Computer Programming

Assignment 1: Problem Solving

→ Eshal Atif
01-131232-023
→ Ibtisam Abid
01-131232-035

Question 1: Finding the Shortest path.

① Start with Source position and Set the distance of Source position initially as 0 and all others distance to Infinity.

② Visit each neighbour of the ~~same~~ Source location and then again neighbour to neighbour update their ~~location~~ distance as infinity to n.

③ Now visit any neighbour location and mark the Current location as visited.

④ For each unvisited neighbour, update their location distance from the Source position if the Current path is Shorter than the previously recorded distance.

⑤ Repeat 2-4 Until you reach the final location.

⑥ Once you reach the final destination Add the Shorter distance from each location to final to find the Shortest Path.

Teacher's Sign _____

Q#2   Sorting list of numbers.

① first Count number of elements "n" in the list.

② Declare Range "k".

③ Create a space Complexity by Order of k.

④ Count how many times each number appears.

⑤ By Space Complexity, list them in ascending order in its right place.

⑥ To describe the running time of algorithms, use time Complexity $O(n+k)$, Where "n" is the number of elements and "k" is the range of input Values.

Q#3   Calculating fibonacci numbers.

① Assigning the first two number of Series as 0 and 1 respectively.

② Starting from the third fibonacci number by adding previous two number.

③ Write the new number of Series.

④ For getting 4th or till nth number of fibonacci, Add previous two numbers or follow Step 2 and 3.

Q# 4   Inventory management.

① Start Inventory :
Create a data Structure of Inventory.

② Add Items to Inventory :
- Verify if a new item is already in the inventory, update its Quantity.

- If it is not in the inventory, Create a new inventory with the item information.

③ Remove Item from the inventory : Take an Item Out from the inventory when it is sold or stocked out.

④ Update Inventory :
If an item already in the inventory has to have its amount adjusted, locate then and update its Quantity.

⑤ Create Report of inventory :
Browse the inventory and print each item's data including its amount and all the details to Create a report.