## appendCheckDigitToISBN12

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 1 | DashlessISBN12 = “97803064061” | IllegalArgumentException("ISBN-12 must be 12 chars long without dashes, without check digit") | 288 |
| 2 | DashlessISBN12 = “97803064061” | “978030640617” | 293, 630 |

## appendCheckDigitToISBN9

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 3 | DashlessISBN9 = “03064061” | IllegalArgumentException("ISBN-9 must be 9 chars long without dashes, without check digit") | 306 |
| 4 | DashlessISBN9 = "030640615" | "0306406152" | 311, 580, 609 |

## ensureISBN10Valid

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 5 | DashlessISBN10 = "030640615" | IllegalArgumentException("ISBN-10 must be 10 digits long") | 322 |
| 6 | DashlessISBN10 = "030640615x" | IllegalArgumentException("ISBN-10 should end in a capital X") | 326 |
| 7 | DashlessISBN10 = "0306406150" | IllegalArgumentException("Bad Check Digit") | 330, 332, 385, 580, 609, 657, 665, 679 |
| 8 | DashlessISBN10 = "03064061502" | No exceptions thrown | 335 |

## ensureISBN13Valid

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 9 | DashlessISBN13 = "978030640615" | IllegalArgumentException("ISBN-13 must be 13 digits.") | 346 |
| 10 | DashlessISBN13 = "000030640615" | IllegalArgumentException("ISBN-13 must begin with 978 or 979.") | 351 |
| 11 | DashlessISBN13 = "9780306406150" | IllegalArgumentException("Bad Check Digit") | 356, 361 |
| 12 | DashlessISBN13 = "9780306406157" | No exceptions thrown | 365, 407, 536, 539, 545, 551, 557 |

## isISBN10CheckDigitValid

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 13 | DashlessISBN10 = “030640615” | IllegalArgumentException("ISBN-10 must be 10 digits long.") | 380 |

## isISBN13CheckDigitValid

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 14 | DashlessISBN13 = "978030640615" | IllegalArgumentException("ISBN-13 must be 13 digits long.") | 402 |

## isbn10To13

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 15 | DashlessISBN10 = “030640615” | IllegalArgumentException("ISBN-10 must be 10 chars long without dashes, with check digit") | 420 |
| 16 | DashlessISBN10 = "0306406152" | "9780306406157" | 425 |

## isbn13To10

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 17 | dashlessISBN13 = "978030640615" | IllegalArgumentException("ISBN-13 must be 13 chars long without dashes, with check digit.") | 438 |
| 18 | dashlessISBN13 = "9780306406157" | "0306406152" | 443 |
| 19 | dashlessISBN13 = "0000306406157" | “n/a” is returned | 447 |

## tidyISBN10or13InsertingDashes

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 20 | rawISBN10or13 = **null** | IllegalArgumentException("no ISBN") | 464 |
| 21 | RawISBN10or13 = "0306406152" | "0-306-40615-2" | 468, 473, 720, 724, 758, 775, 777, 844, 853, 878, 888, 897, 909, 922 |
| 22 | RawISBN10or13 = "9780306406157" | "978-0-306-40615-7" | 476 |
| 23 | RawISBN10or13 = "978030640615" | IllegalArgumentException("ISBN must be 10 or 13 digits long.") | 479 |

## tidyISBN10or13RemovingDashes

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 24 | rawISBN10or13 = **null** | IllegalArgumentException("no ISBN") | 496 |
| 25 | RawISBN10or13 = "0-306-40615-2" | "0306406152" | 500, 505, 913, 917 |
| 26 | RawISBN10or13 = "978-0-306-40615-7" | "9780306406157" | 508 |
| 27 | RawISBN10or13 = "978-0-306-40615" | IllegalArgumentException("ISBN must be 10 or 13 digits long.") | 511 |

## BuildGroupValidLookup

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 28 | DashlessISBN13 = "9780306406157" | IllegalArgumentException("bug: bad VALID_GROUPS table") | 564 |

## calcISBN10CheckDigit

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 29 | DashlessISBN9 = "000000000" | "0000000000" | 605 |
| 30 | DashlessISBN9 = "020153083" | "020153083X" | 607 |

