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**Accomplish the following tasks or answer the following with clear and concise statements.**

Answers may be handwritten or typewritten on the spaces provided.

You may attach additional pages if more space is needed and state all assumptions used.

References, both offline and online, need to be cited somewhere in the space provided if ever they are used.

a. (5 pts) In a very connected graph (i.e. number of edges is high) which MST algorithm would be preferred? Defend your answer with an example.

I think Kruskal's algorithm would be faster than Prim's if there is a high number of edges. The reason is that Kruskal's algorithm does not need to look at all the possible edges. Kruskal's algorithm takes all the edges, sorts them, and picks the edge with the smallest weight. If this edge does not form a cycle, it adds them to the MST. Otherwise, it proceeds to the next edge.

In the coding activity given to us, if Prim's algorithm is implemented, a for loop might be used to run almost  $v*(v-1)/2$  times when finding the MST. Kruskal's algorithm would definitely take less iterations after computing the distance between each pair of vertices because it only needs to iterate whenever the current edge that it picked forms a cycle.

b. (4 pts for each test case, including samples) Find the minimum length of wire needed.

HackerRank Link: <https://www.hackerrank.com/contests/eee-121-2s2223-hkrb/challenges/connect-n>

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