# Test Description

**Test Name or ID**: sortByLimitingFactorTests

**Test Type**: Black Box Tests.

**Description**: Testing to see if an array of distances is properly sorted based on the limiting factors of trucks within a fleet

**Setup:**

1. An instance of the struct ‘Dispatch’ is created.
2. The ‘org’ array is initialized with trucks B, G, and Y.
3. Trucks B, G, and Y within the ‘org’ array are initialized with individual weights and volumes.
4. The truck routes for B, G, and Y within the ‘org’ array are also initialized.
5. The function is run with the above parameters, the function should display the trucks with the highest limiting factors first, and the truck with the lowest limiting factors last
6. Assertions are created to compare the expected outcome to the changed outcome, one assert checks the expected distance by comparing the dists arrays.
7. In a similar fashion, another assertion checks if the expected truck identifier and colour match.

**Test Function**: sortByLimitingFactorTests

**Test Scenarios:**

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| --- | --- | --- | --- | --- |
| Description | Test Data | Expected Result | Actual Result | Pass/Fail |
| **Description of Test Data:** | Truck colour:   weight, volume {distance} | Order of the array |  |  |
| Checking Trucks with different limitations and different distances.  Also checking if a full truck is still prioritized. | Blue: 0.0, 0.0  {12.4}  Green: 625.0, 35.0 {10.6.}  Yellow: 99.0, 12.0  {13.5} | Expected  Blue, Green, Yellow  (Distances are all different, so no change occurs) |  |  |
| Checking same limitations but different limitations | Blue: 200.0, 10.0  {5.5}  Green: 200.0, 10.0 {10.2}  Yellow: 200.0, 10.0  {15.9} | Array unchanged  Expected: Blue, Green, Yellow |  |  |
| Different weight limitations and same distance | Blue: 500.0, 15.0  {10.0}  Green: 625.0, 10.0 {10.0}  Yellow: 800.0, 12.0  {12.0} | Truck that is fuller is prioritized: Expected: Green, Blue, Yellow |  |  |
| Different volume limitation and same distance | Blue: 400.0, 15.0  {5.0}  Green: 625.0, 5.0  {10.0}  Yellow: 625.0, 12.0  {10.0} | Truck that is fuller is prioritized:  Expected:  Blue, Yellow, Green |  |  |
| Checking if empty trucks remain the same order | Blue: 1000.0, 36.0  {3.14}  Green: 1000.0, 36.0  {3.14}  Yellow: 1000.0, 36.0  {3.14} | No changes  Expected Blue, Green, Yellow |  |  |
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**Bugs Found**:

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