# Test Description

**Test Name or ID**: **T013**

**Test Type**: Integration

**Description**: This test validates the package box size and then integrates the validation result with the lineToShip function to ensure that the system handles valid and invalid package sizes correctly in a shipping scenario.

**Setup:** Initialize map, routes, and package information.

**Test Function**: validatePackageBox, lineToShip

**Test Scenarios:**

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| --- | --- | --- | --- | --- |
| Description | Test Data | Expected Result | Actual Result | Pass/Fail |
| Validate box size 0 and find closest point | Size: 0, Weight: 1000, Destination: {10, 10} | Validation: 1, Valid closest point coordinates | Validation: 1, Valid closest point coordinates | Pass |
| Validate box size 1 and find closest point | Size: 1, Weight: 1500, Destination: {15, 15} | Validation: 1, Valid closest point coordinates | Validation: 1, Valid closest point coordinates | Pass |
| Validate box size 3 and find closest point | |  | | --- | |  |   Size: 3, Weight: 2000, Destination: {20, 20} | Validation: 1, Valid closest point coordinates | Validation: 1, Valid closest point coordinates | Pass |
| Validate box size 5 and find closest point | Size: 5, Weight: 2500, Destination: {5, 5} | Validation: 1, Valid closest point coordinates | Validation: 1, Valid closest point coordinates | Pass |
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**Bugs Found**:

Description of each bug found above and how to reproduce it.

Test Description

**Test Name or ID**: **T014**

**Test Type**: Integration

**Description**: Tests the lineToShip function to ensure it finds the closest point on a route given a set of destinations, weights, and sizes for trucks.

**Setup:** Initialize map, routes, and package information.

**Test Function**: populateMap, addRoute, lineToShip

**Test Scenarios:**

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| --- | --- | --- | --- | --- |
| Description | Test Data | Expected Result | Actual Result | Pass/Fail |
| Find closest point for destination (10, 10) | Destination: {10, 10}, Weight: 1000, Size: 1 | Valid closest point coordinates | Valid closest point coordinates | Pass |
| Find closest point for destination (15, 15) | Destination: {15, 15}, Weight: 1500, Size: 2 | Valid closest point coordinates | Valid closest point coordinates | Pass |
| Find closest point for destination (20, 20) | Destination: {20, 20}, Weight: 2000, Size: 3 | Valid closest point coordinates | Valid closest point coordinates | Pass |
| Find closest point for destination (5, 5) | Destination: {5, 5}, Weight: 2500, Size: 4 | Valid closest point coordinates | Valid closest point coordinates | Pass |
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**Bugs Found**:

Test Description

**Test Name or ID**: **T015**

**Test Type**: Integration

**Description**: Validates the validatePackageWeight function by checking if package weights exceeding the limit are correctly identified as invalid.

**Setup:** Initialize package weights and sizes.

**Test Function**: populateMap, addRoute, validatePackageWeight

**Test Scenarios:**

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| --- | --- | --- | --- | --- |
| Description | Test Data | Expected Result | Actual Result | Pass/Fail |
| Validate invalid weight (2600) | Weight: 2600, Size: 5 | 0 (Invalid weight) | 0 | Pass |
| Validate invalid weight (2700) | |  | | --- | |  |  |  | | --- | | Weight: 2700, Size: 4 | | 0 (Invalid weight) | 0 | Pass |
| Validate invalid weight (2800) | Weight: 2800, Size: 3 | 0 (Invalid weight) | 0 | Pass |
| Validate invalid weight (2900) | Weight: 2900, Size: 2 | 0 (Invalid weight) | 0 | Paass |
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**Bugs Found**:

Description of each bug found above and how to reproduce it.

Test Description

**Test Name or ID**: **T016**

**Test Type**: Integration

**Description**: Validates the isDestinationValid function by checking if invalid destinations are correctly identified as invalid.

**Setup:** Initialize map, routes, and package information.

**Test Function**: populateMap, addRoute, isDestinationValid

**Test Scenarios:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Description | Test Data | Expected Result | Actual Result | Pass/Fail |
| Validate invalid destination (28, X) | Destination: (28, X), Weight: 20 | 0 (Invalid destination) | 0 | Pass |
| Validate invalid destination (27, W) | Destination: (27, W), Weight: 40 | 0 (Invalid destination) | 0 | Pass |
| Validate invalid destination (26, V) | Destination: (26, V), Weight: 60 | 0 (Invalid destination) | 0 | Pass |
| Validate invalid destination (25, U) | Destination: (25, U), Weight: 80 | 0 (Invalid destination) | 0 | Pass |
|  |  |  |  |  |
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|  |  |  |  |  |

**Bugs Found**:

Description of each bug found above and how to reproduce it.