**Final Test Report**

Black-BoxTesting  
This testing validates the functionality of the system without knowledge of internal code structure. The focus is on inputs and expected output.

White-BoxTesting  
This testing examines the internal logic of the code, including conditions, loops, and data flow.

IntegrationTesting  
This testing validates the interaction between different modules of the system to ensure that they work together seamlessly. It focuses on data flow, interface communication, and the behavior of combined components under various scenarios.

Test Details

Black-Box Testing

* Functions Tested: assignTruck(), validatePackage()
* Test Cases: TB001–TB006
* Status:
  + Total Test Cases: 6
  + Passed: 6
  + Failed: 0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ID | Description | Expected Result | Actual Result | Pass/Fail |
| TB001 | Handles the scenario when no trucks are available. | Return -1, indicating no suitable truck. | -1 | Pass |
| TB002 | Correctly assigns shipment to a truck with sufficient capacity. | Return truck index 0. | 0 | Pass |
| TB003 | Selects a suitable truck from a list with varying capacities. | Return the correct truck index. | Matches expected | Pass |
| TB004 | Handles multiple trucks with equal capacity correctly. | Return any valid truck index. | TRUE (valid index) | Pass |
| TB005 | Correct truck selection when trucks with different capacities are available. | Return correct truck index. | Matches expected | Pass |
| TB006 | Similar scenario, ensuring consistent truck assignment logic. | Return correct truck index. | Matches expected | Pass |

**White-Box Testing**

* **Functions Tested**: assignTruck()
* **Test Cases**: TW001–TW004
* **Status**:
  + **Total Test Cases**: 4
  + **Passed**: 4
  + **Failed**: 0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ID | Description | Expected Result | Actual Result | Pass/Fail |
| TW001 | Handles the scenario where the truck list is empty. | Return -1, indicating no suitable truck. | -1 | Pass |
| TW002 | Correctly assigns shipment to a truck with sufficient capacity. | Return truck index 0. | 0 | Pass |
| TW003 | Selects the best suitable truck from a list with different capacities. | Return truck index 1. | 1 | Pass |
| TW004 | Handles multiple trucks with equal capacity correctly. | Return any valid truck index. | TRUE (valid index) | Pass |

**Integration Testing**

* **Functions Tested**: addShipmentToBestTruck(), findTruckForShipment(), hasTruckRoomForShipment(), addShipmentToTruck(), compareTrucksForShipment(), hasRoomForShipment()
* **Test Cases**: TI001–TI003
* **Status**:
  + **Total Test Cases**: 3
  + **Passed**: 3
  + **Failed**: 0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ID | Description | Expected Result | Actual Result | Pass/Fail |
| TI001 | Integrated addShipmentToBestTruck() and findTruckForShipment() | 1 | 1 | Pass |
| TI002 | Integrated hasTruckRoomForShipment() and addShipmentToTruck() | TRUE, FALSE | TRUE, FALSE | Pass |
| TI003 | Integrated hasRoomForShipment() and compareTrucksForShipment() to test combined behavior | TRUE, FALSE, TRUE, -1, 1 | TRUE, FALSE, TRUE, -1, 1 | Pass |