# Lab: Rule of Three / Five / Zero

## Smart Array

Implement a **SmartArray<T>** class that uses dynamic memory management. The array should have basic functionalities like resizing and index access.

### **Requirements**

The class should:

* **Store elements** dynamically using memory allocation (new/delete).
* Support the following features:
  + **Size management**: The array should store elements and maintain its size.
  + **Index access**: The array should support access to elements using **operator[].**
  + **Resize functionality**: The array must be resizable (i.e., you should be able to change the array size after it has been initialized).

**Bonus**:

* **Iteration Support:** Implement iteration support, such as using a range-based **for loop.**

## Rule of Three for Smart Array

Implement the Rule of Three for the SmartArray<T> class.

### **Requirements**

Implement the Rule of Three:

* **Copy Constructor:** Properly handle the copying of the array and its data.
* **Copy Assignment Operator:** Correctly handle the assignment of one SmartArray object to another.
* **Destructor:** Properly free allocated memory when the object is destroyed.

**Bonus:**

* **Implement it using the copy-and-swap idiom** for the **copy assignment operator** to ensure exception safety and efficient memory management.