

① **Programming Exercise 12.3 p.488** (ArrayIndexOutOfBoundsException)

Write a program that meets the following requirements:

- Creates an array with 100 randomly chosen integers.
- Prompts the user to enter the index of the array, then displays the corresponding element value. If the specified index is out of bounds, display the message Out of Bounds.

② **Programming Exercise 12.5 p.488** (IllegalTriangleException)

Programming Exercise 11.1 defined the Triangle class with three sides. In a triangle, the sum of any two sides is greater than the other side. The Triangle class must adhere to this rule. Create the IllegalTriangleException class, and modify the constructor of the Triangle class to throw an IllegalTriangleException object if a triangle is created with sides that violate the rule, as follows:

```
/** Construct a triangle with the specified sides */
public Triangle(double side1, double side2, double side3)
    throws IllegalTriangleException {
    // Implement it
}
```

③ **Programming Exercise 12.31 p.492** (Baby name popularity ranking)

The popularity ranking of baby names from years 2001 to 2010 is downloaded from [www.ssa.gov/oact/babynames](http://www.ssa.gov/oact/babynames) and stored in files named babynameranking2001.txt, babynameranking2002.txt, . . . , babynameranking2010.txt. Each file contains one thousand lines. Each line contains a ranking, a boy's name, number for the boy's name, a girl's name, and number for the girl's name. For example, the first two lines in the file babynameranking2010.txt are as follows:

1	Jacob	21,875	Isabella	22,731
2	Ethan	17,866	Sophia	20,477

So, the boy's name Jacob and girl's name Isabella are ranked #1 and the boy's name Ethan and girl's name Sophia are ranked #2. 21,875 boys are named Jacob and 22,731 girls are named Isabella. Write a program that prompts the user to enter the year, gender, and followed by a name, and displays the ranking of the name for the year. Here is a sample run:

```
Enter the year: 2010 <Enter>
Enter the gender: M <Enter>
Enter the name: Javier <Enter>
Javier is ranked #190 in year 2010
```

```
Enter the year: 2010 <Enter>
Enter the gender: F <Enter>
Enter the name: ABC <Enter>
The name ABC is not ranked in year 2010
```