

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: " + temp.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.next  
      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
```

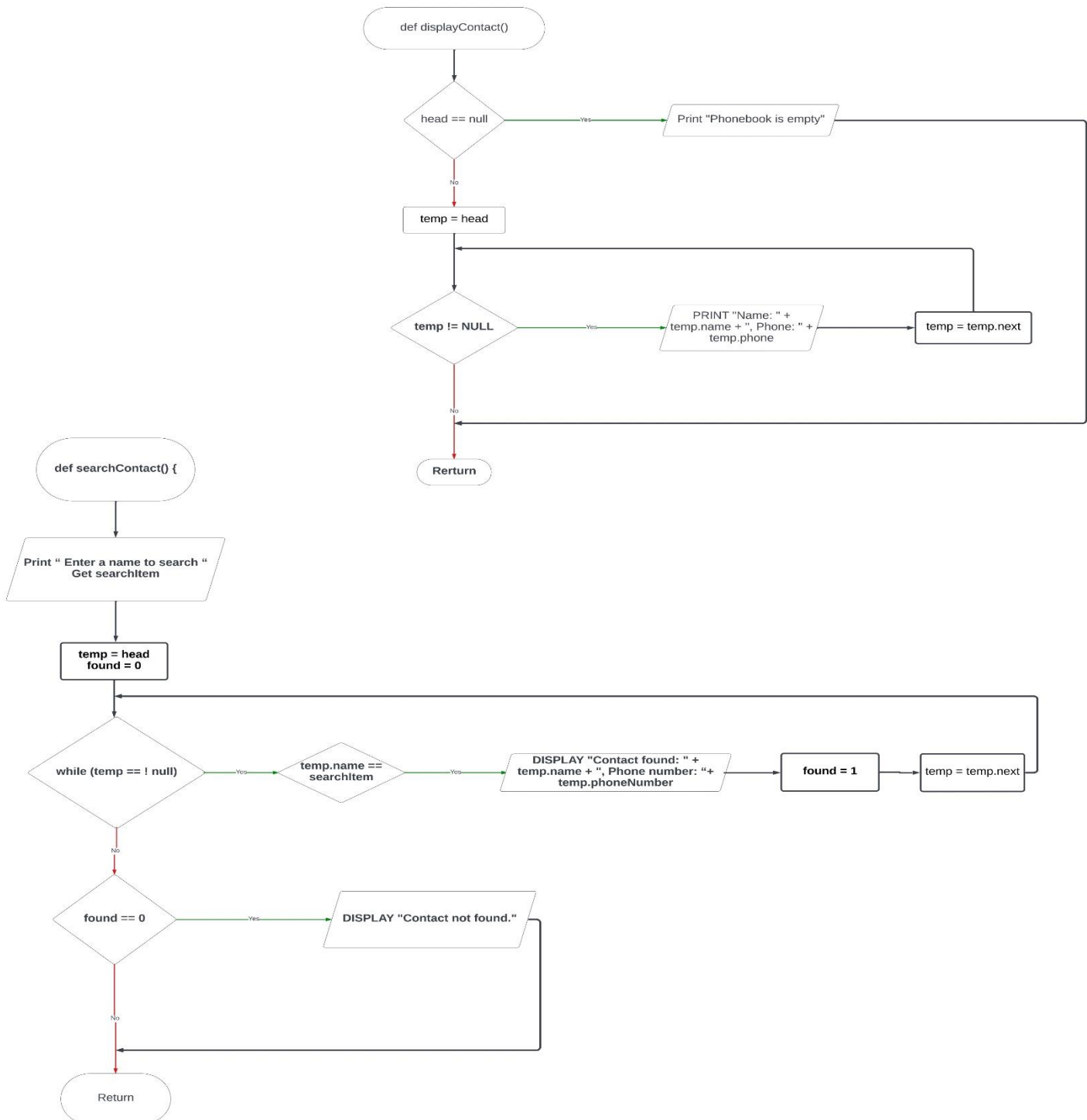
```
temp = temp.next;
```

```
PRINT "Contact not found"
```

