**Assignment : Dijkstra’s Algorithm**

**Computer Networking**

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1. Given the network as shown below calculate the shortest path from node **a** to all other paths.



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Step #** | **Node Set** | **Node b** | **Node c** | **Node d** | **Node e** | **Node f** |
| 0 | a | 7 | 9 | ∞ | ∞ | 14 |
| 1 | a, b | 7 | 9 | 22 | ∞ | 14 |
| 2 | a, b, c | 7 | 9 | 20 | ∞ | 11 |
| 3 | a, b, c, f | 7 | 9 | 20 | 20 | 11 |
| 4 | a, b, c, f, e | 7 | 9 | 20 | 20 | 11 |

* a, b, c, f, e, d
* (a, b) – 7
* (a, c) – 9
* (a, d) – (a, c) –> (c, d) – 20
* (a, e) – (a, c) –> (c, f) –> (f, e) – 20
* (a, f) – (a, c) –> (c, f) – 11

2. Given the network as shown below calculate the shortest path from node **e** to all other paths.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Step #** | **Node Set** | **Node a** | **Node b** | **Node c** | **Node d** | **Node f** |
| 0 | e | ∞ | ∞ | ∞ | 6 | 9 |
| 1 | e, d | ∞ | 21 | 17 | 6 | 9 |
| 2 | e, d, f | 23 | 21 | 11 | 6 | 9 |
| 3 | e, d, f, c | 20 | 21 | 11 | 6 | 9 |
| 4 | e, d, f, c, a | 20 | 21 | 11 | 6 | 9 |

* e, d, f, c, a, b
* (e, f) – 9
* (e, d) – 6
* (e, c) – (e, f) –> (f, c) – 11
* (e, b) – (e, f) –> (f, c) –> (c, b) – 21
* (e, a) – (e, f) –> (f, c) –> (c, a) – 20