| **Name** | **Class** | **Scenario** |
| --- | --- | --- |
| setUp1 | DirectGraphList | A graph with 5 vertex without edges. |
| setUp2 | DirectGraphList | A Graph without vertex and edges. |

| **Class** | **Method** | **Scenario** | **Input** | **Expected Result** |
| --- | --- | --- | --- | --- |
| Graph | AddVertex | setUp2 | insert a vertex to an empty graph | A new vertex is added to the size of the vertices. |
| Graph | AddVertex | setUp1 | Add Vertex To Graph that already has some vertices | A new vertex is added to the size of the vertices. |
| Graph | AddVertex | setUp1 | add a vertex with the same value that a vertex that already exists in the graph | I shouldn't be able to add it either because it doesn't allow it or it throws an exception message. |
| Graph | AddEdge | setUp1 | Add a edge  between two  existing vertex.  Graph with 5 vertex.  Initial vertex: 1  Final vertex: 2 | The edge is added successfully. The size of the edges for the source vertex should increase by 1 and the destination vertex should match the specified destination. |
| Graph | AddEdge | setup1 | Add a edge with weight  between two  existing vertex.  Graph with 5 vertex.  Initial vertex: 1  Final vertex: 2  weight: 10 | The weighted edge is added successfully. The size of the edges for the source vertex should increase by 1. The destination vertex should match the specified destination. The weight of the added edge should be 10. |
| Graph | AddEdge | setup1 | Add a edge with weight  between two  existing vertex.  Graph with 5 vertex.  Initial vertex: 1  Final vertex: 2  weight: 0 | The weighted edge is added successfully. The size of the edges for the source vertex should increase by 1. The destination vertex should match the specified destination. The weight of the added edge should be 0. |
| Graph | BFS | setup1 | add the value of the start vertex. | Each vertex reachable from the starting vertex should have a distance d assigned to it, which is not equal to Integer.MAX\_VALUE. |
| Graph | FloydWarshall | setup1 | add the value of the start vertex. | the minimum cost ways from the start vertex to other vertices. |