

# Generic Class Exercise (Optional - Ungraded)

Submit Assignment

**Due** Apr 8 by 11:59pm    **Points** 0    **Submitting** a file upload

Complete the exercise in Java and submit your work [here](#).

1. Write a generic class named `Maximizer` that can be used to calculate the maximum of a set of values. As shown in the code below, you should be able to:
  1. Instantiate a `Maximizer` for any data type that implements the `Comparable` interface (`String`, `Integer`, etc.)
    - `Comparable` is an interface built into Java that a class can implement to make its objects “sortable” (see the Java documentation for details)
    - Many built-in Java classes such as `String` and `Integer` implement the `Comparable` interface
  2. Pass the `Maximizer` a set of values one-by-one by calling its `updateValue` method
  3. Call the `Maximizer`’s `getValue` method to retrieve the maximum value that was passed to its `updateValue` method. Use the `compareTo` method to find the maximum value (see the Java documentation for the `Comparable` class).
  4. Here’s some sample code that shows how the `Maximizer` class is used:

```
■ Maximizer<String> strMaximizer = new Maximizer<>();

strMaximizer.updateValue("apple");

strMaximizer.updateValue("zoo");

strMaximizer.updateValue("monkey");

String maxStr = strMaximizer.getValue();

System.out.println(maxStr);

Maximizer<Integer> intMaximizer = new Maximizer<>();

intMaximizer.updateValue(-22);

intMaximizer.updateValue(10000);

intMaximizer.updateValue(33);

Integer maxInt = intMaximizer.getValue();

System.out.println(maxInt);
```

5. Using the code above, write a short program that demonstrates that your `Maximizer` class works

2. Write a class named Algorithms that has one static, generic method named “calcStats” that can calculate the minimum and maximum values in an array of any data type that implements the Comparable interface. “calcStats” should return a “Stats” object containing the min and max values.

1. Here’s some sample code that shows how to call “calcStats”:

```
■ String[] strArr = new String[] { "zoo", "apple", "monkey" };

Stats<String> strStats = Algorithms.calcStats(strArr);

System.out.println(String.format("min: %s, max: %s",
strStats.min, strStats.max));

Integer[] intArr = new Integer[] { 10000, 33, -22 };

Stats<Integer> intStats = Algorithms.calcStats(intArr);

System.out.println(String.format("min: %d, max: %d",
intStats.min, intStats.max));
```

**Note:** As you can see from the code above, the Stats class is also defined with a generic type.

2. Using the code above, write a short program that demonstrates that your “calcStats” method works