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**Analysis Document**

**1. This assignment is traditionally done with Pair Programming. Were there times you wish you had a partner to bounce ideas off of? We will ask you to compare your experiences with these first, "single" to assignments to the paired assignments later on in the semester. Please use your answer here for reference later.**

There were times that I would want a partner to work through this with, however most of these times there was some kind of coding error that would turn out to be a typo or small mistake in the code that could be easily fixed. Now finished I feel that this assignment is easily a single person assignment. There were a lot of classes all referencing each other that was sometimes difficult to comprehend on my own so with larger projects a partner would help.

**2. Java's built-in classes Comparable and Comparator are both interfaces for doing comparisons among objects. What is the difference in the two interfaces? Give a situation when it is best to use each. Is it possible to change the extra features in LibraryGeneric such that the Comparable interface is used instead of Comparator? Why or why not?**

The comparable interface is used to compare something with itself for example comparing one string to another might use the comparable to return which is greater. It is best used with variables and strings that are more basic. The comparator interface is used to compare two different items not compare something to itself. This is useful for larger objects that need to be compared based on a single field like we did in this assignment with the sort by author and isbn. It is possible to use either of the compare interfaces in the LibraryGeneric however it shouldn't be done as there is not much comparing done outside of the sorting in phase three. The test class could use the comparator to check if what is returned from the program matches what was supposed to come out.

**3. Comment about the efficiency of your programming time. Did you utilize the time spent on this assignment effectively? How might it be improved?**

I used most of my time on this assignment effectively. Most of the time that was wasted while completing this assignment was due to a small error or a typo. For example, when assigning something Date I forgot the e and that caused an error that appeared to be somewhere else in the code which caused a problem when trying to fix the error. My time efficiency should improve over the course as I become more familiar with the programming and can cut out time consuming errors such as typos and general programming errors.

**4. Reiterate why writing Generic code is important for this course. Phrase your answer in terms of Data Structures and Algorithms.**

Generic programming is important because it allows us to group together large amounts of data in a list that might not all be exactly the same object. This allows for differences in the code like in this assignment where one library would use a phone number to represent the holder while the other would use a string name. This allows for the program to accept both while still functioning. This means that if a piece of data is being checked with an algorithm multiple pieces of data that may not be the same type can also go through the algorithm. This is useful with inheritance where all are objects of the base but may have differences in more specific features.

**5. How many hours did you spend on this assignment?**

I wasn't keeping track of the time while working on this however I would guess that I spent between 5 and 7 hours on this assignment.