**TEST DOCUMENTATION**

**Adjacency List Graph**

**Scenaries Configuration**

|  |  |  |
| --- | --- | --- |
| **Name** | **Class** | **Scenary** |
| setUp | ListGraph | Directed and multiple graph with no loops |
| setUpLoop | ListGraph | Directed and multiple graph with loops |
| setUpExistingNodes | ListGraph | Graph with 6 vertices (V={‘F’,’G’,’H’,’I’,’J’,’K’}) and 3 edges (E={(F,G),5},{(G,H),1},{(F,H),3}) |
| setUpExistingNodesAllConnectedDFS | ListGraph | Graph with 5 vertices (V={‘F’,’G’,’H’,’I’,’J’}) and 6 edges (E={(F,G),5},{(G,H),1},{(F,H),3},{(F,I),2},  {(I,J),2},{(J,H),2}) |
| setUpExistingNodesNotAllConnectedDFS | ListGraph | Graph with 5 vertices (V={‘F’,’G’,’H’,’I’,’J’}) and 3 edges (E={(F,G),5},{(G,H),1},{(F,H),3}) |

**Test Case Design**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Class** | **Method** | **Scenary** | **Entry Value** | **Result** |
| ListGraph | addVertex  searchVertexIndex | setUp | “A” | ≠ 1 |
| ListGraph | addVertex  getList | setUp | “A”, “A” | 1 |
| ListGraph | addVertex  addEdge searchEdge | setUp | “A”, “B”  (“A”,”B”,  ”edge1”,1) | true |
| ListGraph | addEdge | setUp | (“A”,”B”,  ”edge1”,1) | VertexNotFoundException |
| ListGraph | addVertex addEdge | setUp | “A”, (“A”,”A”,  ”edgeLoop”,1) | LoopsNotAllowedException |
| ListGraph | addVertex  addEdge  searchEdge | setUpLoop | “A”, (“A”,”A”,  ”edgeLoop”,1) | true |
| ListGraph | addVertex addEdge searchVertexIndex | setUp | “A”, “B”  (“A”,”B”,  ”edge1”,1), (“A”,”B”,  ”edge2”,2) | 2 |
| ListGraph | addVertex deleteVertex searchVertexIndex | setUp | “A” | = -1 |
| ListGraph | deleteVertex | setUp | “A” | VertexNotFoundException |
| ListGraph | addVertex addEdge deleteEdge searchEdge | setUp | “A”, “B”  (“A”,”B”,  ”edge1”,1) | false |
| ListGraph | addVertex deleteEdge | setup | “A”, “B” | EdgeNotFoundException |
| ListGraph | dijkstra | setUp | “A”, “D” | VertexNotFoundException |
| ListGraph | DFS | setUpExistingNodesAllConnectedDFS | “F” | true for all vertex in the graph |
| ListGraph | DFS | setUpExistingNodesNotAllConnectedDFS | “F” | false for vertices 3 and 4 |
| ListGraph | dijkstra | setUpExistingNodes | “F”,”K” | VertexNotAchievableException |
| ListGraph | addVertex  addEdge  searchEdge | setup | “A”, “B”  (“A”,”B”,  ”edge1”,1) | true for ((“A”,”B”,  ”edge1”)  false for (“B”,”A”,  ”edge1”) |
| ListGraph | addVertex  addEdge  searchEdge | setUp | “A”, “B”  (“A”,”B”,  ”edge1”,1) | true for ((“A”,”B”,  ”edge1”)  true for (“B”,”A”,  ”edge1”) |

**Adjacency Matrix Graph**

**Scenaries Configuration**

|  |  |  |
| --- | --- | --- |
| **Name** | **Class** | **Scenary** |
| setUp | MatrixGraph | Directed graph with 6 empty vertices |
| setUpExistingNodes | MatrixGraph | Directed graph with 6 vertices (V={‘F’,’G’,’H’,’I’,’J’,’K’}) and 3 edges (E={(F,G),5},{(G,H),1},  {(F,H),3}) |
| setUpExistingNodesAllConnectedDFS | MatrixGraph | Directed graph with 5 vertices (V={‘F’,’G’,’H’,’I’,’J’,’K’}) and 8 edges (E={(F,G),5},{(G,H),1},  {(F,H),3},{(F,I),2},{(I,J),2},  {(J,H),2},{(F,K),4},{(K,I),1}) |
| setUpExistingNodesNotAllConnectedDFS | MatrixGraph | Directed graph with 6 vertices (V={‘F’,’G’,’H’,’I’,’J’,’K’}) and 3 edges (E={(F,G),5},{(G,H),1},  {(F,H),3}) |

**Test Case Design**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Class** | **Method** | **Scenary** | **Entry Value** | **Result** |
| MatrixGraph | addVertex searchVertexIndex | setUp | “A” | ≠ 1 |
| MatrixGraph | addVertex | setUp | “A”, “A” | VertexAlreadyAddedException |
| MatrixGraph | addVertex  addEdge searchEdge | setUp | “A”, “B”  (“A”,”B”,  ”edge1”,1) | true |
| MatrixGraph | addEdge | setUp | (“A”,”B”,  ”edge1”,1) | VertexNotFoundException |
| MatrixGraph | addVertex addEdge | setUp | “A”, (“A”,”A”,  ”edgeLoop”,1) | LoopsNotAllowedException |
| MatrixGraph | addVertex  addEdge | setUp | “A”, “B”  (“A”,”B”,  ”edge1”,1), (“A”,”B”,  ”edge2”,1) | MultipleEdgesNotAllowed |
| MatrixGraph | addVertex  deleteVertex  searchVertexIndex | setUp | “A” | = -1 |
| MatrixGraph | deleteVertex | setUp | “A” | VertexNotFoundException |
| MatrixGraph | addVertex  addEdge  deleteEdge  searchEdge | setUp | “A”, “B”  (“A”,”B”,  ”edge1”,1) | false |
| MatrixGraph | addVertex  addVertex  deleteEdge | setUp | “A”, “B”  (“A”,”B”,  ”edge1”) | EdgeNotFoundException |
| MatrixGraph | dijkstra | setUpExistingNodes | “W”, “H” | VertexNotFoundException |
| MatrixGraph | dijkstra | setUpExistingNodes | “F”, “K” | VertexNotAchievableException |
| MatrixGraph | DFS | setUpExistingNodes  AllConnectedDFS | N/A | true |
| MatrixGraph | DFS | setUpExistingNodesNot  AllConnectedDFS | N/A | false |
| MatrixGraph | addVertex  addEdge  searchEdge | setUp | “A”, “B”  (“A”,”B”,  ”edge1”,1) | true for ((“A”,”B”,  ”edge1”)  false for (“B”,”A”,  ”edge1”) |
| MatrixGraph | addVertex  addEdge  searchEdge | setUp | “A”, “B”  (“A”,”B”,  ”edge1”,1) | true for ((“A”,”B”,  ”edge1”)  true for (“B”,”A”,  ”edge1”) |