

Code : 1

```
package Topic_02_Patterns;
```

```
import java.util.Scanner;
```

```
public class A_Pattern1 {  
    public static void main(String[] args) {  
        Scanner s = new Scanner(System.in);  
        int n = s.nextInt();  
        for (int i = 1; i <= n; i++) {  
            for (int j = 1; j <= i; j++) {  
                System.out.print("*\t");  
            }  
            System.out.println();  
        }  
    }  
}  
/*
```

I/P

5

O/P

```
*  
*      *  
*      *      *  
*      *      *      *  
*      *      *      *      *  
  
*/
```

Code : 2

```
package Topic_02_Patterns;
import java.util.Scanner;
public class B_Pattern2 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int n = s.nextInt();
        for (int i = 1; i <= n; i++) {
            for (int j = 1; j <= n - i + 1; j++) {
                System.out.print("*\t");
            }
            System.out.println();
        }
    }
}
/*
```

I/P

5

O/P

```
*      *      *      *      *
*      *      *      *
*      *      *
*      *
*

*/
```

Code : 3

```
package Topic_02_Patterns;
import java.util.Scanner;
```

```
public class C_Pattern3 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int n = s.nextInt();
        for (int i = 1; i <= n; i++) {
            for (int j = 1; j <= n - i; j++) {
                System.out.print("\t");
            }
            for (int k = 1; k <= i; k++) {
                System.out.print("*\t");
            }
            System.out.println();
        }
    }
}
/*
```

I/P
5

O/P

```

                *
            *   *
        *   *   *
    *   *   *   *
*   *   *   *   *
```

*/

Code : 4

```
package Topic_02_Patterns;
import java.util.Scanner;
public class D_Pattern4 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int n = s.nextInt();
        for (int i = 1; i <= n; i++) {
            for (int k = 1; k <= i - 1; k++) {
                System.out.print("\t");
            }
            for (int j = 1; j <= n + 1 - i; j++) {
                System.out.print("*\t");
            }
            System.out.println();
        }
    }
}
/*
```

I/P
5

O/P

```
*      *      *      *      *
      *      *      *      *
        *      *      *
          *      *
            *
```

*/

Code : 5

```
package Topic_02_Patterns;
import java.util.Scanner;
public class E_Pattern5 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int n = s.nextInt();
        for (int i = 1; i <= ((n / 2) + 1); i++) {
            // type 1
            for (int j = 1; j <= ((n / 2) - i + 1); j++) {
                System.out.print("\t");
            }

            // type 2
            for (int j = 1; j <= ((2 * i) - 1); j++) {
                System.out.print("*\t");
            }

            System.out.println();
        }

        // lower half

        for (int i = 1; i <= (n / 2); i++) {
            // type 1
            for (int j = 1; j <= i; j++) {
                System.out.print("\t");
            }

            // type 2
            for (int j = 1; j <= (n - 2 * i); j++) {
                System.out.print("*\t");
            }

            System.out.println();
        }
    }
}
```

/*
I/P
5

O/P

```

      *
    * * *
  * * * * *
    * * *
      *

*/
```

Code : 6

```
package Topic_02_Patterns;
import java.util.Scanner;
public class F_Pattern6 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int n = s.nextInt();
        int nosp = 1;
        int nost = n / 2 + 1;
        for (int i = 1; i <= n / 2 + 1; i++) {
            for (int j = 1; j <= nost; j++) {
                System.out.print("*\t");
            }
            for (int j = 1; j <= 2 * i - 1; j++) {
                System.out.print("\t");
            }
            for (int j = 1; j <= nost; j++) {
                System.out.print("*\t");
            }
            nost--;
            System.out.println();
        }
        nosp = n - 2;
        for (int i = 1; i <= n / 2; i++) {
            for (int j = 1; j <= i + 1; j++) {
                System.out.print("*\t");
            }
            for (int j = 1; j <= nosp; j++) {
                System.out.print("\t");
            }
            for (int j = 1; j <= i + 1; j++) {
                System.out.print("*\t");
            }
            nosp = nosp - 2;
            System.out.println();
        }
    }
}
```