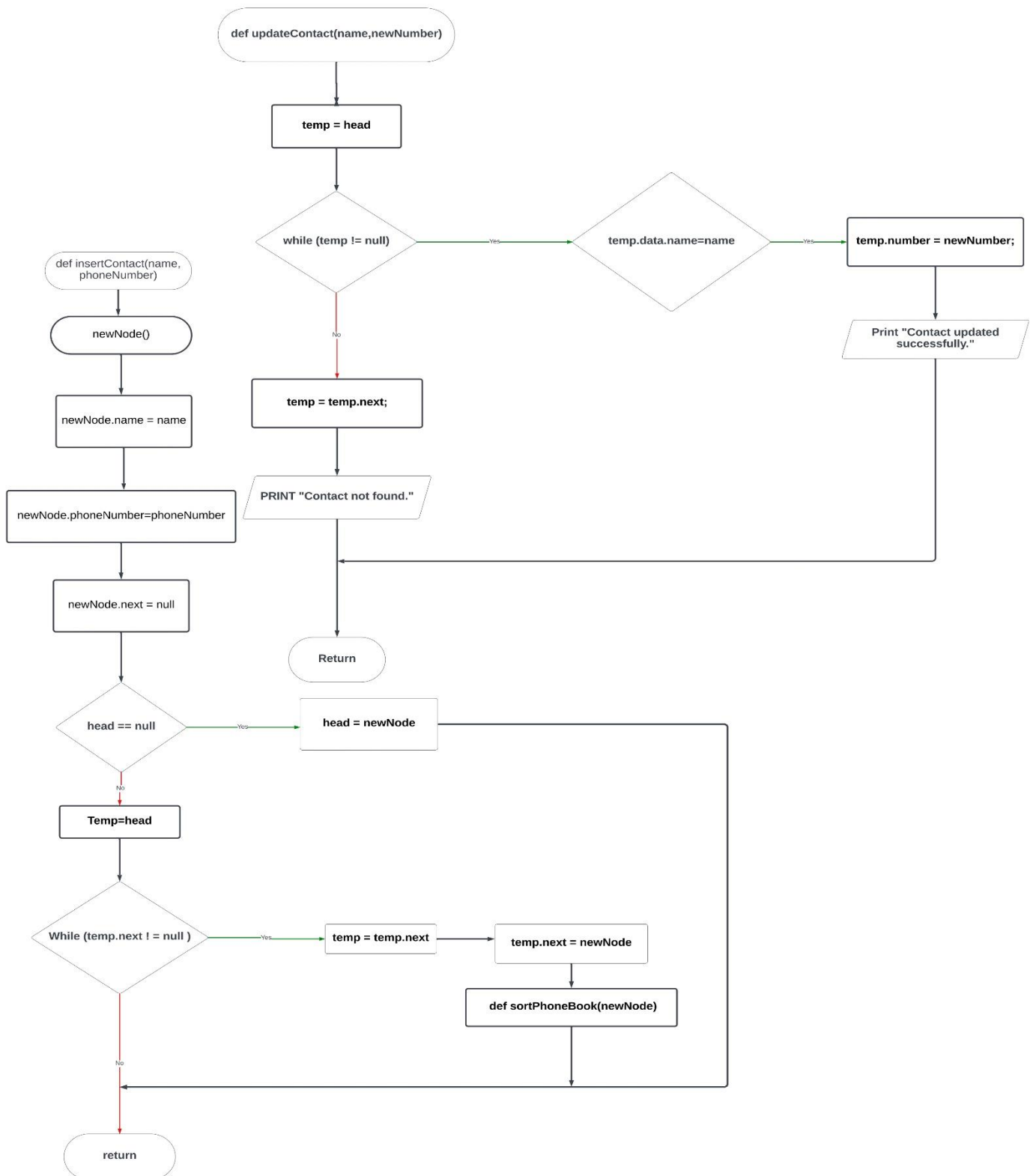
```
}
```


Flowchart Representation

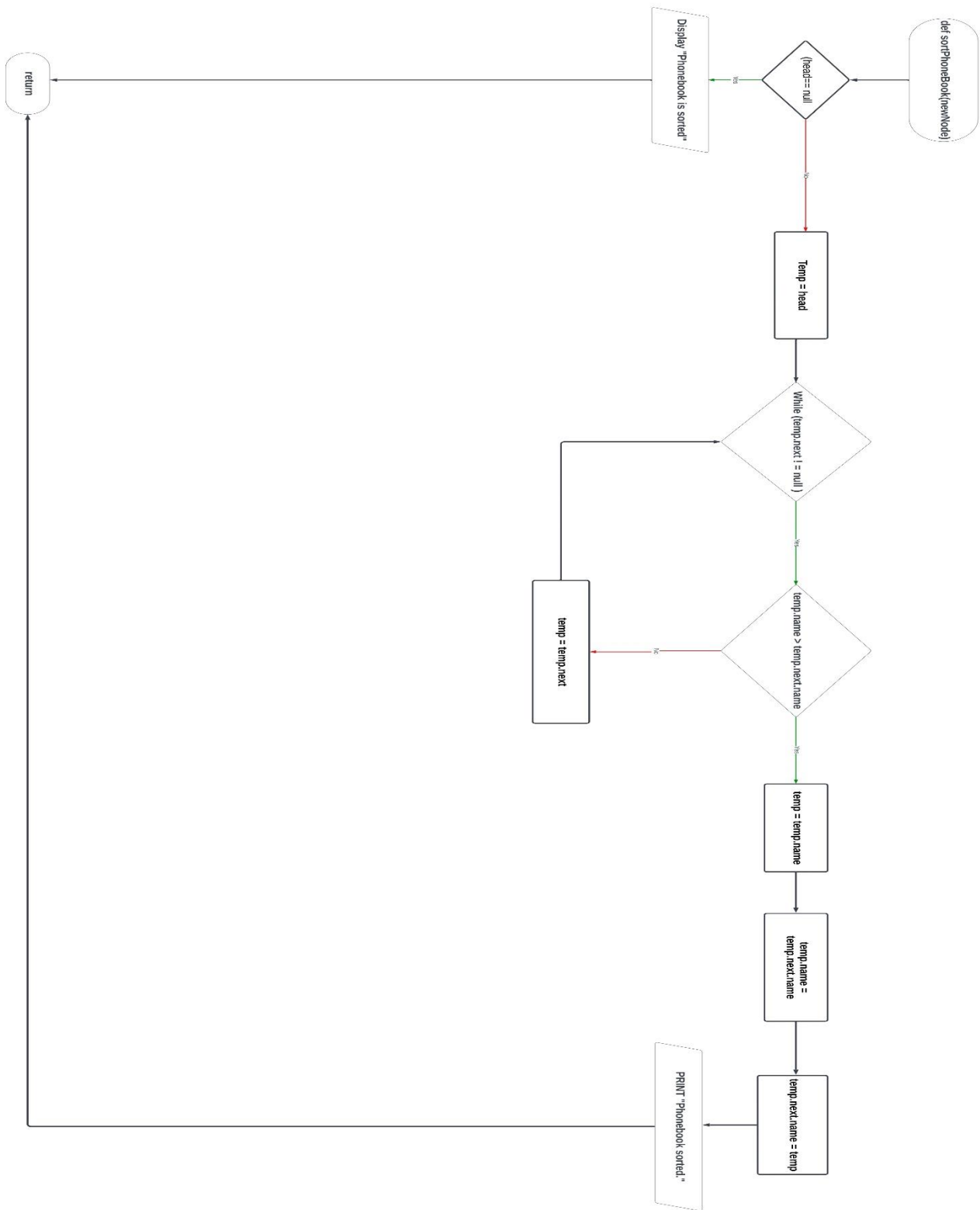
Display and Search Function:



