Time complexity of modified algorithm: T(n) O(n2)

Graph 1 (undirected)

Lengths:

The shortest path from 1 to 2 is length 12

The shortest path from 1 to 10 is length 25

The shortest path from 1 to 3 is length 28

The shortest path from 1 to 4 is length 37

The shortest path from 1 to 5 is length 39

The shortest path from 1 to 11 is length 41

The shortest path from 1 to 6 is length 50

The shortest path from 1 to 7 is length 56

The shortest path from 1 to 13 is length 69

The shortest path from 1 to 8 is length 74

The shortest path from 1 to 12 is length 78

The shortest path from 1 to 15 is length 83

The shortest path from 1 to 9 is length 105

The shortest path from 1 to 14 is length 113

Touch Array: [5, 5, 1, 5, 0, 9, 3, 5, 7, 8]

Run Time: 2074600 nanoseconds

Graph 2 (sparse)

Length array: [-1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1]

Touch Array: [0, 1, 1, 9, 3, 4, 5, 2, 7, 1, 9, 1, 9, 12, 11]

Run Time: 2922200 nanoseconds

Graph 3 (dense)

Length array: [-1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1]

Touch Array: [0, 12, 1, 1, 11, 1, 3, 4, 1, 6, 8, 1, 1, 1, 1]

Run Time: 1802700 nanoseconds