/*
I/P
5

O/P

```
*      *      *      *          *      *      *      *
*      *      *              *      *      *
*      *              *      *      *
*                      *      *      *
*      *              *      *      *
*      *      *              *      *      *
*      *      *      *          *      *      *      *
```

*/

Code : 7

```
package Topic_02_Patterns;
```

```
import java.util.*;
```

```
public class G_Pattern7 {  
    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 <= i; j++) {  
                if (i == j) {  
                    System.out.print("*");  
                } else {  
                    System.out.print("\t");  
                }  
            }  
            System.out.println();  
        }  
    }  
}
```

```
/*
```

Sample Input

5

Sample Output

```
*  
  
 *  
  
  *  
  
   *  
  
    *  
  
     *
```

```
*/
```

Code : 8

```
package Topic_02_Patterns;
```

```
import java.util.*;
```

```
public class H_Pattern8 {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        int n = sc.nextInt();  
        int nosp = n - 1;  
        for (int i = 1; i <= n; i++) {  
            for (int j = 1; j <= nosp; j++) {  
                System.out.print("\t");  
            }  
            System.out.print("*");  
            nosp--;  
            System.out.println();  
        }  
    }  
}  
/*
```

Sample Input

5

Sample Output

```
          *  
        *  
      *  
    *  
  *  
*  
*/
```


Code : 9

```
package Topic_02_Patterns;
```

```
import java.util.*;
```

```
public class I_Pattern9 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        int nosp = n - 2;
        for (int i = 1; i <= n / 2 + 1; i++) {
            for (int j = 1; j <= n; j++) {
                if (i == j) {
                    System.out.print("*\t");
                    for (int j2 = 1; j2 <= nosp; j2++) {
                        System.out.print("\t");
                    }
                    if (i != n / 2 + 1)
                        System.out.print("\t");

                } else {
                    System.out.print("\t");
                }
            }
            nosp = nosp - 2;
            System.out.println();
        }
        nosp = 1;
        int op = n / 2 - 1;
        int innerspace = 1;
        for (int i = 1; i <= n / 2; i++) {
            for (int j = 1; j <= op; j++) {
                System.out.print("\t");
            }
            System.out.print("*\t");
            for (int j = 1; j <= innerspace; j++) {
                System.out.print("\t");
            }
            System.out.print("*\t");
            op--;
            innerspace = innerspace + 2;
            System.out.println();
        }
    }
}
```

```
/*
```

Sample Input

5

Sample Output

```
*
*
*
*
*
*
*
*
*
*
```

*

*

*/

Code : 11

```
package Topic_02_Patterns;
```

```
import java.util.*;
```

```
public class K_Pattern11 {
```

```
    public static void main(String[] args) {  
        Scanner scn = new Scanner(System.in);  
        int n = scn.nextInt();  
  
        // write ur code here  
        int nst = 1;  
        int val = 1;  
        for (int i = 1; i <= n; i++) {  
            for (int j = 1; j <= nst; j++) {  
                System.out.print(val + "t");  
                val++;  
            }  
            System.out.println();  
            nst++;  
        }  
    }
```

```
}
```

```
/*
```

Sample Input

5

Sample Output

```
1  
2      3  
4      5      6  
7      8      9      10  
11     12     13     14     15  
*/
```

Code : 12

```
package Topic_02_Patterns;
```

```
import java.util.*;
```

```
public class L_Pattern12 {
```

```
    public static void main(String[] args) {  
        Scanner scn = new Scanner(System.in);  
        int n = scn.nextInt();  
  
        // write ur code here  
        int nst = 1;  
        int a = 0;  
        int b = 1;  
        for (int i = 1; i <= n; i++) {  
            for (int j = 1; j <= nst; j++) {  
                System.out.print(a + "\t");  
                int c = a + b;  
                a = b;  
                b = c;  
            }  
            System.out.println();  
            nst++;  
        }  
    }
```

```
}  
/*
```

