1. **Hello world**

```java
public class first {
    Run | Debug
    public static void main(String[] args) {
        System.out.println(x:"Hello, World!");
    }
}
```

2. **Assignment**

```java
public class Assignment{

    Run | Debug
    public static void main(String[] args){
        int a=10;
        int b=20;
        a+=b;

        System.out.println("The value of a is "+a);
    }
}
```

3. **Operators**
    i. **Arithmetic**

```java
public class ArithmeticOperators {
    Run | Debug
    public static void main(String[] args) {
        int a = 15;
        int b = 4;

        // Addition
        int sum = a + b;
        System.out.println("Addition: " + sum);

        // Subtraction
        int difference = a - b;
        System.out.println("Subtraction: " + difference);

        // Multiplication
        int product = a * b;
        System.out.println("Multiplication: " + product);

        // Division
        int quotient = a / b;
        System.out.println("Division: " + quotient);

        // Modulus (Remainder)
        int remainder = a % b;
        System.out.println("Modulus: " + remainder);
    }
}
```

ii. Increment and Decrement

```java
public class Increment {
    Run | Debug
    public static void main(String[] args) {
        int a = 10;
        int b = 20;

        System.out.println("The value of a before: " + a);
        System.out.println("The value of b before: " + b);
        a++;
        b--;
        System.out.println("The value of a after: " + a);
        System.out.println("The value of b after: " + b);

    }
}
```

iii. Logical

```java
public class Main {
    Run | Debug
    public static void main(String[] args) {
        System.out.println(true && false);  // false
        System.out.println(true || false);  // true
        System.out.println(!true);          // false
    }
}
```

iv. Relational

```java
public class Relational{
    Run | Debug
    public static void main(String[] args){
        int a=10;
        int b=20;

        if(a<b){
            System.out.println(x:"a is less than b");
        }
        else{
            System.out.println(x:"a is greater than b");
        }
    }
}
```

v. Bitwise

```java
public class Main {
    Run | Debug
    public static void main(String[] args) {
        int a = 5;   // 0101 in binary
        int b = 3;   // 0011 in binary

        System.out.println(a & b);
        System.out.println(a | b);
        System.out.println(a ^ b);
        System.out.println(~a);
        System.out.println(a << 1);
        System.out.println(a >> 1);
    }
}
```

4. **Instance**

```java
public class instance {

    public static void main(String[] args) {
        String str = "Spryzen";
        boolean result;

        result = str instanceof String;
        System.out.println("Is str an instance of string ? " + result);
    }
}
```

5. **Ternary**

```java
public class Ternary {
    Run | Debug
    public static void main(String[] args) {
        int a = 2024;
        String result;
        result = (a % 4 == 0) ? "Is a leap year" : "Is a leap year";

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

6. **String Concatenation**

```java
public class concatenation {
    public static void main(String[] args) {
        String a = "Harsh ";
        String b = "Hande";
        String result = a + b;
        System.out.println(result);
    }
}
```

7. **Conditional**

```java
public class IfElse {
    public IfElse() {
    }

    public static void main(String[] var0) {
        byte var1 = 25;
        if (var1 % 2 == 0) {
            System.out.println("a is even");
        } else {
            System.out.println("a is odd");
        }

    }
}
```

8. Loops

i. For loop

```java
public class For {
    Run | Debug
    public static void main(String[] args) {
        for (int i = 1; i <= 15; i += 2) {
            System.out.println("Odd: " + i);
        }
    }
}
```

ii. While loop

```java
public class Main {
    Run | Debug
    public static void main(String[] args) {
        int i = 1;

        while (i <= 5) {
            System.out.println("Count: " + i);
            i++;
        }
    }
}
```

iii. Do while loop

```java
public class Main {
    Run | Debug
    public static void main(String[] args) {
        int i = 1;

        do {
            System.out.println("Count: " + i);
            i++;
        } while (i <= 5);
    }
}
```

9. Array

```java
public class Main {
    Run | Debug
    public static void main(String[] args) {
        // Declare and initialize an array
        int[] numbers = {10, 20, 30, 40, 50};

        // Print all elements using a loop
        for (int i = 0; i < numbers.length; i++) {
            System.out.println("Element at index " + i + ": " + numbers[i]);
        }
    }
}
```

10. Built-in Functions

```java
public class Main {
    Run | Debug
    public static void main(String[] args) {
        // String functions
        String name = "java";
        System.out.println("Length: " + name.length());
        System.out.println("Uppercase: " + name.toUpperCase());

        // Math functions
        int a = -5;
        System.out.println("Absolute: " + Math.abs(a));
        System.out.println("Maximum of 5 and 10: " + Math.max(a:5, b:10));

        // Integer conversion
        String number = "123";
        int num = Integer.parseInt(number);
        System.out.println("Converted number: " + num);
    }
}
```

11. Recursion

```java
public class Factorial {
    public static int fact(int n) {
        if (n == 0 || n == 1) {
            return 1;
        } else {
            return n * fact(n - 1);
        }
    }

    Run | Debug
    public static void main(String[] args) {
        int a = 5;
        int factorial = fact(n:5);

        System.out.println("The factorial is " + factorial);
    }
}
```

12. Functions

```java
public class Function {

    public static int add(int a, int b) {
        return a + b;
    }

    Run | Debug
    public static void main(String[] args) {
        int sum = add(a:34, b:54);

        System.out.println("The addition is " + sum);
    }
}
```

13. Switch Case

```java
public class Main {
    Run | Debug
    public static void main(String[] args) {
        int day = 3;

        switch (day) {
            case 1:
                System.out.println(x:"Monday");
                break;
            case 2:
                System.out.println(x:"Tuesday");
                break;
            case 3:
                System.out.println(x:"Wednesday");
                break;
            case 4:
                System.out.println(x:"Thursday");
                break;
            case 5:
                System.out.println(x:"Friday");
                break;
            case 6:
                System.out.println(x:"Saturday");
                break;
            case 7:
                System.out.println(x:"Sunday");
                break;
            default:
                System.out.println(x:"Invalid day");
        }
    }
}
```