| **Test Name** | Swipe card |
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| **Use Case Tested:** | Swipe card |
| **Test Description:** | Evaluates how the interface should respond once the borrower swipes their card. |
| **Pre-conditions** | cardReader visible and enabled  BorrowBookCTL added as listener to cardReader  memberDAO exists  BorrowBookCTL state == ***INITIALIZED*** |
| **Post-conditions** | **Unrestricted members:**  Scanning panel of BorrowBookUI displayed  Complete, Cancel buttons enabled  cardReader is disabled  scanner is enabled  borrower details displayed  existing loans displayed  scan count initialized as number of existing loans  existing fine message displayed if relevant  BorrowBookCTL state == ***SCANNING\_BOOKS***  **Restricted users:**  Restricted panel of BorrowBookUI displayed  Cancel button enabled  cardReader is disabled  scanner is disabled  borrower details displayed  existing loans displayed  existing fine message displayed if relevant  overdue message displayed if relevant  atLoanLimit message displayed if relevant  borrowing restricted error message displayed  BorrowBookCTL state == ***BORROWING\_RESTRICTED*** |

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| Test 1: Member exists and is not restricted | | | |
| Test step | Action done | Expected test results |  |
| 1 | Enter member ID 1 | Scanning panel displayed  Complete, cancel buttons displayed  cardReader is disabled  Scanner is enabled  Borrower details displayed  Existing loans displayed  Scanning count initialized  Existing fine message displayed  BorrowBookCTL state == SCANNING\_BOOKS |  |
| 2a. | Press cancel button | Return to borrow panel |  |
| 2b. | Press complete button | Shown the printer panel  A paper slip of books being borrowed is printed |  |

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| Test 2 : Member exists and is restricted | | |
| Test step | Action done | Expected test Results |
| 1 | Enter member ID 2 | Restricted panel displayed  Cancel button enabled  cardReader is disabled  Scanner is disabled  Borrower details displayed  Existing loans displayed  Overdue loan message displayed  Borrowing restricted error message displayed  BorrowBookCTL state == BORROWING\_RESTRICTED |
| 2 | Click cancel | Return to the borrowing panel |

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| Case 3: Member exists and is at loan limit | | |
| Test step | Action done | Expected test results |
| 1 | Enter member ID 3 | Restricted panel displayed  Cancel button enabled  Card Reader is disabled  Scanner is disabled  Borrower details displayed  Existing loans displayed  Existing fines displayed if any  At loan limit message displayed  BorrowBookCTL state == BORROWING\_RESTRICTED |
| 2. | Press cancel button | Return back to the borrow panel |

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| Case 4: Member doesn’t exist | | |
| Test step | Action done | Expected test results |
| 1 | Enter member ID 0 | An error message is displayed |

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| **Description: How the interface responds once the member swipes their card and the system reads the members ID from their card.** | | | | |
|  | **Case 1** | **Case 2** | **Case 3** | **Case 4** |
| **Error message displayed** |  |  |  | **X** |
| **Scanning panel of BorrowBookUI displayed** | X |  |  |  |
| **Restricted scanning panel displayed** |  | X | X |  |
| **Complete button enabled** | X |  |  |  |
| **Cancel button enabled** | X | X | X |  |
| **cardReader disabled** | X | X | X | X |
| **Scanner enabled** | X |  |  |  |
| **Borrowed details displayed** | X | X | X |  |
| **Existing loans displayed** | X | X | X |  |
| **Scan count initialized to count existing loans** | X |  |  |  |
| **Existing fine message displayed (if any)** | X | X | X |  |
| **Overdue message displayed if relevant** |  | X |  |  |
| **atLoanLimit message displayed if relevant** |  |  | X |  |
| **Borrowing restricted error message displayed** |  | X | X |  |
| **BorrowBookCTL state == SCANNING\_BOOKS** | X |  |  |  |
| **BorrowBookCTL state == BORROWING\_RESTRICTED** |  | X | X |  |

