*Record the predecessor node and total path weight (sum of edge weights) for each of the paths you discover from the start node to any other node in the graph, in the order you discover them*.

*You will be reporting the total path weight and predecessor in the order you update them during your trace of the algorithm.*

*Predecessor and total path weights for a node will only be updated if a newer path has a lower cost than a previously discovered one, so the total path weights will be in descending order(You will only report multiple predecessors and total path weights for a specific node if  you discover more than one path to the node and the new path's total weight is lower than the previous discovered path).*

For example, if your start node is X and you discover an edge from X to node Z with weight 5, you record 5 as the first total path weight, and X as the corresponding predecessor for node Z.

Then, in a later iteration of the algorithm, you discover an edge from node Y to node Z with total path weight from X over Y to Z to be 3. Record 3 as the second total path weight, and Y as the second predecessor for node Z. If the algorithm terminates with those two updates to the total weight and predecessor of Z, you would report 5, 3 as the total path weights, and X, Y as the predecessors of Z. The image below shows an example graph with node X, Y, and Z. *The list of edge weights for your starting node will be only contain a 0, and the list of it's predecessors will be empty.*