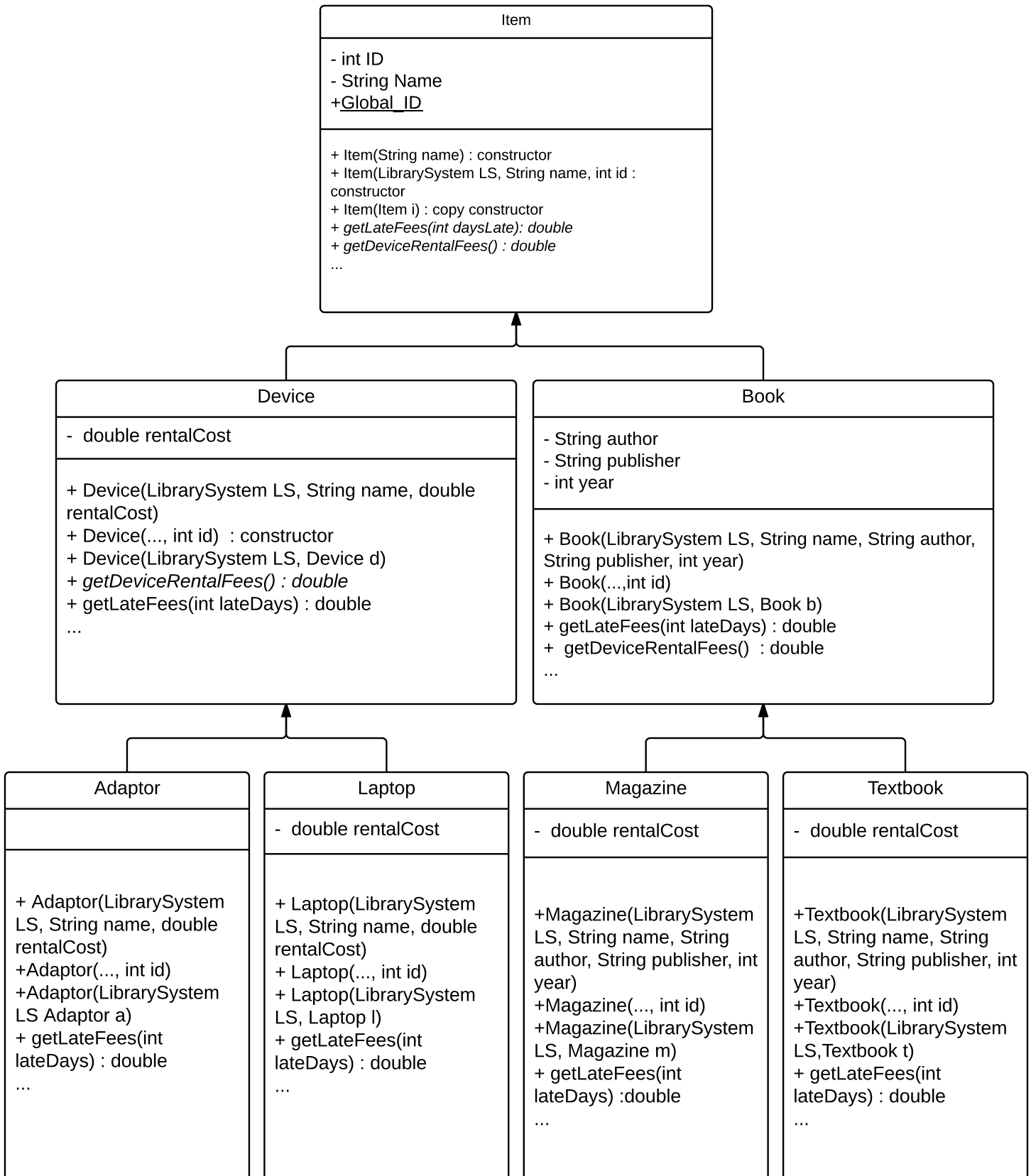


**Library System Assignment #4**  
**Cory Crowley, Student #10180322**  
**UML Class Diagram**

Library

**Item Class Heirarchy**



## Independent Classes

### LibrarySystem

- HashMap<Integer,Item> itemSet
- HashMap<Integer,Customer> customerSet
- HashMap<Integer,Rental> transactionSet

- + LibrarySystem()
- + LibrarySystem(LibrarySystem l)
- + addDeviceItem(int id, Device device) : void
- + addBookItem(int id, Book book) : void
- + readCustomers(String filename) : void
- + readRentals(String filename) : void
- + addItem(String filename) : void
- + writeItems(String filename) : void
- + writeTransactions(String filename) : void
- + AddTransaction(Rental toAdd) : void
- + getTransactionsByDate(DateTime a, DateTime b) : HashMap<Integer, Rental>
- + searchTransByTransID(int transID) : Rental
- + searchTrasnByCustID(int custID) : Rental
- + searchTransByItemID(int itemID) : Rental
- + searchItemByItemID(int ID) : Item
- + searchItemByName(String Name) : Item
- ...

### Rental

- + int transactionGlobalID
- + enum rentalStatus{active,late,closed}
- Item item;
- Customer customer;
- int customerID;
- int transactionID;
- int itemID;
- LibrarySystem LS;
- int rentalDays;
- int daysLate;
- DateTime rentalDate;
- DateTime estimatedReturn;
- DateTime returnDate;
- rentalStatus status;

- + Rental(LibrarySystem LS, int custID, int itemID, int rentalDays, DateTime rentalDate)
- + Rental(LibrarySystem LS, int transID, int itemID, int custID,DateTime TransactionDate,DateTime ExpectedReturnDate, DateTime ReturnDate)
- + Rental(Rental r)
- + isLate() : boolean
- + itemReturned(DateTime returnTime) : void
- + getLateFee(LibrarySystem LS, boolean print) : double
- + getRentalCost() : double
- + getTotalToBePaid(LibrarySystem LS,boolean print) : double
- ...

### Customer

- + enum type {student,employee}
- String name
- String department
- int ID
- type t

- + Customer(LibrarySystem LS, int id, String name, String department, type t)
- + getType() : type

### TesterV2

- + main(String[] args) : void
- + printSeparator(int length) : void

## Exception Classes