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| Test Name | Borrow Book |
| Use case tested | Borrow book |
| Test Description | How the system responds as the user borrows books |
| Pre-conditions | BorrowBookCTL class exists  scanner exists  BorrowBookCTL added as listener to scanner  BorrowBookCTL state == ***SCANNING\_BOOKS*** |
| Post-Conditions: | **If book isn’t available:**  BorrowBookUI is displayed  Scanning panel of BorrowBookUI displayed  Cancel button enabled  cardReader is disabled  scanner is enabled  book not available error message displayed  BorrowBookCTL state == ***SCANNING\_BOOKS***  **If user has less books than the maximum to be loaned and borrows a book:**  BorrowBookUI is displayed  Scanning panel of BorrowBookUI displayed  Cancel button enabled  cardReader is disabled  scanner is enabled  scanCount incremented by 1  scanned books details displayed  new (pending) loan created  (pending) loan added to pending loan list  Current pending loan list displayed  BorrowBookCTL state == ***SCANNING\_BOOKS***  **If book isn’t found:**  BorrowBookUI is displayed  Scanning panel of BorrowBookUI displayed  Cancel button enabled  cardReader is disabled  scanner is enabled  book not found error message displayed  BorrowBookCTL state == ***SCANNING\_BOOKS***  **If book has already been scanned:**  BorrowBookUI is displayed  Scanning panel of BorrowBookUI displayed  Cancel button enabled  cardReader is disabled  scanner is enabled  book already scanned error message displayed  BorrowBookCTL state == ***SCANNING\_BOOKS***  **If book scanned causes the user to have the maximum amount of books to be borrowed at once:**  BorrowBookUI is displayed  ConfirmingLoans panel of BorrowBookUI displayed  final pending loan list displayed  Cancel button enabled  Reject button enabled  cardReader is disabled  scanner is disabled  scanCount incremented by 1  BorrowBookCTL state == ***CONFIRMING\_LOANS*** |

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| Case 1: The book being borrowed cannot be found | | |
| Test step | Action done | Expected test results |
| 1 | Enter bookID 1 | BorrowBookUI displayed  Displayed error message that the book cannot be found |
| 2 | Press cancel button | Screen goes back to the member panel where it requests the member enter their ID |

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| Case 2: The book being borrowed is not available | | |
| Test step | Action done | Expected test results |
| 1 | Enter bookID 2 | BorrowBookUI displayed  Display the error message that the book isn’t available |
| 2 | Press cancel button | Screen goes back to the first state where it requests the member to enter their ID |

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| Case 3: The book being borrowed has already been scanned | | |
| Test step | Action done | Expected test results |
| 1 | Enter bookID 3 | BorrowBookUI displayed  Book is added to a loan list belonging to the member who’s ID was entered before the book was scanned |
| 2 | Enter bookID 3 | Screen displays an error message to the user that they have already scanned the bookID previously |
| 3 | Press cancel button | Screen goes back to the first state where it requests the user enter their ID |
| 3.1 | Press complete button | Users scans are finalized and printed |
| 3.2 | Scan another book | The next book is added to the users loan list |

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| Case 4: User scans books while their scan count is less than the maximum amount of books to be borrowed (Happy day scenario) | | |
| Test step | Action done | Expected test results |
| 1 | Enter bookID 3 | BorrowBookUI displayed  Book is added to the users loan list |
| 2 | Add more books | The books are continuously added to the users loan list until it reaches the maximum amount of loans |
| 3 | Press cancel button | Screen goes back to the member panel, where the user needs to enter their member ID |
| 3.1 | Press complete button | Screen goes through to the printer screen, which displays the loan details to the user and the print slip is printed |

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| Case 5: The scan count equals the maximum amount of books that can be borrowed | | |
| Test step | Action done | Expected test results |
| 1 | Scan book ID | BorrowBookUI displayed  Book added to the users loan list  Scanner is disabled  Final loan list displayed  Reject button enabled  Cancel button enabled  Scan count incremented by 1  BorrowBookCTL state == CONFIRMING\_LOANS |
| 2 | Press complete button | Loan is completed and loan details are printed |
| 2.1 | Press the reject button | The loan is rejected and the screen returns to the BorrowBookUI screen  Scanner is enabled  The users loan list doesn’t accept the loaned book in the current session  BorrowBookCTL state == SCANNING\_BOOKS |
| 2.2 | Press the cancel button | The user returns to the member screen where they must enter the members ID |

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| **Description: Determines if the book can be borrowed** | | | |  |  |
|  | Case 1 | Case 2 | Case 3 | Case 4 | Case 5 |
| BorrowBookUI displayed | X | X | X | X | X |
| ConfirmingLoans panel of BorrowBookUI displayed |  |  |  |  | X |
| Final pending loan list displayed |  |  |  |  | X |
| Scanning panel of BorrowBookUI displayed | X | X | X | X |  |
| Cancel button enabled | X | X | X | X | X |
| Reject button enabled |  |  |  |  | X |
| cardReader disabled | X | X | X | X | X |
| Scanner enabled | X | X | X | X |  |
| scanCount incremented by 1 |  |  |  | X | X |
| Scanned books details displayed |  |  |  | X | X |
| New pending loan created |  |  |  | X |  |
| Pending loan added to pending loan list |  |  |  | X |  |
| Current pending loan list displayed |  |  |  | X |  |
| Book not found error message displayed | X |  |  |  |  |
| Book not available error message displayed |  | X |  |  |  |
| Book already scanned error message |  |  | X |  |  |
| borrowBookCTL state == SCANNING\_BOOKS | X | X | X | X |  |
| borrowBookCTL state == CONFIRMING\_LOANS |  |  |  |  | X |