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// Data structure: Array of Contact objects
Contact[] phonebook

// Contact class structure
class Contact:
    String name
    String phoneNumber

// 1. Insert Contact
function insertContact(name, phoneNumber):
    if phonebook is full:
        resize phonebook array
    newContact = new Contact(name, phoneNumber)
    append newContact to phonebook
    if sort option is enabled:
        sortContacts()

// 2. Search Contact
function searchContact(searchTerm):
    for each contact in phonebook:
        if contact.name contains searchTerm or contact.phoneNumber contains searchTerm:
            return contact
    return null

// 3. Display all contacts
function displayAllContacts():
    for each contact in phonebook:
        print contact.name + ": " + contact.phoneNumber

// 4. Delete Contact
function deleteContact(searchTerm):
    index = -1
    for i = 0 to phonebook.length - 1:
        if phonebook[i].name contains searchTerm or phonebook[i].phoneNumber contains searchTerm:
            index = i
            break
    if index != -1:
        remove contact at index from phonebook
        return true
    return false

// 5. Update Contact
function updateContact(searchTerm, newName, newPhoneNumber):
    contact = searchContact(searchTerm)
    if contact is not null:
        contact.name = newName
        contact.phoneNumber = newPhoneNumber
        if sort option is enabled:
            sortContacts()
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        return true
    return false

// 6. Sort Contacts (optional)
function sortContacts():
    use bubble sort or insertion sort to sort phonebook array based on contact names

// 7. Analyze search efficiency
// The search algorithm (searchContact function) uses a linear search approach.
// Time complexity: O(n), where n is the number of contacts in the phonebook.
// Space complexity: O(1), as it uses a constant amount of extra space.

// Main function to run the application
function main():
    while true:
        display menu options
        read user choice
        switch user choice:
            case 1: call insertContact()
            case 2: call searchContact()
            case 3: call displayAllContacts()
            case 4: call deleteContact()
            case 5: call updateContact()
            case 6: call sortContacts()
            case 7: exit program
```