Assignment III DSAL3001 March 2022

Student ID: _____ Student Name: _____

Instructions: Answer all questions.

1. Consider the following function:

```
void   DoThis (A, m, n)
//input : Array A(m .. n)

      x ← A[m]; i ← m; j ←n;

      while A[i] ≤ x and i ≤ n do i ← i +1;
      while A[j] > x and j ≥ m do j ← j -1;
      if i< j then
          swap A[i] ↔ A[j];
      return A;
```

a. What task does this function perform?
Explain what the function does in general terms, not line by line.

b. i. What is the time complexity of the function?

ii. If A[m .. n] = [27, 31, 07, 45, 16, 21, 30, 65, 53], what is the output?

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2. i. Represent the undirected graph below in a matrix form.

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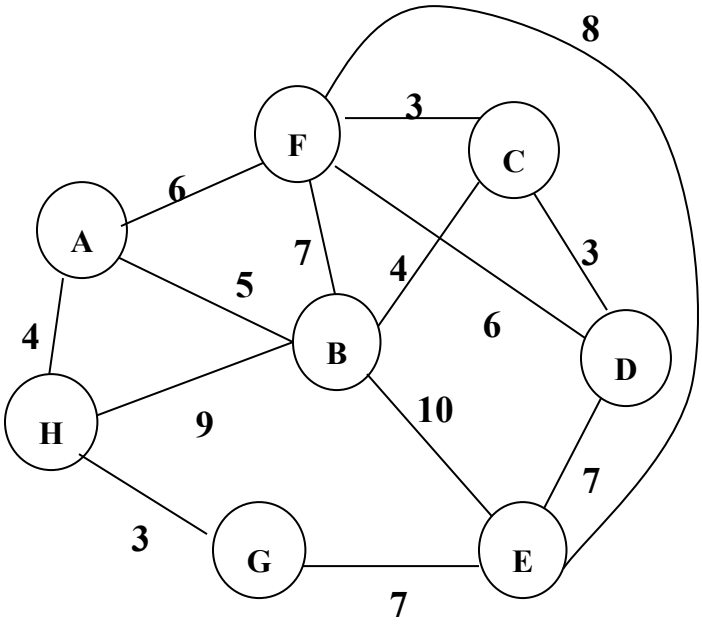

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ii. Apply Kruskal's algorithm to find a minimum spanning tree for the graph.