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 : 10

```
package Topic_02_Patterns;

import java.util.*;

public class J_Pattern10 {
	public static void main(String[] args) {
		Scanner scn = new Scanner(System.in);
		int n = scn.nextInt();
		int nos = n / 2;
		int nis = -1;
		for (int i = 1; i <= n; i++) {

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

			for (int j = 1; j <= nis; j++) {
				System.out.print("\t");
			}

			if (i > 1 && i < n) {
				System.out.print("*\t");
			}

			if (i <= n / 2) {
				nos--;
				nis += 2;
			} else {
				nos++;
				nis -= 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
*       *       *       *       *                       *       //5//3
                        *                               *       //2//3  i>1 && i<n/2 then print space and initialize
space = n/2-1
                        *                               *       //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
*				*
*				*
*		*		*
*	*		*	*
*				*
*/
```