**PSUEDOCODE**

PROGRAM Phonebook

// Global variables

names = empty list

numbers = empty list

MODULE main()

exit = false

WHILE NOT exit

displayMenu()

decision = getUserChoice()

SWITCH decision

CASE 1: insertContact()

CASE 2: searchContact()

CASE 3: displayAllContacts()

CASE 4: deleteContact()

CASE 5: updateContact()

CASE 6: sortContacts()

CASE 7: exit = true

DEFAULT: PRINT "Invalid choice, try again"

END SWITCH

END WHILE

PRINT "THANK YOU FOR USING THE PHONEBOOK APPLICATION"

END MODULE

MODULE sortContacts()

PRINT "1: Sort contacts in alphabetical order."

PRINT "2: Sort contacts in ascending order of numbers."

PRINT "Enter your choice: "

choice = getUserChoice()

IF choice == 1 THEN

sortByName()

ELSE IF choice == 2 THEN

sortByNumber()

ELSE

PRINT "Invalid choice"

RETURN

END IF

PRINT "Contacts sorted successfully."

displayAllContacts()

END MODULE

MODULE searchContact()

PRINT "Enter number you are searching for: "

searchNo = getUserChoice()

found = false

FOR i = 0 TO numbers.size() - 1

IF numbers[i] == searchNo THEN

PRINT "Contact found at position " + (i + 1)

PRINT names[i] + " " + numbers[i]

found = true

BREAK

END IF

END FOR

IF NOT found THEN

PRINT "Contact not found"

END IF

END MODULE

FUNCTION displayMenu()

PRINT menu options

PRINT "Enter the number of the option you want to select: "

END FUNCTION

FUNCTION getUserChoice()

WHILE input is not an integer

PRINT "Invalid input. Please enter a number."

CLEAR input

END WHILE

RETURN integer input

END FUNCTION

FUNCTION insertContact()

PRINT "Enter the number you want to insert: "

number = getUserChoice()

numbers.add(number)

PRINT "Enter contact name: "

name = get user input

names.add(name)

PRINT "Contact added successfully."

END FUNCTION

FUNCTION displayAllContacts()

IF names is empty THEN

PRINT "No contacts to display."

RETURN

END IF

FOR i = 0 TO names.size() - 1

PRINT (i + 1) + ". " + names[i] + " " + numbers[i]

END FOR

END FUNCTION

FUNCTION deleteContact()

PRINT "Enter name or number of contact you want to delete: "

input = get user input

deleted = false

FOR i = 0 TO names.size() - 1

IF names[i] equals input (case insensitive) OR numbers[i] as string equals input THEN

remove names[i]

remove numbers[i]

PRINT "Contact deleted successfully."

deleted = true

BREAK

END IF

END FOR

IF NOT deleted THEN

PRINT "Contact not found"

END IF

END FUNCTION

FUNCTION updateContact()

PRINT "Enter name or number of contact you want to update: "

input = get user input

FOR i = 0 TO names.size() - 1

IF names[i] equals input (case insensitive) OR numbers[i] as string equals input THEN

PRINT "Enter new name: "

newName = get user input

PRINT "Enter new number: "

newNumber = getUserChoice()

names[i] = newName

numbers[i] = newNumber

PRINT "Contact updated successfully."

RETURN

END IF

END FOR

PRINT "Contact not found"

END FUNCTION

FUNCTION sortByName()

entries = empty list

FOR i = 0 TO names.size() - 1

entries.add(new Entry(names[i], numbers[i]))

END FOR

sort entries by key (name)

clear names and numbers

FOR EACH entry IN entries

names.add(entry.key)

numbers.add(entry.value)

END FOR

END FUNCTION

FUNCTION sortByNumber()

entries = empty list

FOR i = 0 TO numbers.size() - 1

entries.add(new Entry(numbers[i], names[i]))

END FOR

sort entries by key (number)

clear names and numbers

FOR EACH entry IN entries

numbers.add(entry.key)

names.add(entry.value)

END FOR

END FUNCTION

END PROGRAM