Priority Queue = [Distance, Node], Path = Node: [Distance, Parent Node]

Compare: Distance\_of\_Parent + Weight and Distance\_of\_Vertex

Initialization:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Node | Visited | Distance | Parent Node | Adjacency List |
| V0 | N | 0 | None | (V1, 2), (V3, 1) |
| V1 | N |  | - | (V3, 3), (V4, 10) |
| V2 | N |  | - | (V0, 4), (V5, 5) |
| V3 | N |  | - | (V2, 2), (V5, 8), (V4, 2), (V6, 4) |
| V4 | N |  | - | (V6, 6) |
| V5 | N |  | - | - |
| V6 | N |  | - | (V5, 1) |

Step 1:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Node | Visited | Distance | Parent Node | Adjacency List |
| V0 | Y | 0 | None | (V1, 2), (V3, 1) |
| V1 | N | 2 | V0 | (V3, 3), (V4, 10) |
| V2 | N |  | - | (V0, 4), (V5, 5) |
| V3 | N | 1 | V0 | (V2, 2), (V5, 8), (V4, 2), (V6, 4) |
| V4 | N |  | - | (V6, 6) |
| V5 | N |  | - | - |
| V6 | N |  | - | (V5, 1) |

Step 2:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Node | Visited | Distance | Parent Node | Adjacency List |
| V0 |  |  |  | (V1, 2), (V3, 1) |
| V1 | N | 2 | V0 | (V3, 3), (V4, 10) |
| V2 | N | 3 | V3 | (V0, 4), (V5, 5) |
| V3 | Y | 1 | V0 | (V2, 2), (V5, 8), (V4, 2), (V6, 4) |
| V4 | N | 3 | V3 | (V6, 6) |
| V5 | N | 9 | V3 | - |
| V6 | N | 5 | V3 | (V5, 1) |

Step 3:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Node | Visited | Distance | Parent Node | Adjacency List |
| V0 |  |  |  | (V1, 2), (V3, 1) |
| V1 | Y | 2 | V0 | (V3, 3), (V4, 10) |
| V2 | N | 3 | V3 | (V0, 4), (V5, 5) |
| V3 |  |  |  | (V2, 2), (V5, 8), (V4, 2), (V6, 4) |
| V4 | N | 3 | V3 | (V6, 6) |
| V5 | N | 9 | V3 | - |
| V6 | N | 5 | V3 | (V5, 1) |

Step 4:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Node | Visited | Distance | Parent Node | Adjacency List |
| V0 |  |  |  | (V1, 2), (V3, 1) |
| V1 |  |  |  | (V3, 3), (V4, 10) |
| V2 | Y | 3 | V3 | (V0, 4), (V5, 5) |
| V3 |  |  |  | (V2, 2), (V5, 8), (V4, 2), (V6, 4) |
| V4 | N | 3 | V3 | (V6, 6) |
| V5 | N | 8 | V2 | - |
| V6 | N | 5 | V3 | (V5, 1) |

Step 5:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Node | Visited | Distance | Parent Node | Adjacency List |
| V0 |  |  |  | (V1, 2), (V3, 1) |
| V1 |  |  |  | (V3, 3), (V4, 10) |
| V2 |  |  |  | (V0, 4), (V5, 5) |
| V3 |  |  |  | (V2, 2), (V5, 8), (V4, 2), (V6, 4) |
| V4 | Y | 3 | V3 | (V6, 6) |
| V5 | N | 8 | V2 | - |
| V6 | N | 5 | V3 | (V5, 1) |

Step 6:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Node | Visited | Distance | Parent Node | Adjacency List |
| V0 |  |  |  | (V1, 2), (V3, 1) |
| V1 |  |  |  | (V3, 3), (V4, 10) |
| V2 |  |  |  | (V0, 4), (V5, 5) |
| V3 |  |  |  | (V2, 2), (V5, 8), (V4, 2), (V6, 4) |
| V4 |  |  |  | (V6, 6) |
| V5 | N | 6 | V6 | - |
| V6 | Y | 5 | V3 | (V5, 1) |

Step 7:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Node | Visited | Distance | Parent Node | Adjacency List |
| V0 |  |  |  | (V1, 2), (V3, 1) |
| V1 |  |  |  | (V3, 3), (V4, 10) |
| V2 |  |  |  | (V0, 4), (V5, 5) |
| V3 |  |  |  | (V2, 2), (V5, 8), (V4, 2), (V6, 4) |
| V4 |  |  |  | (V6, 6) |
| V5 | Y | 8 | V2 | - |
| V6 |  |  |  | (V5, 1) |