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Project 2: Exception Handling
Best Practices

Tips for building templates

- You should always make changes to member variables at the end of the function because if there is an exception during the function, the member variables should not change.
- If you're making changes to a member variable, do not make changes to the member variable directly (use a temp variable) because an exception can occur while you're manipulating the member variable.
- Try not to delete a member variable then manipulate the member variable afterwards because an exception could be thrown during the changes which means you have to revert the member variable to its original state, but you are not able to because the original state has been deleted.
- Always try to use references as much as possible because you will have less overhead with a the generic type's copy constructor and avoid having to deal with exceptions in the generic type's copy constructor.
- Every time you see dynamic memory being allocated, be sure to check for memory leaks because an exception can stop the function midway.
- Make sure the values of your member functions stay the same before and after an exception of a generic type is thrown.
- Check for functions that have a generic type as a return type because a copy constructor could be called.
- You should try to reorder your code before adding temp variables and try-catch blocks because it can lead to a lot of unnecessary code.
- Try to keep dynamically allocated memory outside of the try-block so that you will be able to free the memory in the catch-block.

Tips for using templates

- Look at the documentation for the template class to distinguish between your exceptions and exceptions in the template class.
- Make sure to handle your own exceptions because the template class isn't responsible for identifying and handling your exceptions.
- Keep track of exceptions that occurring while using the template class because the state of the template class should not change when an exception is thrown.
- Try to put as little code as possible in the try block, so you can narrow down the specific line where the exception is being thrown.