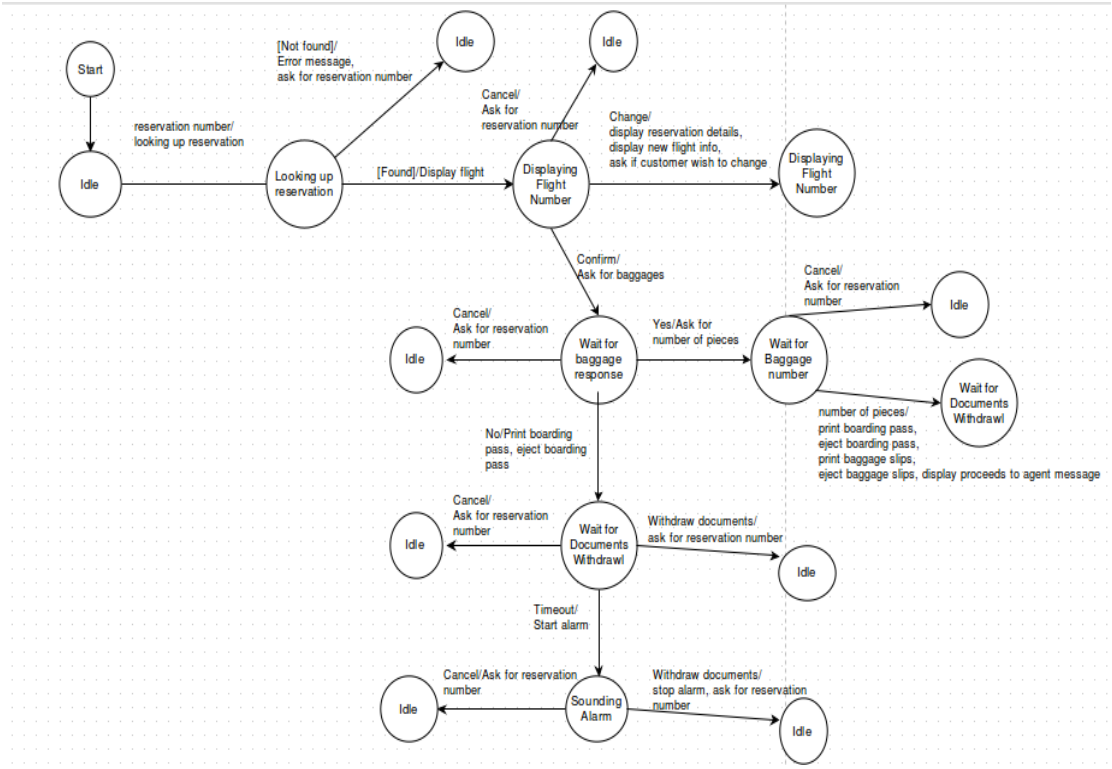
## ensureISBN10GroupValid

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 31 | dashlessISBN10 = "asdfg06150" | IllegalArgumentException("Bad group number") | 661 |
| 32 | DashlessISBN9 = "9463206152" | "020153083X" | 665 |

ensureISBN10PublisherValid

| Test case number | Input | Expected Output | Branch Coverage (line number) |
|---|---|---|---|
| 33 | dashlessISBN10 = "03064061d2" | IllegalArgumentException("Bad publisher") | 683 |

" For loop " branch should also be taken into account.


Start
Idle
reservation number/
looking up reservation
Looking up
reservation
[Not found]/
Error message,
ask for reservation number
Idle
[Found]/Display flight
Displaying
Flight
Number
Cancel/
Ask for
reservation number
Idle
Change/
display reservation details,
display new flight info,
ask if customer wish to change
Displaying
Flight
Number
Confirm/
Ask for baggages
Cancel/
Ask for reservation
number
Idle
Wait for
baggage
response
Yes/Ask for
number of pieces
Wait for
Baggage
number
Cancel/
Ask for reservation
number
Idle
Wait for
Documents
Withdrawl
number of pieces/
print boarding pass,
eject boarding pass,
print baggage slips,
eject baggage slips, display proceeds to agent message
No/Print boarding
pass, eject boarding
pass
Cancel/
Ask for reservation
number
Idle
Wait for
Documents
Withdrawl
Withdraw documents/
ask for reservation number
Idle
Timeout/
Start alarm
Cancel/Ask for reservation
number
Idle
Sounding
Alarm
Withdraw documents/
stop alarm, ask for reservation
number
Idle

Conformance and sneak path test suites

| ID | Start State | Event | Condition | Reaction | New State |
|---|---|---|---|---|---|
| 1.1 | - | Constructor | - | - | Idle |
| 1.2 | Idle | Reservation Number | | Looking up reservation | Looking up Reservation |
| 1.3 | Looking Up Reservation | | Not Found | Error Message, Ask for reservation message | Idle |
| | | | | | |
| 2.1 | - | Constructor | - | - | Idle |
| 2.2 | Idle | Reservation Number | - | Looking up reservation | Looking up Reservation |
| 2.3 | Looking up Reservation | - | Found | Display flight | Displaying Flight Number |
| 2.4 | Displaying Flight Number | Cancel | - | Ask for reservation number | Idle |
| | | | | | |
| 3.1 | - | Constructor | - | - | Idle |
| 3.2 | Idle | Reservation Number | - | Looking up reservation | Looking up Reservation |
| 3.3 | Looking up Reservation | - | Found | Display flight | Displaying Flight Number |
| 3.4 | Displaying Flight Number | Change | - | Display reservation detail, display new flight info, ask if customer wishes to change | Displaying Flight Number |
| | | | | | |
| 4.1 | - | Constructor | - | - | Idle |
| 4.2 | Idle | Reservation Number | - | Looking up reservation | Looking up Reservation |
| 4.3 | Looking up Reservation | - | Found | Display flight | Displaying Flight Number |
| 4.4 | Displaying Flight | Confirm | - | Ask for baggages | Wait for |

