

## Assignment - 2

```
① import java.util.*.  
class demo{  
    public static void main(String[] args){  
        Scanner sc = new Scanner(System.in)  
        int n = sc.nextInt();  
  
        for(int i=1; i<=n; i++){  
            for(int j=1; j<=n; j++){  
                if(i==1 || i==n || j==1 || j==n){  
                    System.out.print("*");  
                }  
                else {  
                    System.out.print(" ");  
                }  
            }  
            System.out.println();  
        }  
    }  
}
```

Dry run :-

i = 1      j = 1 == 1 — True → \*

j = 2 == 1 — space.

j = 3 == 1 — False

j = 4 == 1 — False

j = 5 == 1 — X

j = 5 — True → \*

\*      \*

$i = 2$      $j = i = j == 1 \rightarrow \text{True } (*)$   
 $j * = 2 \rightarrow \text{false}$   
 $j == 5 \rightarrow \text{True } (*)$ .

$i = 3$      $j = 1 (j == 1) \text{ True } (*)$   
 $j = 2 (j == 1) \text{ false}$   
 $j = 3 (j == 1) \text{ false}$   
 $j = 5 (j == 5) \text{ True } (*)$ .

$j = 5$

L

$j = 1 (j == 1) \rightarrow \text{True} (*)$

$j = 2 (j == 2) \rightarrow \text{False}$

$j = 3 (j == 3) \rightarrow \text{False}$

$j = 5 (j == 5) \rightarrow \text{True} (*)$

output

\* \* \* \* \*

\* \* \* \*

\* \* \* \*

\* \* \* \*

	1,1	1,2	1,3	1,4	1,5	
2,1	*	*	*	*	*	
3,1	*	*	*	*	*	
4,1	*	*	*	*	*	
5,1	*	*	*	*	*	
	1,2	1,3	1,4	1,5		
	2,2	2,3	2,4	2,5		
	3,2	3,3	3,4	3,5		
	4,2	4,3	4,4	4,5		
	5,2	5,3	5,4	5,5		

```

import java.util.*;
class demo{
    public static void main (String [] args){
        for (int i=1 ; i<=5 ; i++){
            for (int j=1 ; j<=5 ; j++){
                if (i==j || i+j==6){
                    System.out.println("*");
                }
            }
        }
    }
}

```

$i = 1$

$\boxed{j = 1 == 1}$

\*

$j = 2 == 1 - \text{False}$

$i = 2$

$\boxed{j = 1 == 2} - x$

$j = 2 == 2 - *$

$j = 3 == 2 - x$

$i = 3$

$\boxed{j = 1 == 3} - x$

$j = 2 == 2 - x$

$j = 3 == 3 - \checkmark (*)$

$j = 4 == 3 - \text{False}$

$i = 4$

$\boxed{j = 1 == 4} - \text{False}$

$j = 2 == 4 - \text{False}$

$j = 3 == 4 - \text{False}$

$j = 4 == 4 - \text{True} (*)$

or

$i = 1 (i + j == 6)$

$\boxed{j = 1 + 1 == 6} (\text{False})$

$j = 2 + 1 == 6 (\text{False})$

$j = 3 + 1 == 6 (\text{False})$

$j = 4 + 1 == 6 (\text{False})$

$j = 5 + 1 == 6 (\text{True}) \rightarrow *$

$i = 2$

$\boxed{j = 2 + 1 == }$

$i = 2$

$\leftarrow j = 1 + 2 == 6 \text{ (False)}$   
 $j = 2 + 2 == 6 \text{ (False)}$   
 $j = 3 + 2 == 6 \text{ (False)}$   
 $j = 4 + 2 == 6 \text{ (True)} \rightarrow *$ .

$i = 3$

$\leftarrow j = 1 + 3 == 6 \text{ (False)}$   
 $j = 2 + 3 == 6 \text{ (False)}$   
 $j = 3 + 3 == 6 \text{ (} \cancel{\text{False}} \text{) } \rightarrow *$ .

