DSA521S Project

Group 13

Stu.Number	Stu.Name	Created module for
224031066	Nangukuii Kangootui	Delete contact
223113298	Kayando Kandjungu	Search contact
224035622	Anopaishe Mukwendi	Display contact
224013092	Gabriel Kasoma	Sorting contacts
224010395	Rauha Kadhingula	Update contact
224016997	Emily Mudjanima	Insert contact

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Short Description

A Namibian telecommunications company is looking for an efficient phonebook algorithm to perform typical phonebook operations such as, insert, search, delete, and update and sort contacts. Linked lists is one of the simple algorithms that can deliver these operations efficiently.

Data structure used

Linked lists

Pseudocode representation

Start

Print “welcome to the phonebook application”

Print “1. Display Contacts”

Print “2. Search Contact”

Print “3. Insert Contact”

Print “4. Delete Contact”

Print “5. Update Contact”

Print “Please enter the number for the function you want to carry out:”

Get number

If (number==1) then

displayContact()

else if (number==2) then

```
searchContact()

else if (number==3) then
Prompt user for name, phoneNumber to insert
Get name, phoneNumber
insertContact(name,phoneNumber)

else if( number==4) then
Prompt user for name to delete
Get name
deleteContact(name)

else if (number==5) then

Prompt user for contact name and new contact number
get contact name and new contact number
updateContact(name,newNumber)

else
display “INVALID OPTION”
endif
endif
endif
endif
endif

displayContact() {
```

```
IF (head == NULL) THEN
PRINT “Phonebook is empty.”
RETURN
ENDIF
temp = head
WHILE (temp != NULL) {
PRINT “ Name:  “  +  temp.name + “ , Phone “ + temp.phone
temp = temp.next
}
END WHILE
}

searchContact() {

Print “ Enter a name to search “
Get searchItem

temp = head
found = 0

While (temp ==! null )
If (temp.name == searchItem ) THEN
DISPLAY “Contact found: “ + current.name  + “, Phone number: “+ temp.phoneNumber
found = 1
EndIf
temp = temp.next
```

```
EndWhile
If (found == 0) THEN
DISPLAY “Contact not found”;
EndIf
}

newNode(){
String name
Int phoneNumber
node next
}
insertContact(name, phoneNumber){
newNode()
newNode.name = name
newNode.phoneNumber=phoneNumber
newNode.next = null
If (head == null) Then
head = newNode

Else
Temp=head
While (temp.next ! = null )
temp = temp.next
EndWhile
temp.next = newNode
endif
sortPhoneBook(newNode)
```