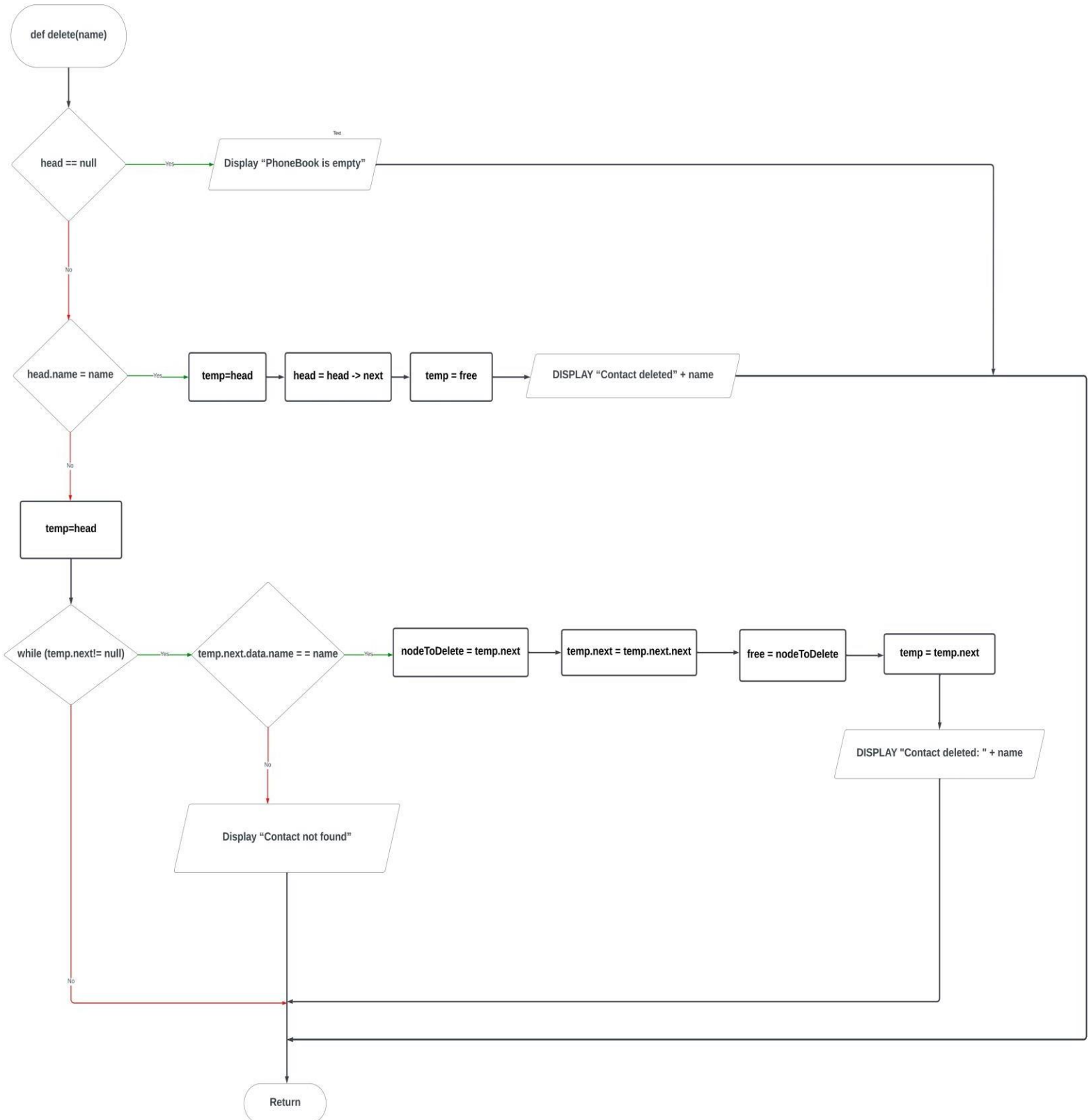
Update and Insert function:



Sort function:



Delete function:



The flowchart below calls the functions above:

