**Question 3 [15 marks]:**

The lengths of all the roads connecting a pair of cities is shown in the following table:

|  |  |
| --- | --- |
| Pair of cities | Length (km) |
| (A, B) | 2 |
| (B, C) | 3 |
| (C, D) | 2 |
| (C, E) | 7 |
| (A, C) | 4 |
| (A, F) | 3 |
| (B, E) | 5 |
| (F, D) | 6 |
| (E, D) | 7 |

Draw a graph to model the problem and apply a suitable algorithm to find the shortest path from city C to each of the remaining cities. You must show all the steps in finding these paths step-by-step using a table.

|  |  |
| --- | --- |
| Shortest Path | Length |
| C | 0 |
| C, D | 2 |
| C, B | 3 |
| C, A | 4 |
| C, E | 7 |
| C, A, F | 4 + 3 = 7 |