$i = 4$

$\leftarrow j = 1 + 4 == 6 \text{ (False)}$   
 $j = 2 + 4 == 6 \text{ (True)} \rightarrow *$ .

```
import java.util.*;  
  
class demo {  
    public static void main(String[] args) {  
        for (int i = 1; i <= 4; i++) {  
            for (int j = 1; j <= i; j++) {  
                System.out.print("x");  
            }  
            System.out.println();  
        }  
    }  
}
```

$j = 1$      $j <= i$      $i \rightarrow *$

```

graph TD
    A[i = 2] --> B[j <= i]
    A --> C[j > i]
    B --> D[l <= 2]
    B --> E[l > 2]
    D --> F(*)
  
```

```

graph TD
    A[j = 3] --> B[j <= i]
    A --> C[1 <= 3]
    C --> D[2 <= 3]
  
```

$3 < 3 \rightarrow *$

$i = 4$

$\boxed{1} \quad j < i \rightarrow *$

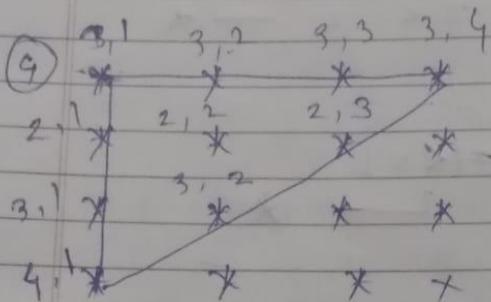
$\quad \quad \quad \boxed{1} < 4 \rightarrow *$

$\quad \quad \quad \boxed{2} < 4 \rightarrow *$

$\quad \quad \quad \boxed{3} < 4 \rightarrow *$

$\quad \quad \quad \boxed{4} < 4 \rightarrow *$

⑨



import java.util.\*;

class demo {

public static void main (String [] args) {

for (int i=4; i>=1; i++) {

    for (int j=1; j<=i; j++) {

        System.out.print("\*");

    }

    System.out.println();

    3  
    3

$i = 4$

$\boxed{1} < i$

$\quad \quad \quad \boxed{j=1} < 4 \rightarrow *$

$2 < 4 \rightarrow *$

$3 < 4 \rightarrow *$

$4 < 4 \rightarrow *$

$i = 3$

$\quad \quad \quad j < i$

$\quad \quad \quad \quad \quad j = 1 < 3 \rightarrow *$

$\quad \quad \quad \quad \quad 2 < 3 \rightarrow *$

$\quad \quad \quad \quad \quad 3 < 3 \rightarrow *$

$i = 2$

$\quad \quad \quad j < i$

$\quad \quad \quad \quad \quad j = 1 < 2 \rightarrow *$

$\quad \quad \quad \quad \quad 2 < 2 \rightarrow *$

$i = 1$

$\quad \quad \quad j < i$

$\quad \quad \quad \quad \quad j = 1 < 1 \rightarrow$

$\quad \quad \quad \quad \quad *$

1,1 1,2 1,3 1,4

\* # \* #

2,1 # 2,2 2,3 2,4

# \* # \* #

3,1 \* 3,2 3,3 3,4

# \* # #

4,1 # 4,2 4,3 4,4

# \* # \* #

class demo {

public static void main(String[] args) {

for (int i = 1; i <= 4; i++) {

    for (int j = 1; j <= 4; j++) {

        int num = i + j;

        if (num % 2 == 0) {

            System.out.println("\*");

```

else {
    system.out.print("#");
}
}
system.out.println();
}
}

```

$$\begin{aligned}
i=1 \rightarrow j=1 & (1+1) - 2 \rightarrow * \\
j=2 & (1+2) - 3 \rightarrow \# \\
j=3 & (1+3) - 4 \rightarrow * \\
j=4 & (1+4) - 5 \rightarrow \#
\end{aligned}$$

$$\begin{aligned}
i=2 \rightarrow j=1 & (1+2) - 3 \rightarrow \# \\
j=2 & (2+2) - 9 \rightarrow * \\
j=3 & (2+3) - 5 \rightarrow \# \\
j=4 & (2+4) - 6 \rightarrow *
\end{aligned}$$

$$\begin{aligned}
i=3 \rightarrow j=1 & (3+1) - 4 \rightarrow * \\
j=2 & (3+2) - 5 \rightarrow \# \\
j=3 & (3+3) - 6 \rightarrow * \\
j=4 & (3+4) - 7 \rightarrow \#
\end{aligned}$$

$\left[ \begin{array}{l} \text{if } (i+j) \text{ is even} \rightarrow \text{print } (*) \\ \text{if } (i+j) \text{ is odd} \rightarrow \text{print } (\#) \end{array} \right]$