| | | | | | |
|---|---|---|---|---|---|
| | Number | | | | Baggage Response |
| 4.5 | Wait for Baggage Response | Cancel | - | Ask for reservation number | Idle |
| | | | | | |
| 5.1 | - | Constructor | - | - | Idle |
| 5.2 | Idle | Reservation Number | - | Looking up reservation | Looking up Reservation |
| 5.3 | Looking up Reservation | - | Found | Display flight | Displaying Flight Number |
| 5.4 | Displaying Flight Number | Confirm | - | Ask for baggages | Wait for Baggage Response |
| 5.5 | Wait for Baggage Response | Yes | - | Ask for number of pieces | Wait for Baggage Number |
| 5.6 | Wait for Baggage Number | Cancel | - | Ask for reservation number | Idle |
| | | | | | |
| 6.1 | - | Constructor | - | - | Idle |
| 6.2 | Idle | Reservation Number | - | Looking up reservation | Looking up Reservation |
| 6.3 | Looking up Reservation | - | Found | Display flight | Displaying Flight Number |
| 6.4 | Displaying Flight Number | Confirm | - | Ask for baggages | Wait for Baggage Response |
| 6.5 | Wait for Baggage Response | Yes | - | Ask for number of pieces | Wait for Baggage Number |
| 6.6 | Wait for Baggage Response | Number of pieces | - | Print boarding pass, ejecting boarding pass, print baggage slips, eject baggage slips, displays proceeds | Wait for Documents Withdrawal |

| | | | | | |
|---|---|---|---|---|---|
| | | | | to agent message | |
| | | | | | |
| 7.1 | - | Constructor | - | - | Idle |
| 7.2 | Idle | Reservation Number | - | Looking up reservation | Looking up Reservation |
| 7.3 | Looking up Reservation | - | Found | Display flight | Displaying Flight Number |
| 7.4 | Displaying Flight Number | Confirm | - | Ask for baggages | Wait for Baggage Response |
| 7.5 | Wait for Baggage Response | No | - | Print boarding pass, eject boarding pass | Wait for Documents Withdrawal |
| 7.6 | Wait for Documents Withdrawal | Cancel | - | Ask for reservation number | Idle |
| | | | | | |
| 8.1 | - | Constructor | - | - | Idle |
| 8.2 | Idle | Reservation Number | - | Looking up reservation | Looking up Reservation |
| 8.3 | Looking up Reservation | - | Found | Display flight | Displaying Flight Number |
| 8.4 | Displaying Flight Number | Confirm | - | Ask for baggages | Wait for Baggage Response |
| 8.5 | Wait for Baggage Response | No | - | Print boarding pass, eject boarding pass | Wait for Documents Withdrawal |
| 8.6 | Wait for Documents Withdrawal | Withdraw Documents | - | Ask for reservation number | Idle |
| | | | | | |
| 9.1 | - | Constructor | - | - | Idle |
| 9.2 | Idle | Reservation Number | - | Looking up reservation | Looking up Reservation |
| 9.3 | Looking up Reservation | - | Found | Display flight | Displaying Flight Number |

| | | | | | |
|---|---|---|---|---|---|
| 9.4 | Displaying Flight Number | Confirm | - | Ask for baggages | Wait for Baggage Response |
| 9.5 | Wait for Baggage Response | No | - | Print boarding pass, eject boarding pass | Wait for Documents Withdrawal |
| 9.6 | Wait for Documents Withdrawal | Timeout | - | Start Alarm | Sounding Alarm |
| 9.7 | Sounding Alarm | Cancel | - | Ask for reservation number | Idle |
| | | | | | |
| 10.1 | - | Constructor | - | - | Idle |
| 10.2 | Idle | Reservation Number | - | Looking up reservation | Looking up Reservation |
| 10.3 | Looking up Reservation | - | Found | Display flight | Displaying Flight Number |
| 10.4 | Displaying Flight Number | Confirm | - | Ask for baggages | Wait for Baggage Response |
| 10.5 | Wait for Baggage Response | No | - | Print boarding pass, eject boarding pass | Wait for Documents Withdrawal |
| 10.6 | Wait for Documents Withdrawal | Timeout | - | Start Alarm | Sounding Alarm |
| 10.7 | Sounding Alarm | Withdraw Documents | - | Stop alarm, ask for reservation number | Idle |
| | | | | | |
| 11 | Idle | Withdraw Document | - | - | Idle |
| 12 | Idle | Cancel | - | - | Idle |
| 13 | Idle | Number of Pieces | - | - | Idle |
| 14 | Idle | Change | - | - | Idle |
| 15 | Idle | Yes | - | - | Idle |

