Assignment # 3

CSE356: Formal Methods

**[CLO – 3] *Applying***[4+2+2+2 = 10 marks]

The software concerns recording the collection of books and works as software to manage the personal library. The software needs a database to manage the collection of books. The personal collection of books may contain so many books that it tends to buy duplicate books. There is an estimate that a flat is big enough to store the MAX number of books only.

The types involved here are the set of all possible books, called [BOOK].

1. Write a system state schema ***BookDatabase*** containing the only state variable which is *collection*: P BOOK. Further, the only invariant is that the number of books in the set *collection* can’t exceed the MAX number.
2. Write an operation schema *BuyBook* to add the book. Further, the new book should not already exist in the book database.
3. Write an operation schema *AlreadyOwned* which returns the output that the book to be added is already existed in the book database.
4. Write an operation schema *NoSpace* which returns the message that there is no space to add a new book in the book database.