DSA Assignment 1

220040664 KNT Shongolo

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**Star Class**

Write a java class (call it Star) for the model of the network. [10 marks] The class must have the methods insertNode( ) and deleteNode( ). [10 marks]

NOTE:

insertNode(zero or more parameters): adds a node to the model,

deleteNode(zero or more parameters): deletes a node from the model.

**SOLUTION**

import java.util.ArrayList;

import java.util.List;

public class Star {

private ServerNode centralNode;

private List<ClientNode> clientNodes;

// Constructor

public Star() {

centralNode = new ServerNode();

clientNodes = new ArrayList<>();

}

// Method to insert a node

public void insertNode(String name) {

ClientNode newNode = new ClientNode(name);

centralNode.addClient(newNode);

clientNodes.add(newNode);

}

// Method to delete a node

public void deleteNode(String name) {

ClientNode nodeToRemove = null;

for (ClientNode node : clientNodes) {

if (node.getName().equals(name)) {

nodeToRemove = node;

break;

}

}

if (nodeToRemove != null) {

centralNode.removeClient(nodeToRemove);

clientNodes.remove(nodeToRemove);

} else {

System.out.println("Node not found: " + name);

}

}

// Getter for central node

public ServerNode getCentralNode() {

return centralNode;

}

// Getter for client nodes

public List<ClientNode> getClientNodes() {

return clientNodes;

}

public static void main(String[] args) {

// Example usage

Star starNetwork = new Star();

starNetwork.insertNode("Client1");

starNetwork.insertNode("Client2");

starNetwork.insertNode("Client3");

System.out.println("Nodes in the network:");

for (ClientNode node : starNetwork.getClientNodes()) {

System.out.println(node.getName());

}

starNetwork.deleteNode("Client2");

System.out.println("Nodes after deletion:");

for (ClientNode node : starNetwork.getClientNodes()) {

System.out.println(node.getName());

}

}

}

This Star class maintains a list of client nodes and a central server node. The insertNode() method adds a new client node to the network, while the deleteNode() method removes a client node from the network. Each client node is added to the central server node upon insertion and removed upon deletion.