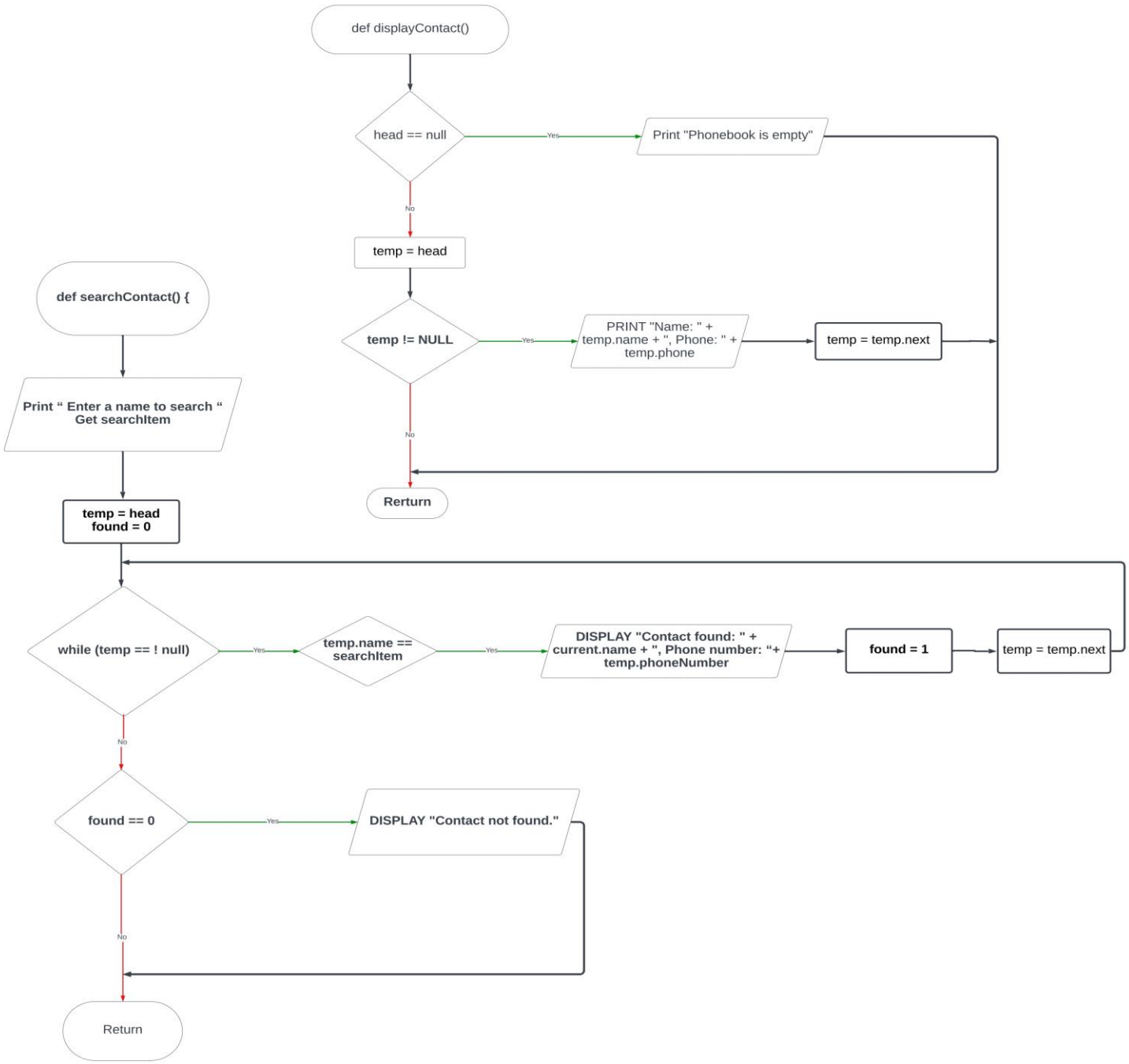
```
}

sortPhoneBook(newNode){
If (head== null) Then
Display “Phonebook is sorted”;
End if
Temp=head
While (temp.next ! = null )
IF (temp.name -> temp.next.name) THEN
temp = temp.name
temp.name = temp.next.name
endif
temp.next.name = temp
EndWhile
PRINT “Phonebook sorted”;
}

delete(name){

if( head == null) Then
Display “PhoneBook is empty”
RETURN
endif

if(head.name = name) then
temp=head
head= head -> next
```

```
temp=free
DISPLAY “Contact deleted” + name
endif

temp=head
while (temp.next!= null)
if(temp.next.data.name = = name)
nodeToDelete = temp.next
temp.next = temp.next.next
free = nodeToDelete
temp=temp.next
DISPLAY “Contact deleted: “ + name
Else
Display “Contact not found”
endif
endwhile

}

updateContact(name,newNumber) {
temp = head;
while (temp != null)
if (temp.data.name=name)
temp.number = newNumber;
Print “Contact updated successfully.”
return
endif
```

