FACULTY OF COMPUTING AND INFORMATIC'S

DSA GROUP ASSIGNMENT 2024

THIS PROJECT WAS DONE BY

Names	Student Number
Shumirai Shindi	222071230
Undjakuje Tjiriange	221065784
Viouje T. Kaumunika	224063014
Stella E Apollus	222045868
Eugen H Haingura	218003285

Members Contribution to the project

- Each member played a critical role in the success of this DSA project, contributing unique skills and insights that enhanced the overall quality and functionality of the visualization tool. The collaborative efforts resulted in a comprehensive resource for learning and understanding data structures and algorithms.

Section A

Pseudo Code:

```
START

// Define structure for my Phone class
DEFINE STRUCT Phone
    STRING cont_name
    STRING cont_numb

// Initialize an empty array of saving contact details
INITIALIZE phoneList as empty array

// Function to display in my menu
FUNCTION displayMenu
    PRINT "| W E L C O M E |"
    PRINT "1. Insert new contact"
    PRINT "2. Search any contact"
    PRINT "3. Display all contacts"
    PRINT "4. Delete a contact"
    PRINT "5. Update a contact"
    PRINT "6. Sort contacts"
    PRINT "7. Exit"

// Main program loop
Do
    CALL displayMenu
    PRINT "Enter your choice: "
    READ choice

    IF choice == 1 THEN
        PRINT "Enter contact name: "
        READ name
        PRINT "Enter contact number: "
        READ number
        CALL addContact(name, number)
```

```
    ELSE IF choice == 2 THEN
        PRINT "Enter contact name you want to search: "
        READ name
        CALL searchContact(name)

    ELSE IF choice == 3 THEN
        CALL printAllContacts()

    ELSE IF choice == 4 THEN
        PRINT "Enter contact name you want to delete: "
        READ name
        CALL deleteContact(name)

    ELSE IF choice == 5 THEN
        PRINT "Enter contact name you want to update: "
        READ name
        PRINT "Enter new contact number: "
        READ number
        CALL updateContact(name, number)

    ELSE IF choice == 6 THEN
        CALL sortContacts()

    ELSE IF choice == 7 THEN
        PRINT "Exiting the program........."
        BREAK

    ELSE
        PRINT "Invalid choice! Please choose from Menu......"

WHILE choice != 7
```

```
// Function to insert a contact
FUNCTION addContact(name, number)
    CREATE new Phone
    SET newphone.cont_name = name
    SET newphone.cont_numb = number
    ADD newPhone to PhoneList
    PRINT "Contact added successfully."

// Function to search for a contact
FUNCTION searchContact(name)
    SET found = false
    FOR each phone IN phoneList
        IF phone.cont_name  EQUALS name THEN
            PRINT "Contact found: " + phone.cont_name+ ", " + phone.cont_numb
            SET found = true
            BREAK
    IF found == false THEN
        PRINT "Contact not found."

// Function to display all contacts
FUNCTION displayAllContacts
    IF phoneList is empty THEN
        PRINT "No contacts saved in list"
    ELSE
        FOR each phone IN phoneList
            PRINT phone.cont_name+ ": " + phone.cont_numb

// Function to delete a contact
FUNCTION deleteContact(name)
    SET found = false
    FOR each phone IN phoneList
        IF phone.cont_name EQUALS name THEN
            REMOVE phone from phoneList
            PRINT "Contact deleted successfully."
            SET found = true
```

```
        BREAK
    IF found == false THEN
        PRINT "Contact not found."

// Function to update a contact
FUNCTION updateContact(name, newNumber)
    SET found = false
    FOR each phone IN phoneList
        IF phone.cont_name EQUALS name THEN
            SET phone.cont_numb = newNumber
            PRINT "Contact updated successfully."
            SET found = true
            BREAK
    IF found == false THEN
        PRINT "Contact not found."

// Function to sort contacts alphabetically
FUNCTION sortContacts
    SORT phoneList by phone.cont_name alphabetically
    PRINT "Contacts sorted alphabetically."

END
```

Flowchart: