Anu Varshneya

Homework 4

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| 1. (4.2a)   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | **S** | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** | | **0** | 0 | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | ∞ | | **1** | 0 | 7 | ∞ | 6 | ∞ | 6 | 5 | ∞ | ∞ | ∞ | | **2** | 0 | 7 | 11 | 5 | 7 | 6 | 4 | ∞ | 9 | ∞ | | **3** | 0 | 7 | 11 | 5 | 7 | 6 | 4 | 9 | 7 | ∞ | | **4** | 0 | 7 | 11 | 5 | 7 | 6 | 4 | 8 | 7 | 7 | |
| 2. (4.8)  Professor F’s solution is not valid. Considering the following as a counter example:    In this example, the path from A🡪C is -6, and the path from A🡪B🡪C is -7. Therefore, the path from A🡪B🡪C is clearly the shortest path. If we follow Professor F’s solution, we would add 7 to every edge so that A🡪B = 4, B🡪C = 3, and A🡪C = 1. Once 7 is added to every edge, the path from A🡪C is 1 and A🡪B🡪C = 7, meaning that the straight path from A🡪C is the shortest, but we know this not to be true. Therefore, Professor F’s solution is incorrect. |
| 3. (4.17a) |
| 4. (5.2)  a)   |  |  |  | | --- | --- | --- | | **Edge Included** | **Intermediate Value** | **Cost** | | AB | 1 | 1 | | BC | 2 | 3 | | CG | 2 | 5 | | GD | 1 | 6 | | GH | 1 | 7 | | GF | 1 | 8 | | AE | 4 | 12 |   b)   |  |  | | --- | --- | | Edges | Distance | | AB | 1 | | GD | 1 | | GH | 1 | | GF | 1 | | BC | 2 | | CG | 2 | | CD | 3 | | DH | 4 | | AE | 4 | | EF | 5 | | BF | 6 | | BG | 6 | | AF | 8 |  |  | | --- | | Step 1: | | Step 2: | | Step 3: | | Step 4: | |
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