Library Exercise

Exercise 1:

Case: Build a model of a simple library system where you just want to be able to track personal book collections. Assume that a book will have a Title, Author, and Year Published.

Tasks:

1. Write your class diagram
2. Create 5 books
3. Display all 5 books created in the following format:
   <Title> <Author> <Year Published>
4. Display all books with year published > 2000

Exercise 2:

Case: The small library collection has grown and requires you to place the books in different bookcases/bookshelves. Extend the model to allow tracking of where the books are shelved.

Tasks:

1. Write your extended class diagram to include bookshelves
2. Create 3 book shelves and place books into the different shelves
3. Display books from each shelf with the following format:
   <Shelf Name 1> <Shelf Location 1>
   <Title1> <Author> <Year Published>
   <Title2> <Author> <Year Published>

   <Shelf Name 2> <Shelf Location 2>
   <Title1> <Author> <Year Published>
   <Title2> <Author> <Year Published>

4. From each shelf, display all books with year published > 2000
5. From each shelf, just the total count of books with year published > 2000
6. Display all shelf name and location with at least 2 books with year published > 2000
7. Reflect on your design on how you can reduce the amount of code when you will repeatedly do 4-6. Show how you can reduce this.

Exercise 3:

Case: The entire room is starting to fill up with shelves so the library has expanded into different rooms. Extend the model to allow tracking of where the books are shelved and which room they are located in.

Tasks:

1. Write your extended class diagram to include rooms that contains shelves
2. Create 3 rooms with shelves and books inside it
3. Display Shelves from each room and then Book from each shelf with the following format:

   <Room Name 1> <Room Location 1>
   <Shelf Name 1> <Shelf Location 1>
   <Title1> <Author> <Year Published>
   <Title2> <Author> <Year Published>

   <Shelf Name 2> <Shelf Location 2>
   <Title1> <Author> <Year Published>
   <Title2> <Author> <Year Published>

4. From each room, display all books with year published > 2000
5. From each room, just the total count of books with year published > 2000
6. From each room, identify the shelves that has books with year published > 2000
7. Reflect on your design on how you can reduce the amount of code when you will repeatedly do 4-6. Show how you can reduce this.
8. How would you best model and implement to identify given a book which room currently is it in?
9. How would you best model and implement given a book, determine which room and shelf it belongs to?