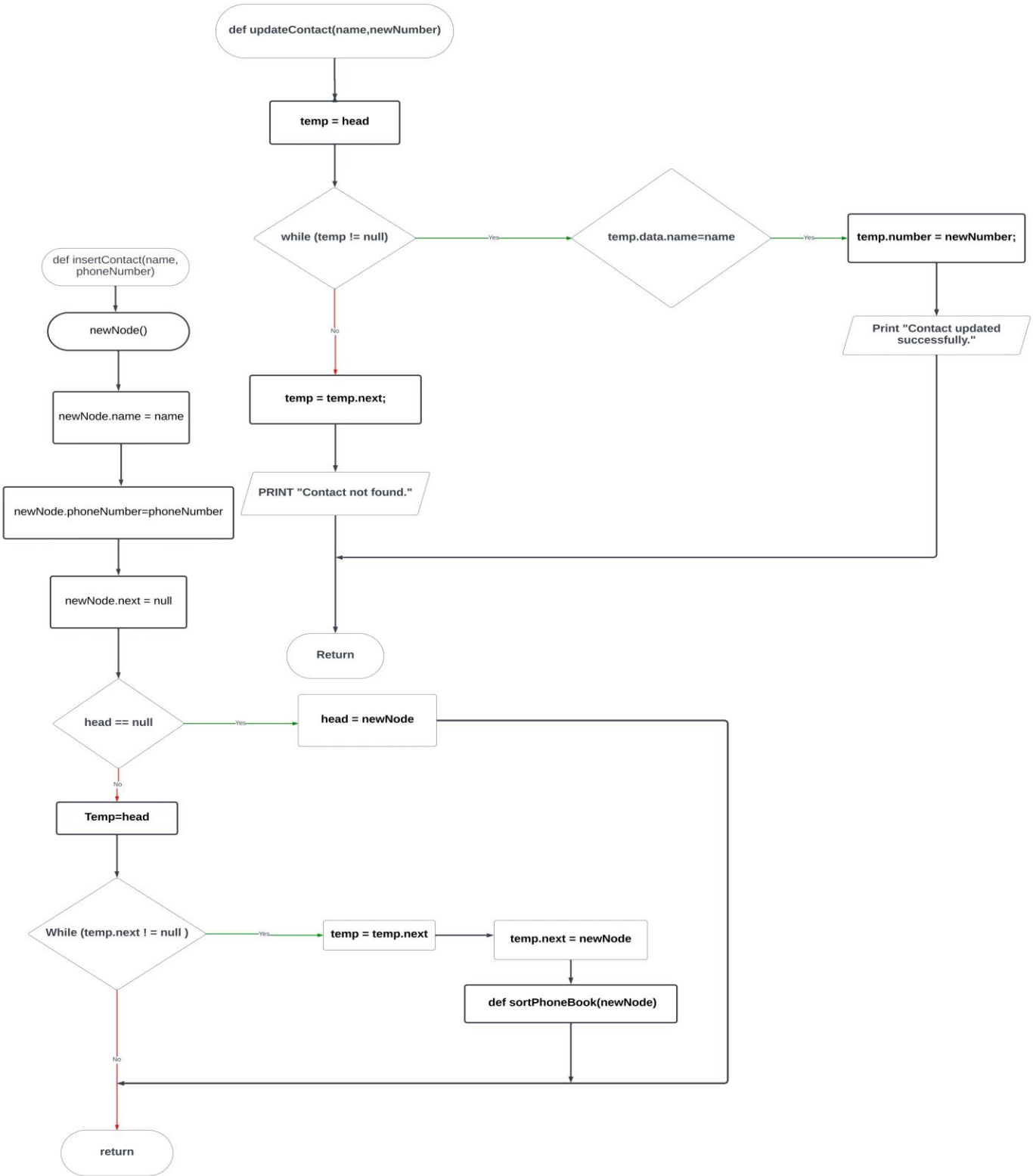
```
temp = temp.next;


PRINT “Contact not found”
   }
```