Sample Input

5

Sample Output

0

1 1

2 3 5

8 13 21 34

55 89 144 233 377

```
*/
```

Code : 13

```
package Topic_02_Patterns;
```

```
import java.util.*;
```

```
public class M_Pattern13 {  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        int rows = sc.nextInt();  
        int nck = 1;  
        for (int n = 0; n < rows; n++) {  
            nck = 1;  
            for (int k = 0; k <= n; k++) {  
                System.out.print(nck + "\t");  
                int n_minus_k = n - k;  
                int kplus1 = k + 1;  
                nck = (nck * n_minus_k) / (kplus1);  
            }  
            System.out.println();  
        }  
    }  
}
```

```
/*
```

Sample Input

5

Sample Output

```
1  
1      1  
1      2      1  
1      3      3      1  
1      4      6      4      1  
*/
```

Code : 14

```
package Topic_02_Patterns;
```

```
import java.util.*;
```

```
public class N_Pattern14 {
```

```
    public static void main(String[] args) {  
        Scanner scn = new Scanner(System.in);
```

```
        // write ur code here  
        int x = scn.nextInt();
```

```
        for (int ja = 1; ja <= 10; ja++) {  
            System.out.println(x + " * " + ja + " = " + (x * ja));  
        }
```

```
    }
```

```
}
```

```
/*
```

Sample Input

3

Sample Output

3 * 1 = 3

3 * 2 = 6

3 * 3 = 9

3 * 4 = 12

3 * 5 = 15

3 * 6 = 18

3 * 7 = 21

3 * 8 = 24

3 * 9 = 27

3 * 10 = 30

*/

Code : 15

```
package Topic_02_Patterns;
```

```
import java.util.Scanner;
```

```
public class O_Pattern15 {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int n = s.nextInt();
        int nsp = n / 2;
        int nst = 1;
        int val = 1;
        int k = 1;
        for (int i = 1; i <= n; i++) {
            for (int j = 1; j <= nsp; j++) {
                System.out.print("\t");
            }

            int temp = val;
            for (int j = 1; j <= nst; j++) {
                System.out.print(temp + "\t");
                if (j < nst / 2 + 1)
                    temp++;
                else
                    temp--;
            }

            if (i < (n / 2 + 1)) {
                nst = nst + 2;
                nsp--;
                val++;
            } else {
                nst = nst - 2;
                nsp++;
                val--;
            }

            System.out.println();
        }
    }
}
```

```
/*
```

Sample Input

5

Sample Output

```

      1
    2  3  2
  3  4  5  4  3
    2  3  2
      1
```

```
*/
```


Code : 16

```
package Topic_02_Patterns;
```

```
import java.util.*;
```

```
public class P_Pattern16 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        int sop = (2 * n) - 3;
        int val = 1;
        for (int i = 1; i <= n; i++) {
            val = 1;
            for (int j = 1; j <= i; j++) {
                System.out.print(val + "\t");
                val = val + 1;
            }
            for (int j = 1; j <= sop; j++) {
                System.out.print("\t");
            }
            int k = (i == n) ? i - 1 : i;
            val = k;
            for (int j = 1; j <= k; j++) {
                System.out.print(val + "\t");
                val--;
            }
            sop = sop - 2;
            System.out.println();
        }
    }
}
```

```
/*
```

Sample Input

7

Sample Output

for n=7

```
1                                     1
1      2                                     2      1
1      2      3                                     3      2      1
1      2      3      4                                     4      3      2      1
1      2      3      4      5                                     5      4      3      2      1
1      2      3      4      5      6                                     6      5      4      3      2      1
1      2      3      4      5      6      7      6      5      4      3      2      1
```

for n=5

```
1                                     1
1      2                                     2      1
1      2      3                                     3      2      1
1      2      3      4      3      2      1
```

```
*/
```

Code : 17

```
package Topic_02_Patterns;
```

```
import java.util.*;
```

```
public class Q_Pattern17 {
```

```
    public static void main(String[] args) {  
        Scanner scn = new Scanner(System.in);
```

```
        int n = scn.nextInt();
```

```
        int nst = 1;
```

```
        int nsp = n / 2;
```

```
        for (int i = 1; i <= n; i++) {  
            for (int j = 1; j <= nsp; j++) {  
                if (i == (n / 2 + 1)) {  
                    System.out.print("*\t");  
                } else {  
                    System.out.print("\t");  
                }  
            }  
        }
```

```
        for (int j = 1; j <= nst; j++) {  
            System.out.print("*\t");  
        }  
        System.out.println();
```

```
        if (i <= n / 2) {  
            nst++;  
        } else {  
            nst--;  
        }  
    }
```

```
}
```

```
/*
```

