**DESIGN OF UNIT TESTS**

**Stages**

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| **Name** | **Class** | Stage |
| Scenery 1 | GraphTest | Empty graph |
| Stage 2 | GraphTest |  |
| Stage 3 | GraphTest |  |
| Stage 4 | GraphTest |  |

**Test Cases**

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| **Test Objective:** Validate the correct insertion of a vertex in graph | | | | |
| **Class** | **Method** | **Stage** | **Input Values** | **Result** |
| Graph | insert (Vertex<String>) | Stage1 | Vertex=”1”  Vertex=”2” | The graph is empty |
| Graph | insert (Vertex<String>) | Stage2 | Vertex=”1”  Vertex=”2”  Vertex=”3”  Vertex=”4”  Vertex=”5” | The graph contains vertices 1,2,3,4 and 5. |
| Graph | insert (Vertex<String>) | Stage3 | Vertex=”7”  Vertex=”8”  Vertex=”9”  Vertex=”10”  Vertex=”11” | The graph contains vertices 7,8,9,10 and 11. |

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| **Test Objective:** Validate the correct search of a vertex in graph | | | | |
| **Class** | **Method** | **Stage** | **Input Values** | **Result** |
| Graph | Search (Vertex<String>) | Stage3 | Vertex=”4”  Vertex=”10” | Vertices found |

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| **Test Objective:** Validate the correct insertion of a edge in graph | | | | |
| **Class** | **Method** | **Stage** | **Input Values** | **Result** |
| Graph | insert (Edge<String>) | Stage1 | Edge=(8,7,1)  Edge=(8,10,1)  Edge=(8,11,1) | The graph don’t have edges |
| Graph | insert (Edge<String>) | Stage2 | Edge=(3,4,1) | The graph contains edge 3-4. |
| Graph | insert (Edge<String>) | Stage3 | Edge=(1,10,1) | The graph contains edge 1-10. |

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| **Test Objective:** Validate the correct remove of a vertex in graph | | | | |
| **Class** | **Method** | **Stage** | **Input Values** | **Result** |
| Graph | delete (Vertex<String>) | Stage1 | Vertex=”2” | Vertex 2 don’t exist |
| Graph | delete (Vertex<String>) | Stage2 | Vertex=”1”  Vertex=”6” | Vertex 1 has been deleted  Vertex 6 don’t exist |
| Graph | delete (Vertex<String>) | Stage3 | Vertex=”1”  Vertex=”6” | Vertex 1 has been deleted  Vertex 6 has been deleted |

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| **Test Objective:** Verify the Dijkstra method | | | | |
| **Class** | **Method** | **Stage** | **Input Values** | **Result** |
| Graph | Dijkstra (Vertex<V> initial, Vertex<V> final) | Stage4 | Vertex=”1”  Vertex=”5” | A stack with the minimum path length from the given starting node to the end node. |