Flowchart Representation

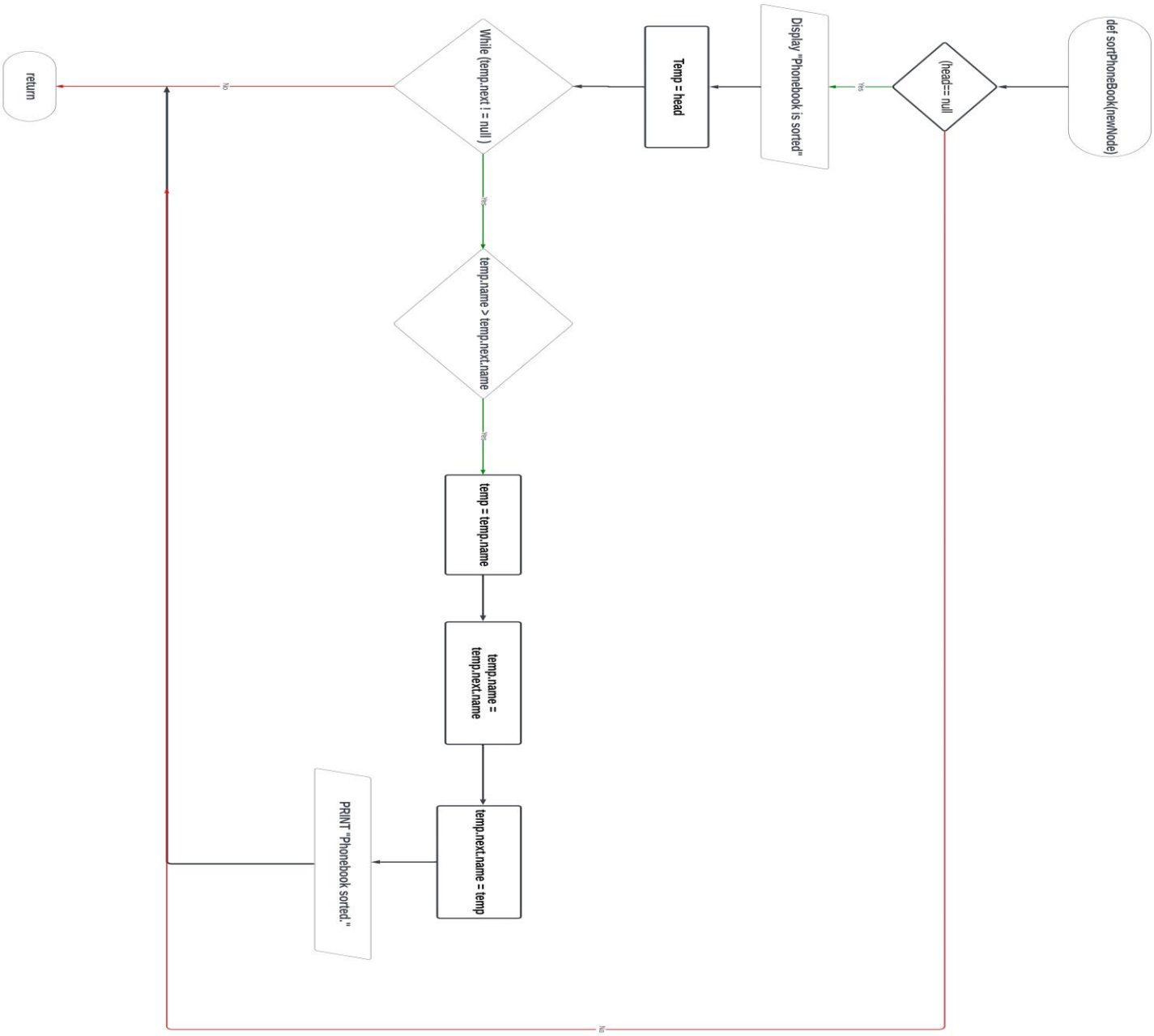
Display and Search Function:



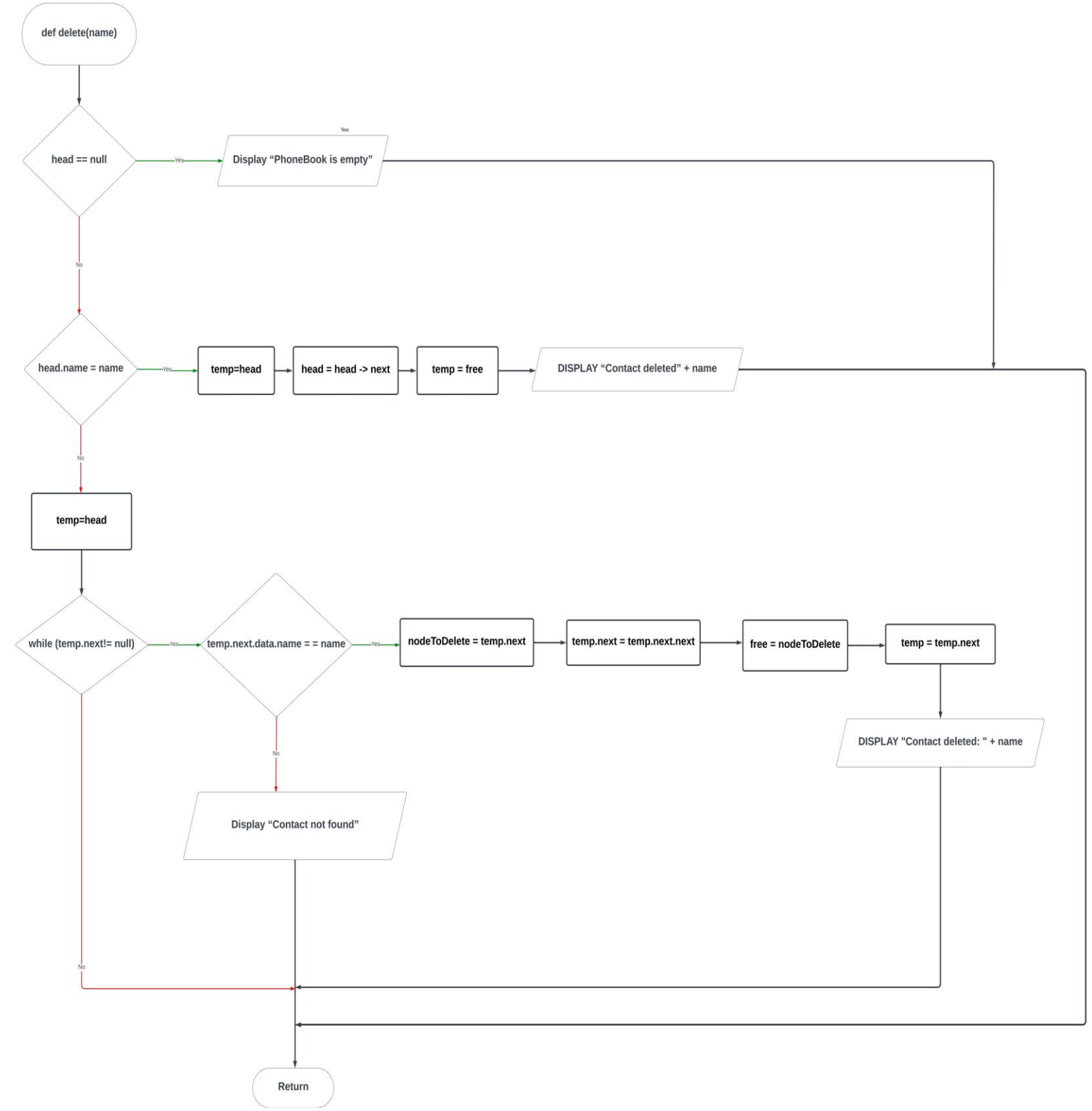
Update and Insert function:



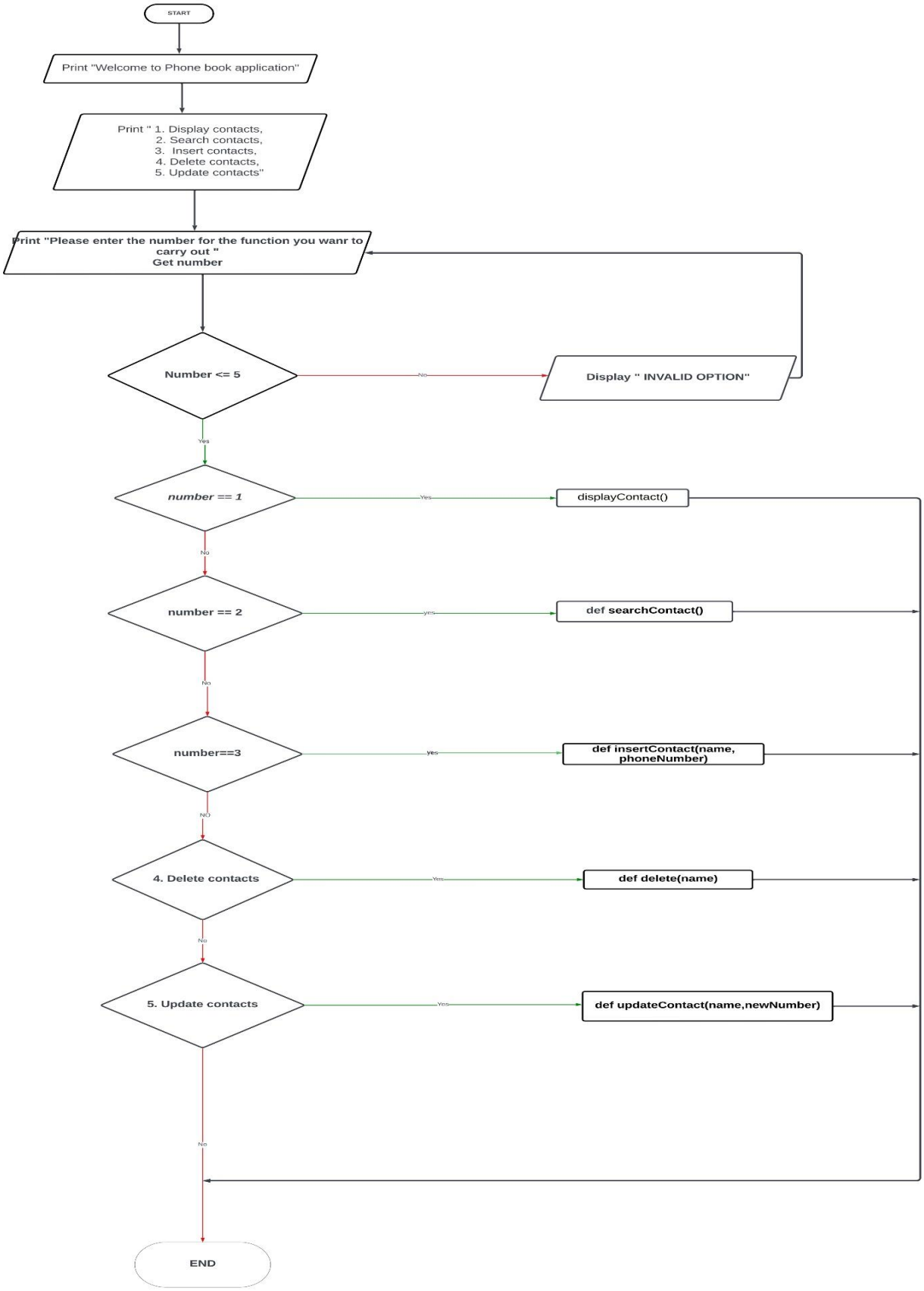
Sort function:



Delete function:



The flowhart below calls the functions above :


START
Print "Welcome to Phone book application"
Print " 1. Display contacts,
2. Search contacts,
3. Insert contacts,
4. Delete contacts,
5. Update contacts"
Print "Please enter the number for the function you wanr to carry out "
Get number
Number <= 5
No
Display " INVALID OPTION"
Yes
number == 1
Yes
displayContact()
No
number == 2
yes
def searchContact()
No
number==3
yes
def insertContact(name, phoneNumber)
NO
4. Delete contacts
Yes
def delete(name)
No
5. Update contacts
Yes
def updateContact(name,newNumber)
No
END