# Analysis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Role | Responsibilities | Permissions | Activities | Protocols |
| **BookstoreRole** | - Maintain book inventory  - Respond to book queries  - Process book purchases | - Read and update book inventory | - Update inventory when books are sold  - Add new books to inventory | - BookQuery (with CustomerRole)  - BookPurchase (with CustomerRole)  - InventoryUpdate (with ManagerRole) |
| **CustomerRole** | - Search for books  - Purchase books | - Read book information | - Decide which book to purchase | - BookQuery (with BookstoreRole)  - BookPurchase (with BookstoreRole) |
| **ManagerRole** | - Monitor store operations  - Handle special requests  - Update inventory | - Read and update book inventory  - Read sales information | - review sales reports  - order new books | - InventoryUpdate (with BookstoreRole) |

## Role Model

## Interaction Model

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Protocol** | **Initiator** | **Responder** | **Description** | **Inputs** | **Outputs** |
| BookQuery | CustomerRole | BookstoreRole | Customer queries for a specific book | Book title, author | Book availability, price |
| BookPurchase | CustomerRole | BookstoreRole | Customer purchases a book | Book title, payment | Purchase confirmation |
| InventoryUpdate | ManagerRole | BookstoreRole | Manager updates book inventory | Book details, quantity | Update confirmation |

# Design

## Agent Model

1. **BookstoreAgent:** Implements BookstoreRole
2. **CustomerAgent:** Implements CustomerRole
3. **ManagerAgent:** Implements ManagerRole

## Service Model

|  |  |
| --- | --- |
| **Agent** | **Services** |
| BookStoreAgent | QueryBookService, SellBookService, UpdateInventoryService |
| CustomerAgent | SearchBookService, BuyBookService |
| ManagerAgent | UpdateInventoryService, MonitorStoreService |

## Acquaintance Model

The acquaintance model shows communication paths between agents.

* CustomerAgent communicates with BookstoreAgent
* ManagerAgent communicates with BookstoreAgent