Q1 Initial Step 1 Step 2

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Vertex | Distance | Previous | Vertex | Distance | Previous | Vertex | Distance | Previous |
| VS | 0 | 0 | VS | 0 | 0 | VS | 0 | 0 |
| V1 | ∞ | 0 | V1 | 12 | VS | V1 | 12 | VS |
| V2 | ∞ | 0 | V2 | ∞ | 0 | V2 | ∞ | 0 |
| V3 | ∞ | 0 | V3 | 12 | VS | V3 | 12 | VS |
| V4 | ∞ | 0 | V4 | ∞ | 0 | V4 | ∞ | 0 |
| V5 | ∞ | 0 | V5 | 13 | VS | V5 | 13 | VS |
| V6 | ∞ | 0 | V6 | ∞ | 0 | V6 | ∞ | 0 |
| VF | ∞ | 0 | VF | ∞ | 0 | VF | ∞ | 0 |

Step 3 Step 4 Step 5

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Vertex | Distance | Previous | Vertex | Distance | Previous | Vertex | Distance | Previous |
| VS | 0 | 0 | VS | 0 | 0 | VS | 0 | 0 |
| V1 | 12 | VS | V1 | 12 | VS | V1 | 12 | VS |
| V2 | 30 | 0 | V2 | 30 | V3 | V2 | 30 | V3 |
| V3 | 12 | VS | V3 | 12 | VS | V3 | 12 | VS |
| V4 | 24 | 0 | V4 | 24 | V3 | V4 | 24 | V3 |
| V5 | 13 | VS | V5 | 13 | VS | V5 | 13 | VS |
| V6 | ∞ | 0 | V6 | 39 | V5 | V6 | 30 | V4 |
| VF | ∞ | 0 | VF | ∞ | 0 | VF | 54 | V4 |

Step 6 Step 7 Step 8

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Vertex | Distance | Previous | Vertex | Distance | Previous | Vertex | Distance | Previous |
| VS | 0 | 0 | VS | 0 | 0 | VS | 0 | 0 |
| V1 | 12 | VS | V1 | 12 | VS | V1 | 12 | VS |
| V2 | 30 | V3 | V2 | 30 | V3 | V2 | 30 | V3 |
| V3 | 12 | VS | V3 | 12 | VS | V3 | 12 | VS |
| V4 | 24 | V3 | V4 | 24 | V3 | V4 | 24 | V3 |
| V5 | 13 | VS | V5 | 13 | VS | V5 | 13 | VS |
| V6 | 30 | V4 | V6 | 30 | V4 | V6 | 30 | V4 |
| VF | 46 | V2 | VF | 46 | V2 | VF | 46 | V2 |

Q2

(1) Initial Step 1 Step 2

Added edge: 02

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Vertex | Distance | Previous | Vertex | Distance | Previous | Vertex | Distance | Previous |
| V0 | 0 | 0 | V0 | 0 | 0 | V0 | 0 | 0 |
| V1 | ∞ | 0 | V1 | 6 | V0 | V1 | Min(6,5) | V2 |
| V2 | ∞ | 0 | V2 | 1 | V0 | V2 | 1 | V0 |
| V3 | ∞ | 0 | V3 | 5 | V0 | V3 | 5 | V0 |
| V4 | ∞ | 0 | V4 | ∞ | 0 | V4 | 6 | V2 |
| V5 | ∞ | 0 | V5 | ∞ | 0 | V5 | 4 | V2 |

Step 3 Step 4 Step 5

Added edge: 25 53 21

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Vertex | Distance | Previous | Vertex | Distance | Previous | Vertex | Distance | Previous |
| V0 | 0 | 0 | V0 | 0 | 0 | V0 | 0 | 0 |
| V1 | 5 | V2 | V1 | 5 | V2 | V1 | 5 | V2 |
| V2 | 1 | V0 | V2 | 1 | V0 | V2 | 1 | V0 |
| V3 | Min(5,2) | V5 | V3 | 2 | V5 | V3 | 2 | V5 |
| V4 | 6 | V2 | V4 | 6 | V2 | V4 | Min(6,3) | V1 |
| V5 | 4 | V2 | V5 | 4 | V2 | V5 | 4 | V2 |

Step 6

Added edge: 14

|  |  |  |
| --- | --- | --- |
| Vertex | Distance | Previous |
| V0 | 0 | 0 |
| V1 | 5 | V2 |
| V2 | 1 | V0 |
| V3 | 2 | V5 |
| V4 | 3 | V1 |
| V5 | 4 | V2 |

(2) 02,35,14,25,21