Exception-safe Class Solutions

Writing an Exception-safe Class

- Implement an exception-safe constructor, copy constructor, assignment operator and destructor for the class shown below

```
class String {

    private:

        int size;

        char *data;

        ...

};
```

Exception Safety

- Explain how using RAII can ensure the strong exception guarantee for a class's

- Constructor
  - If an exception is thrown when acquiring the resource (e.g. calling new), the constructor returns immediately
  - The partially-constructed object and its members are destroyed
  - No existing objects are modified and no new objects are created
  - This provides the strong exception guarantee

- Copy constructor
  - Same as for constructor

Exception Safety

- Explain how using RAII can ensure the strong exception guarantee for a class's

- Destructor
  - Implemented using noexcept operations - provides the no-throw guarantee

- Assignment Operator
  - An exception can be thrown when re-acquiring the resource (e.g. calling new)
  - This can provide the strong exception guarantee, provided that no members are modified before the exception is thrown