$n-1 \;(odd) \rightarrow \quad n = 30 \qquad 29, 27, 25 \; . \; - - \; 5, 3, 1$

$1 - n \;(odd) \rightarrow \qquad\qquad\qquad 1, 3, 5, 7 - - - - n$

$\left(i = 1; \quad i \leq n ; \quad i += 2 \right)$

$i \, \% \, 2 \, != 0 \quad \checkmark$

```
for(int i = n; i >= 1; i--){
    if(i % 8 == 0){
        syso(i + "");
    }
}
```

$\swarrow$ multiples of $8 , (n-1)$

$n, n-3, n-6, n-9 - - - - - -$

$n = 20$

$n = 20$

$n-3 = 20 - \cancel{3} = 17$

$n-6 = 20 - 6 = 14$

$n = 20$

$20 - 3 = 17$

$17 - 3 = 14$

$14 - 3 = 11$

```java
for(int i = n; i >= 1; i -=3){
    Syso(i);
}
```

$n = 30$

$n, n-k, n-2k, n-3k$

$k = \underline{4} \quad 3$

$n = \underline{30}$

$n - k = 30 - 4 \Rightarrow 26$

$n - 2k = 30 - 2 \times 4 = 22$

$n - 3k = 30 - 3 \times 4 = 18$

$\begin{array}{l} 30 \rceil -4 \; -3 \\ 26 \rceil -4 \; -3 \\ 22 \rceil -4 \; -3 \\ 18 \end{array}$

$i \; -= 2k$

for(int $i = n$; $i \geq 0$; $i \; -= k$)

Syso(i)

Series
$n, n-k, n-2k, n-3k \cdots$

$n = 10$

$k = 3$

$n = 10$
$n - k = 10 - 3 = 7 \quad \rceil -3$
$n - 2k = 10 - 2 \times 3 = 4 \quad \rceil -3$
$n - 3k = 10 - 3 \times 3 = 1 \quad \rceil -3$

```java
for(char i = 'a'; i <= 'z'; i++){
    System.out.println(i);
}
```

print a to z

Print a, B, c, D, e, F, g...... 26 characters

```java
char ch = 'a';

for(int i = 1; i <= 26; i++){
    if(i % 2 == 0){
        System.out.println((char)(ch -32));
    }
    else{
        System.out.println(ch);
    }
    ch++;
}
```

$i = 97; \leq 122$

%2

(char) (ch-32)

(char) (i)

HW_Print series AAA,bb,CCC,dd,EEE,ff till 26 lines

add → upper case → 3-times

even → small case → 2 times

$int\ i = 'A'$

$i = 65 \leq 90\ T$

$65\%2\ != 0\ T$

$(char)(65) \to AAA$

$\int bb$

$\int CCC$

$\int dd$

$i = 66 \leq 90\ T$

$66\%2\ != 0\ F$

$int\ ch = (i)$

$66 \to 98$

$int\ ch = 98$

$(char)(98) \to b$

```java
for(int i = 'A'; i <= 'Z'; i++){
    if(i % 2 != 0){
        System.out.print((char)(i));
        System.out.print((char)(i));
        System.out.print((char)(i));
    }
    else{
        int ch = Character.toLowerCase(i);
        System.out.print((char)(ch));
        System.out.print((char)(ch));
    }
    System.out.println();
}
```

Character. toLowerCase (char); ⎤ in-built
Character. toUpperCase (Char); ⎦ functions

22

Print Alternate Elements of a String

```java
Scanner s = new Scanner(System.in);
String str = s.nextLine();

for(int i = 0; i < str.length(); i+=2){
    System.out.print(str.charAt(i));
}
```

$$str \rightarrow \overset{0\ \ 1\ \ 2\ \ 3\ \ 4,,}{\text{"Shree"}}$$

$$length \rightarrow 5$$

$$4 \leq 5$$

$$1 \leq n$$

$$0 < n$$

$$\frac{2^n}{n=0}$$

$2^0 \rightarrow 1$

multiply $\rightarrow 1$

sum $= 0$

$2^{\textcircled{3}} \rightarrow n$

2^4
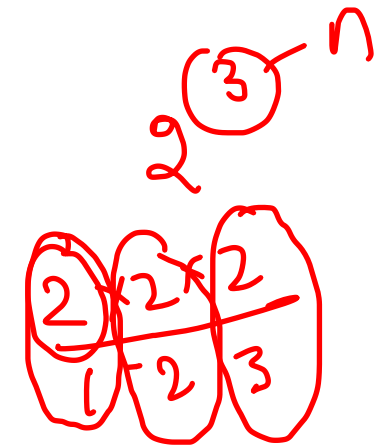
$\underbrace{2 \times 2 \times 2}_{1 \quad 2 \quad 3}$

$\dfrac{2 \times 2 \times 2 \times 2}{1 \quad 2 \quad 3 \quad 4}$

ans $= \underline{1}$

for (int $i = 1$; $i \leq n$; $i++$)

ans $=$ ans $\ast 2$;

$i = 1 \leq 3$ T

$i = 4 \leq 3$ F

ans $= 1 \times 2 = \underline{2}$

$i = 2 \leq 3$ T

ans $= 2 \times 2 = 4$

$i = 3 \leq 3$ T

ans $= 4 \times 2 = 8 \rightarrow o/p$

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

int ans = 1;
for(int i = 1; i <= n; i++){
    ans = ans * 2;
}
System.out.println(ans);
```

Print powers of 2 less than n

```java
for(int i = 1; i < n; i *= 2){
    Syso(i + " ");
}
```

$1 < 20$

$2 < 20$

$4 < 20$

$8 < 20$

$16 < 20$

$32 < 20 f$

Multiples of 3, 5 and Both 3 and 5

```java
for(int i = 1; i <= n; i++){
    if(i % 3 ==0 || i%5 ==0){
        Syso(i + " ");
    }
}
```