Bookstore Inventory System

Design Document

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# Overview

This document will collect detailed method definition tables for each of the methods contained in each class in the Book Inventory System (BIS). These classes and methods were defined in the Analysis Document.

# Controller Class

## addBookRecord()

|  |  |
| --- | --- |
| Method Name | addBookRecord() |
| Return Type | Void |
| Input Arguments | Isbn, authors, title, edition, format, coverPrice, storePrice, stock |
| Output Arguments | None |
| Error Messages | ISBN conflicts with an existing record   * ERROR: Record already exists.   Invalid ISBN   * ERROR: Invalid ISBN format. ISBN should be numerical and exactly 10 or 13 digits in length.   Invalid Data for Cover Price   * ERROR: Invalid Cover Price format. Cover Price must be a positive value with two decimal places.   Invalid Data for Store Price   * ERROR: Invalid Store Price format. Store Price must be a positive value with two decimal places.   Invalid Data for Stock Quantity   * ERROR: Invalid Stock Quantity format. Stock Quantity must be >= 0. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecord() |
| Narrative | Method adds a book record with a specified ISBN and associated information. It throws an error if the ISBN is invalid or already in use, or if the cover price, store price, or stock quantity are invalid format. |

## addCustomerRecord()

|  |  |
| --- | --- |
| Method Name | addCustomerRecord() |
| Return Type | Void |
| Input Arguments | firstName, lastName, bizName, address, telephone, email |
| Output Arguments | None |
| Error Messages | None |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Method adds a customer record with an automatically generated customer number and associated data. |

## addEmployeeRecord()

|  |  |
| --- | --- |
| Method Name | addEmployeeRecord() |
| Return Type | Void |
| Input Arguments | firstName, lastName, address, telephone, email |
| Output Arguments | None |
| Error Messages | None |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Method adds an employee record with an automatically generated employee number and associated data. |

## addOrderRecord()

|  |  |
| --- | --- |
| Method Name | addOrderRecord() |
| Return Type | Void |
| Input Arguments | Contents, employeeNumber, customerNumber |
| Output Arguments | subTotal, tax, total |
| Error Messages | Invalid Employee Number   * ERROR: Employee number not found or invalid format. Format should be a ten-digit number.   Invalid ISBN for Book in Order Contents   * ERROR: ISBN not found or invalid format. Format should be a 10 or 13 digit number.   Invalid Customer Number   * ERROR: Customer number not found or invalid format. Format should be a ten-digit number.   Insufficient Stock for Book in Order Contents   * ERROR: Insufficient stock found for ISBN [ISBN]. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecord() |
| Narrative | Method adds an order record with an automatically generated order number and associated data. It verifies validity of employee number, each ISBN in the contents, and the customer number (if applicable). It also verifies that there is sufficient stock for each book in the order contents. |

## searchRecord()

|  |  |
| --- | --- |
| Method Name | addEmployeeRecord() |
| Return Type | Void |
| Input Arguments | targetID, recordType |
| Output Arguments | resultID |
| Error Messages | Record Not Found   * ERROR: No record found with that ID.   Invalid Key Data Member   * ERROR: Key data search input does not match format. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Method searches all records of a given record type for a specified key data member called “targetID.” It then returns that records key data member as “resultID,” or it returns a string of 10 0’s if the record was not found. |

## adjustBookRecord()

|  |  |
| --- | --- |
| Method Name | adjustBookRecord() |
| Return Type | Void |
| Input Arguments | ISBN, fieldName, fieldValue |
| Output Arguments | None |
| Error Messages | Record Not Found   * ERROR: No record found with that ID.   Invalid Target Key Data Format   * ERROR: Key data search input does not match format.   Invalid Updated Data Format   * ERROR: Updated data input does not match format. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecord() |
| Narrative | Method searches all book records for one with a matching ISBN. Once located, it displays that record. It then lets the user set the property specified by fieldName to the value specified by fieldValue. |

## adjustCustomerRecord()

|  |  |
| --- | --- |
| Method Name | adjustCustomerRecord() |
| Return Type | Void |
| Input Arguments | customerNumber, fieldName, fieldValue |
| Output Arguments | None |
| Error Messages | Record Not Found   * ERROR: No record found with that ID.   Invalid Target Key Data Format   * ERROR: Key data search input does not match format.   Invalid Updated Data Format   * ERROR: Updated data input does not match format. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecord() |
| Narrative | Method searches all customer records for one with a matching customerNumber. Once located, it displays that record. It then lets the user set the property specified by fieldName to the value specified by fieldValue. |

