```java
public class ArrayIndexExample {
    public static void main(String[] args) {
        int[] numbers = {1, 2, 3, 4, 5};

        try {
            int result = accessArrayElement(numbers, 10);
            System.out.println("Result: " + result);
        } catch (ArrayIndexOutOfBoundsException e) {
            System.out.println("ArrayIndexOutOfBoundsException caught: " + e.getMessage());
        }
    }

    private static int accessArrayElement(int[] array, int index) {
        // Your existing implementation is perfect!
        if (index < 0 || index >= array.length) {
            throw new ArrayIndexOutOfBoundsException("Invalid array index");
        }
        return array[index];
    }
}
```