Learning Experiences

In this assignment, I learned how the CourseDBStructure, CourseDBManager, and CourseDBElement classes work together to efficiently manage course information using a hash table. When a CourseDBElement is added, its hashCode() method determines the index (or bucket) where the element is stored, and collisions are managed using separate chaining, with each bucket implemented as a linked list. CourseDBManager provides methods for adding courses, retrieving them by CRN, reading data from a file, and displaying all stored courses, acting as a bridge to interact with CourseDBStructure. The size of the hash table is carefully selected using a load factor and adjusted to the next prime number to ensure an even distribution of elements and minimize collisions. However, challenges can arise if multiple items are placed in one bucket, requiring additional searching, and solutions like using a second hash may increase space usage, which is not ideal for large datasets.