| | | | | | |
|---|---|---|---|---|---|
| 16 | Idle | No | - | - | Idle |
| 17 | Idle | Confirm | - | - | Idle |
| 18 | Idle | Timeout | | | Idle |
| | | | | | |
| 19 | Looking up Reservation | Reservation number | - | - | Looking up Reservation |
| 20 | Looking up Reservation | Withdraw Document | - | - | Looking up Reservation |
| 21 | Looking up Reservation | Cancel | - | - | Looking up Reservation |
| 22 | Looking up Reservation | Number of Pieces | - | - | Looking up Reservation |
| 23 | Looking up Reservation | Change | - | - | Looking up Reservation |
| 24 | Looking up Reservation | Yes | - | - | Looking up Reservation |
| 25 | Looking up Reservation | No | - | - | Looking up Reservation |
| 26 | Looking up Reservation | Confirm | - | - | Looking up Reservation |
| 27 | Looking up Reservation | Timeout | | | Looking up Reservation |
| | | | | | |
| 28 | Displaying Flight Number | Reservation number | - | - | Displaying Flight Number |
| 29 | Displaying Flight Number | Withdraw Document | - | - | Displaying Flight Number |
| 30 | Displaying Flight Number | Number of Pieces | - | - | Displaying Flight Number |
| 31 | Displaying Flight Number | Yes | - | - | Displaying Flight Number |
| 32 | Displaying Flight Number | No | - | - | Displaying Flight Number |
| 33 | Displaying Flight Number | Timeout | | | Displaying Flight Number |
| | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 34 | Wait for Baggage Response | Reservation number | - | - | Wait for Baggage Response |
| 35 | Wait for Baggage Response | Withdraw Document | - | - | Wait for Baggage Response |
| 36 | Wait for Baggage Response | Number of Pieces | - | - | Wait for Baggage Response |
| 37 | Wait for Baggage Response | Change | - | - | Wait for Baggage Response |
| 38 | Wait for Baggage Response | Confirm | - | - | Wait for Baggage Response |
| 39 | Wait for Baggage Response | Timeout | | | Wait for Baggage Response |
| | | | | | |
| 40 | Wait for Baggage Number | Reservation number | - | - | Wait for Baggage Number |
| 41 | Wait for Baggage Number | Withdraw Document | - | - | Wait for Baggage Number |
| 42 | Wait for Baggage Number | Change | - | - | Wait for Baggage Number |
| 43 | Wait for Baggage Number | Yes | - | - | Wait for Baggage Number |
| 44 | Wait for Baggage Number | No | - | - | Wait for Baggage Number |
| 45 | Wait for Baggage Number | Confirm | - | - | Wait for Baggage Number |
| 46 | Wait for Baggage Number | Timeout | | | Wait for Baggage |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | Number |
| | | | | | |
| 47 | Wait for Documents Withdrawal | Reservation number | - | - | Wait for Documents Withdrawal |
| 48 | Wait for Documents Withdrawal | Number of Pieces | - | - | Wait for Documents Withdrawal |
| 49 | Wait for Documents Withdrawal | Change | - | - | Wait for Documents Withdrawal |
| 50 | Wait for Documents Withdrawal | Yes | - | - | Wait for Documents Withdrawal |
| 51 | Wait for Documents Withdrawal | No | - | - | Wait for Documents Withdrawal |
| 52 | Wait for Documents Withdrawal | Confirm | - | - | Wait for Documents Withdrawal |
| | | | | | |
| 53 | Sounding Alarm | Reservation number | - | - | Sounding Alarm |
| 54 | Sounding Alarm | Number of Pieces | - | - | Sounding Alarm |
| 55 | Sounding Alarm | Change | - | - | Sounding Alarm |
| 56 | Sounding Alarm | Yes | - | - | Sounding Alarm |
| 57 | Sounding Alarm | No | - | - | Sounding Alarm |
| 58 | Sounding Alarm | Confirm | - | - | Sounding Alarm |
| 59 | Sounding Alarm | Timeout | | | Sounding Alarm |