## adjustEmployeeRecord()

|  |  |
| --- | --- |
| Method Name | adjustEmployeeRecord() |
| Return Type | Void |
| Input Arguments | employeeNumber, fieldName, fieldValue |
| Output Arguments | None |
| Error Messages | Record Not Found   * ERROR: No record found with that ID.   Invalid Target Key Data Format   * ERROR: Key data search input does not match format.   Invalid Updated Data Format   * ERROR: Updated data input does not match format. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecord() |
| Narrative | Method searches all employee records for one with a matching employeeNumber. Once located, it displays that record. It then lets the user set the property specified by fieldName to the value specified by fieldValue. |

## adjustOrderRecord()

|  |  |
| --- | --- |
| Method Name | adjustOrderRecord() |
| Return Type | Void |
| Input Arguments | orderNumber, fieldName, fieldValue |
| Output Arguments | None |
| Error Messages | Record Not Found   * ERROR: No record found with that ID.   Invalid Target Key Data Format   * ERROR: Key data search input does not match format.   Invalid Updated Data Format   * ERROR: Updated data input does not match format. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecord() |
| Narrative | Method searches all order records for one with a matching orderNumber. Once located, it displays that record. It then lets the user set the property specified by fieldName to the value specified by fieldValue. |

## removeBookRecord()

|  |  |
| --- | --- |
| Method Name | removeBookRecord() |
| Return Type | Void |
| Input Arguments | ISBN |
| Output Arguments | None |
| Error Messages | Record Not Found   * ERROR: No record found with that ID. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecord() |
| Narrative | Method searches all book records for one with a matching ISBN. Once located, it displays that record. The user may then click a confirmation button to remove that record from the system or a cancel button to return to the main menu. |

## removeCustomerRecord()

|  |  |
| --- | --- |
| Method Name | removeCustomerRecord() |
| Return Type | Void |
| Input Arguments | customerNumber |
| Output Arguments | None |
| Error Messages | Record Not Found   * ERROR: No record found with that ID. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecord() |
| Narrative | Method searches all customer records for one with a matching customerNumber. Once located, it displays that record. The user may then click a confirmation button to remove that record from the system or a cancel button to return to the main menu. |

## removeEmployeeRecord()

|  |  |
| --- | --- |
| Method Name | removeEmployeeRecord() |
| Return Type | Void |
| Input Arguments | employeeNumber |
| Output Arguments | None |
| Error Messages | Record Not Found   * ERROR: No record found with that ID. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecord() |
| Narrative | Method searches all employee records for one with a matching employeeNumber. Once located, it displays that record. The user may then click a confirmation button to remove that record from the system or a cancel button to return to the main menu. |

## removeOrderRecord

|  |  |
| --- | --- |
| Method Name | removeOrderRecord() |
| Return Type | Void |
| Input Arguments | orderNumber |
| Output Arguments | None |
| Error Messages | Record Not Found   * ERROR: No record found with that ID. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecord() |
| Narrative | Method searches all order records for one with a matching orderNumber. Once located, it displays that record. The user may then click a confirmation button to remove that record from the system or a cancel button to return to the main menu. |

## listAllBooks()

|  |  |
| --- | --- |
| Method Name | listAllBooks() |
| Return Type | Void |
| Input Arguments | None |
| Output Arguments | None |
| Error Messages | No Records Found   * ERROR: No records of the specified type were found. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Method lists all records of the specified type. |

## listAllCustomers()

|  |  |
| --- | --- |
| Method Name | listAllCustomers() |
| Return Type | Void |
| Input Arguments | None |
| Output Arguments | None |
| Error Messages | No Records Found   * ERROR: No records of the specified type were found. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Method lists all records of the specified type. |

## listAllEmployees()

|  |  |
| --- | --- |
| Method Name | listAllEmployees() |
| Return Type | Void |
| Input Arguments | None |
| Output Arguments | None |
| Error Messages | No Records Found   * ERROR: No records of the specified type were found. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Method lists all records of the specified type. |

## listAllOrders()

|  |  |
| --- | --- |
| Method Name | listAllOrders() |
| Return Type | Void |
| Input Arguments | None |
| Output Arguments | None |
| Error Messages | No Records Found   * ERROR: No records of the specified type were found. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Method lists all records of the specified type. |

# Book Class

Each variable in this class has its own simplified get and set methods. Only certain specific methods will be defined on these tables to reduce redundancy.

