Code : 1

```
package Topic_07_Recursion;

import java.io.*;
import java.util.*;

public class A_PrintDecreasing2 {

	public static void main(String[] args) throws Exception {
		// write your code here
		Scanner s = new Scanner(System.in);
		printDecreasing(s.nextInt());
	}

	public static void printDecreasing(int n) {
		if (n == 0)
			return;

		System.out.println(n);
		printDecreasing(n - 1);
	}

}
```

Code : 2

```
package Topic_07_Recursion;

import java.io.*;
import java.util.*;

public class B_PrintIncreasing {

	public static void main(String[] args) throws Exception {
		// write your code here
		printIncreasing(new Scanner(System.in).nextInt());
	}

	public static void printIncreasing(int n) {
		if (n == 0)
			return;

		printIncreasing(n - 1);
		System.out.println(n);

	}

}
```

Code : 3

```
package Topic_07_Recursion;

import java.io.*;
import java.util.*;

public class C_PrintIncreasingAndDecreasing {

	public static void main(String[] args) throws Exception {
		// write your code here4
		pdi(new Scanner(System.in).nextInt());
	}

	public static void pdi(int n) {
		if (n == 0)
			return;

		System.out.println(n);
		pdi(n - 1);
		System.out.println(n);
	}

}
```

Code : 4

```
package Topic_07_Recursion;

import java.io.*;
import java.util.*;

public class D_Factorial {

	public static void main(String[] args) throws Exception {
		// write your code here
		Scanner s = new Scanner(System.in);
		int rv = factorial(s.nextInt());
		System.out.println(rv);
	}

	public static int factorial(int n) {
		if (n == 1)
			return 1;

		return n * factorial(n - 1);
	}

}
```

Code : 5

```
package Topic_07_Recursion;

import java.io.*;
import java.util.*;

public class E_PowerLinear {

	public static void main(String[] args) throws Exception {
		// write your code here
		Scanner s = new Scanner(System.in);
		int x = s.nextInt();
		int n = s.nextInt();
		int rv = power(x, n);
		System.out.print(rv);
	}

	public static int power(int x, int n) {
		if (n == 0) {
			return 1;
		}
		return x * power(x, n - 1);
	}

}
```

Code : 6

```
package Topic_07_Recursion;

import java.io.*;
import java.util.*;

public class F_PowerLinearlogarithmic {

	public static void main(String[] args) throws Exception {
		// write your code here
		Scanner s = new Scanner(System.in);
		int x = s.nextInt();
		int n = s.nextInt();
		int rv = power(x, n);
		System.out.print(rv);
	}

	public static int power(int x, int n) {
		if (n == 0) {
			return 1;
		}
		int xpn2 = power(x, n / 2);
		int xn = xpn2 * xpn2;
		if (n % 2 == 1) {
			xn = xn * x;
		}
		return xn;
	}

}
```

Code : 7

```
package Topic_07_Recursion;

import java.io.*;
import java.util.*;

public class G_PrintZigZag {

	public static void main(String[] args) throws Exception {
		// write your code here
		Scanner s = new Scanner(System.in);
		int n = s.nextInt();
		printZigZag(n);
	}

	public static void printZigZag(int n) {
		if (n <= 0) {
			return;
		}
		System.out.print(n + " ");
		printZigZag(n - 1);
		System.out.print(n + " ");
		printZigZag(n - 1);
		System.out.print(n + " ");
	}

}
```

Code : 8

```
package Topic_07_Recursion;

import java.util.*;

public class H_TowerOfHonoi {
	public static void toh(int n, int src, int dest, int help) {
		if (n == 0) {
			return;
		}
		toh(n - 1, src, help, dest);
		System.out.println(n + "[" + src + " -> " + dest + "]");
		toh(n - 1, help, dest, src);
	}

	public static void main(String[] args) throws Exception {
		Scanner scn = new Scanner(System.in);
		int n = scn.nextInt();
		int t1 = scn.nextInt();
		int t2 = scn.nextInt();
		int t3 = scn.nextInt();
		toh(n, t1, t2, t3);
	}
}
```