Justin Wei
JustinWei@my.unt.edu
Keathly CSCE 1040

Report

Homework four tasked me to build a robust application architecture and implement it using the business transaction design style. I learned how to organize my code into header files and cpp files, and how to debug large applications. I am now more confident coding large applications using the transaction design pattern.

My biggest challenge in this homework was data integrity - I wanted to avoid passing my linked lists of Patrons, Books, and Borrows to each other. To accomplish this and continue using the transaction design pattern, I moved business logic out of my linked list classes and into my main loop in main.cpp.

Implementing time was a difficult task, as I did not know much about time.h before this assignment. I studied the documentation thoroughly before tackling the calculation of due dates and fines. I was proud to have figured out a psuedo-real-time method of calculating fines. I would calculate a current_time struct tm variable after every iteration of the main loop. I would then compare it to a last_checked variable and calculate the fines only if a day had passed. I added the fine rate to every overdue book when calculating the fines. I did not know what the fine rate was so I created a constant variables in the borrows header file to keep track of the fine rate and check_out_period.

I also faced problems with circular imports of classes. I combated these problems by using forward class declarations and paying close attention to which header files I imported in which implementation files. One idea I had that I did not implement in the application was building a generic container class instead of separate linked lists. Nevertheless, I was confident in my implementation of the linked lists because of the many previous assignments involving them.

Overall, this homework taught me more about building large applications and organizing business logic. I'm confident that if I was given another task of equal complexity in C++, I could approach it more rapidly. I am looking forward to solving homework five with classes and inheritance!