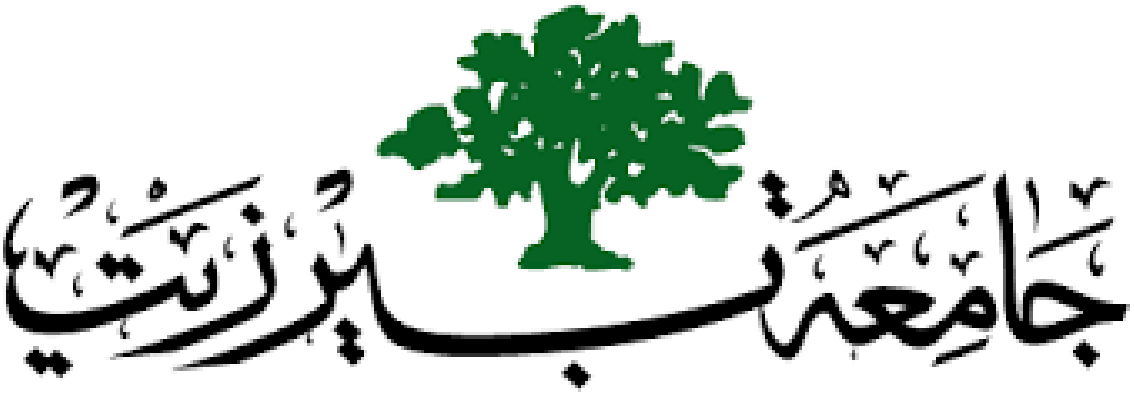


Faculty of Engineering & Technology Electrical & Computer Engineering Department

LINUX LABORATORY-ENCS3130

SHELL SCRIPTING PROJECT REPORT

DONE BY:

Rami Majadbeh 1190611 SEC1
Nasser awwad 1191484 SEC2

INSTRUCTORS:

Dr.Mohammad Jubran
Dr.Khader Mohammad

12.1.2021

Abstract

In this project, a simple Contact management system was implemented using shell scripting, as multiple functionalities were implemented like adding, listing, searching, editing, and deleting on it

Table of contents

Abstract **2**

main menu **3**

Filename **4**

Tasks description **6**

adding a contact 7

Listing contacts to user 12

Searching for a contacts 14

Editing a contact 16

Deleting a contact 24

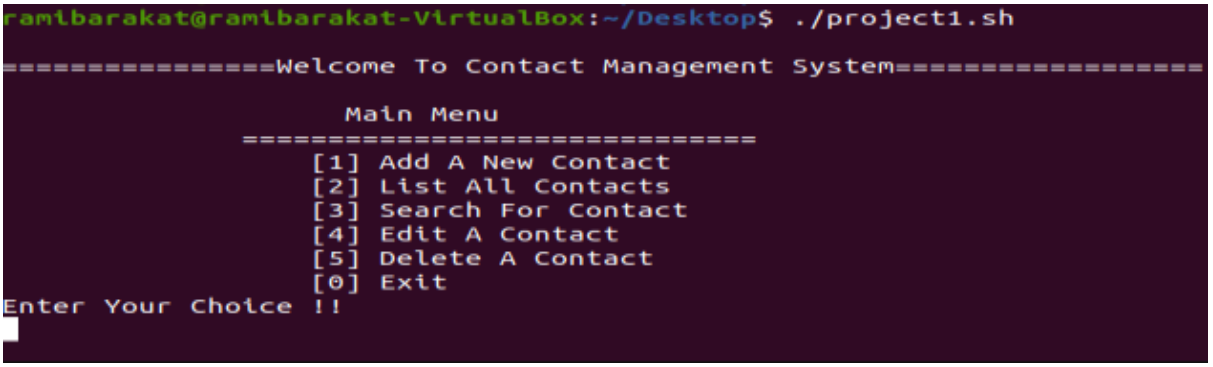
main menu

The main menu asks the user to enter what option they wish to use in the contacts system.

