Shallow and Deep Copying Exercises

A String class and Resource Management

- A class that uses the RAII idiom is responsible for managing a resource's lifetime

- Which resource does the String class manage?

- What does an RAII class need to do when managing a resource's lifetime?

Shallow Copying

- What is meant by "shallow copying"?
- When is shallow copying dangerous?

Deep Copying

- What is meant by "deep copying"?

- Why is deep copying safe?

Deep Assignment

- How does a deep assignment differ from a deep copy?

- When performing a deep assignment, why is it necessary to check that the source and the target are different objects?

Rule of Three

- What is the "Rule of Three"?
- Give an example where the Rule of Three would be helpful

Rule of Three

- Implement the "rule of three" operators for the class shown below using the RAII idiom

```
class String {
    private:
        int size;
        char *buffer;
    //   ....
};
```