## validateISBN()

|  |  |
| --- | --- |
| Method Name | validateISBN() |
| Return Type | Boolean |
| Input Arguments | isbn |
| Output Arguments | None |
| Error Messages | None |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Called by the set() method for the ISBN, this method verifies that the supplied input is a valid format. It returns a Boolean value of “true” if the input is valid and “false” otherwise. |

# Customer Class

Each variable in this class has its own simplified get and set methods. Only certain specific methods will be defined on these tables to reduce redundancy.

## validatePhoneNumber()

|  |  |
| --- | --- |
| Method Name | validatePhoneNumber() |
| Return Type | Boolean |
| Input Arguments | phone |
| Output Arguments | None |
| Error Messages | None |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Called by the set() method for the phone variable, this method verifies that the supplied input is a valid format. It returns a Boolean value of “true” if the input is valid and “false” otherwise. |

# Employee Class

Each variable in this class has its own simplified get and set methods. Only certain specific methods will be defined on these tables to reduce redundancy.

## validatePhoneNumber()

|  |  |
| --- | --- |
| Method Name | validatePhoneNumber() |
| Return Type | Boolean |
| Input Arguments | phone |
| Output Arguments | None |
| Error Messages | None |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Called by the set() method for the phone variable, this method verifies that the supplied input is a valid format. It returns a Boolean value of “true” if the input is valid and “false” otherwise. |

# Order Class

Each variable in this class has its own simplified get and set methods. Only certain specific methods will be defined on these tables to reduce redundancy.

## validateContents()

|  |  |
| --- | --- |
| Method Name | validateContents() |
| Return Type | Boolean |
| Input Arguments | Contents |
| Output Arguments | None |
| Error Messages | Invalid ISBN   * ERROR: Invalid format detected for ISBN [ISBN Value]..   Book Not Found   * ERROR: ISBN [ISBN Value] not found.   Insufficient Quantity   * ERROR: Insufficient stock quantity found for ISBN [ISBN Value]. |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Called by the set() method for the Contents variable, which is a dictionary of Book objects defined by ISBN and matched to an integer representing the number of instances of that book the order will include. This method verifies that each ISBN is valid and that there is a sufficient number of books under that ISBN to be sold in the order. It returns a Boolean value of “true” if both checks are successful and “false” otherwise. |

## validateEmployee()

|  |  |
| --- | --- |
| Method Name | validateEmployee() |
| Return Type | Boolean |
| Input Arguments | employeeNumber |
| Output Arguments | None |
| Error Messages | None |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecords() |
| Narrative | Calls searchRecords() to locate the record matching the specified employeeNumber. Returns a Boolean value of “true” if that record is found or “false” otherwise. |

## validateCustomer()

|  |  |
| --- | --- |
| Method Name | validateCustomer() |
| Return Type | Boolean |
| Input Arguments | customerNumber |
| Output Arguments | None |
| Error Messages | None |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecords() |
| Narrative | Calls searchRecords() to locate the record matching the specified customerNumber. Returns a Boolean value of “true” if that record is found or “false” otherwise. |

## calculateSubTotal()

|  |  |
| --- | --- |
| Method Name | calculateSubTotal() |
| Return Type | decimal |
| Input Arguments | contents |
| Output Arguments | subTotal |
| Error Messages | None |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | searchRecords() |
| Narrative | Looks up all Book records in the contents variable, adding the product of each book’s stockPrice and the specified quantity from the order to a running total. |

## calculateTax()

|  |  |
| --- | --- |
| Method Name | calculateTax() |
| Return Type | decimal |
| Input Arguments | subTotal |
| Output Arguments | tax |
| Error Messages | None |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Calculates sales tax for an order by multiplying the order’s subTotal by the defined tax rate for the store’s location, which is hardcoded into the program elsewhere. |

## calculateTotal()

|  |  |
| --- | --- |
| Method Name | calculateTotal() |
| Return Type | decimal |
| Input Arguments | subTotal, tax |
| Output Arguments | total |
| Error Messages | None |
| Files Accessed | None |
| Files Changed | None |
| Methods Invoked | None |
| Narrative | Calculates the order’s grand total by adding the subTotal to the tax. It returns the value of that grand total as a decimal. |