg.

    → marks > 60 && marks <= 70 → below Avg.

    → marks < 60   → fail

if / Else if () .... / Else

```
if (Condn1) {
    //Statement 1
}
else if (Condn2) X {
    // Statement 2
}
else if (Condn3) {
    // Statement 3
}
else {
    //Statement 4
}
```

Condn1 → True → enc. St. 1 & skip remaining else if.

False → Check next cond^n

Condn2 → True → enc. St. 2 and skip remaining else if.

False → Check next cond^n

Condn3 → True → enc. St. 3 & skip remaining else if.

False → Check next cond^n

Comparison

```
if (cond^n1) {        →true
    //Statement 1
}
if (cond^n2) {        ←false
    //Statement 2
}
if (cond^n3) {        →true
    //Statement 3
}
if (cond^n4) {        ←false
    //Statement 4
}
```

```
if (cond^n1) {
    //Statement 1
}
else if (cond^n2) {
    //Statement 2
}
else if (cond^n3) {
    //Statement 3
}
else if (cond^n4) {
    //Statement 4
}
```

Statement 1
Statement 3

Statement 1

Cond^n1 & cond^n3 are true

Q) Max of 3 numbers

> Given 3 numbers, Point max out of these.

Ex:

a	b	c	
6	3	1	→ 6
8	3	10	→ 10
12	4	4	→ 12
13	10	13	→ 13
8	6	6	→ 8
11	11	11	→ 11

a   b   c

max = a $a >= b$ && $a >= c$

max = b $b >= a$ && $b >= c$

max = c

```java
    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        int a = scn.nextInt();
        int b = scn.nextInt();
        int c = scn.nextInt();


        if(a>=b && a>=c){
            System.out.println(a);
        }else if(b>=a && b>=c){
            System.out.println(b);
        }else{
            System.out.println(c);
        }
    }
```

Run   Untitled   Save   Java   Finished

stdin
-59
-45
-9

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Break till   10:24 pm

//Intro to loops

⤷ Print all numbers from 1 to 5.

S.o.p (1);
S.o.p (2);
S.o.p (3);
S.o.p (4);
S.o.p (5);

⤷ Print numbers 1 to 10⁵.

→ Do similar things multiple times. : loops

⤷ (i) while loop
⤷ (ii) for loop
⤷ ~~do-while~~
⤷ ~~for-each~~

Q) Print all numbers from 1 to 5.

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

        i++;
}
```

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

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 along with cond^n

```
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.point (i);
    i = i*2;
}
```

i	i < 10	Print
5	T	5
10	F	
	exit	

Quiz 4:

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

i	i >= 5	Print
1	F	
	exit	

→

Quiz 6:

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

   └ infinite loop
```

i	i <= 5	Print
1	T	1
1	T	1
1	T	1
¦	T	'
¦	T	'
¦		(

Quiz 7:

```
int i = 0;
while (i <= 5) {
    System.out.print("AlgoPrep");
    i = i + 1;
}
→
└ How many times AlgoPrep will be Printed?

      └ 6
```

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

└ exit