Sample Input

5

Sample Output

```
      *  
      *      *  
*      *      *      *      *  
      *      *  
      *  
*/
```

Code : 18

```
package Topic_02_Patterns;
```

```
import java.util.*;
```

```
public class R_Pattern18 {
```

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

        int nst = n;
        int nsp = 0;
        for (int i = 1; i <= n; i++) {
            for (int j = 1; j <= nsp; j++) {
                System.out.print("\t");
            }

            for (int j = 1; j <= nst; j++) {
                if (i >= 2 && i <= n / 2) {
                    if (j == 1 || j == nst) {
                        System.out.print("*\t");
                    } else {
                        System.out.print("\t");
                    }
                } else {
                    System.out.print("*\t");
                }
            }

            if (i <= n / 2) {
                nst -= 2;
                nsp++;
            } else {
                nst += 2;
                nsp--;
            }
            System.out.println();
        }
    }
```

```
}
/*
```

Sample Input

7

Sample Output

```
*   *   *       *   *   *   *
      *           *
        *       *
          *   *   *
            *   *   *   *
              *   *   *   *
                *   *   *   *
```

* /

Code : 19

```
package Topic_02_Patterns;
```

```
import java.util.*;
```

```
public class S_Pattern19 {
    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) {
                    if (j <= (n / 2) + 1 || j == n) {
                        System.out.print("*\t");
                    } else {
                        System.out.print("\t");
                    }
                }
                if (i > 1 && i <= n / 2) {
                    if (j == n / 2 + 1 || j == n) {
                        System.out.print("*\t");
                    } else {
                        System.out.print("\t");
                    }
                }
                if (i == n / 2 + 1) {
                    System.out.print("*\t");
                }
                if (i > n / 2 + 1 && i < n) {
                    if (j == 1 || j == n / 2 + 1) {
                        System.out.print("*\t");
                    } else {
                        System.out.print("\t");
                    }
                }
                if (i == n) {
                    if (j == 1 || j >= n / 2 + 1) {
                        System.out.print("*\t");
                    } else {
                        System.out.print("\t");
                    }
                }
            }
            System.out.println();
        }
    }
}
```

```
/*
```

```
For n=7
```

```
* * * *
```

```
*
```

```
//4
```

```
*
```

```
*
```

```
//2
```

```
*
```

```
*
```

```
//2
```

```
* * * *
```

```
*
```

```
*
```

```
*
```

```
*
```

```
//7
```

```
*
```

```
*
```

```
//2
```

```
*
```

```
*
```

```
//2
```

```

*                * * * *
//4

for n=9
*      *      *      *      *
*                *
space = n/2-1
*                *
*                *
*      *      *      *      *      *      *
*                *
*                *
*                *
*                *
*      *      *      *      *
*/

```

```

//5//3

```

```

//2//3 i>1 && i<n/2 then print space and initialize

```

```

//2//3

```

```

//2//3

```

```

//9//0

```

```

//2//3

```

```

//2//3

```

```

//2//3

```

```

//5//3

```

Code : 20

```
package Topic_02_Patterns;
```

```
import java.util.*;
```

```
public class T_Pattern20 {
```

```
    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        // write ur code here
        int n = scn.nextInt();

        for (int i = 1; i <= n; i++) {
            for (int j = 1; j <= n; j++) {
                if (j == 1 || j == n) {
                    System.out.print("*\t");
                } else if (i > n / 2 && (i == j || i + j == n + 1)) {
                    System.out.print("*\t");
                } else {
                    System.out.print("\t");
                }
            }
            System.out.println();
        }
    }
```

```
}
```

```
/*
```

Sample output for n=5

```
*           *
*           *
*       *   *
*   *       *
*           *
*/
```