It provides:

1. Adding a new contact
2. Listing all of the contacts wanted by the user
3. Searching for contact entered by user
4. Editing a contact
5. Deleting any contact
6. Exiting the program

Output:



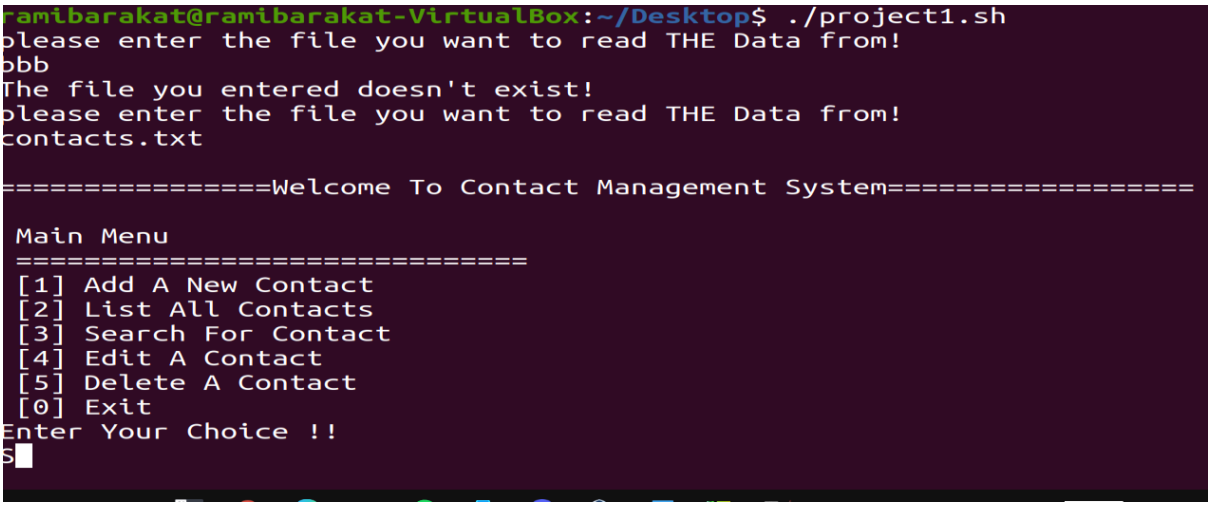
Filename

In order to execute the program, the data file must exist and also be valid, so we check this matter before the program starts executing.

Code:

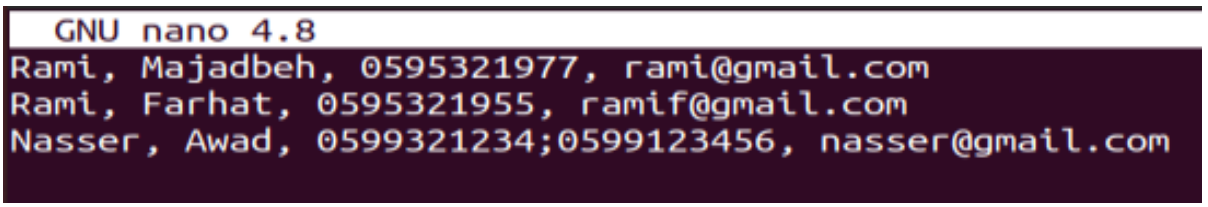
```
while [ 1 ]
do
printf "please enter the file you want to read THE Data from!\n"

read fileN

if [ ! -e $fileN ]
then
printf "The file you entered doesn't exist!\n" # to make sure the file exists
#to make sure the file is readable

elif [ ! -f $fileN ]
then
printf "THIS IS AN READABLE FILE\n"

else
break

fi

done

sed 's/,//g' $fileN > temp #remove ',' from all of the contacts, to make operations easier
mv temp $fileN
```

Simulation result:

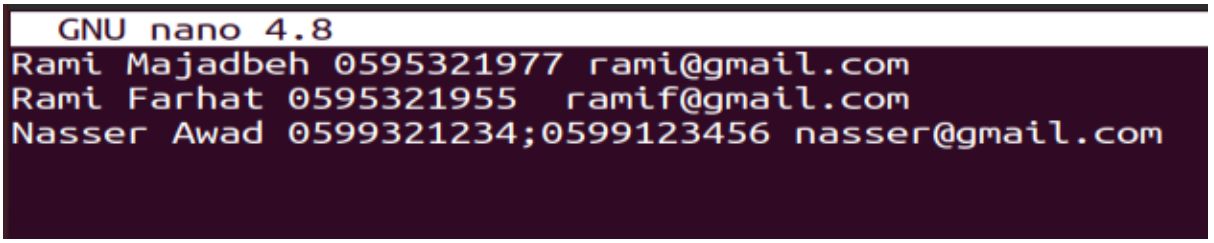


An error will be raised if the file doesn't exist or the file isn't readable, then will ask the user to enter a file again.

The sample data for the first three operations:



*please note that the command sed 's/,//g' removes all the ‘,’ in the text file, the idea is to make operations easier to implement, as shown below,



Tasks description

1. adding a contact

In this task we intend to add new users to the contacts file from the user with some restriction to make sure the data stays valid and appropriate

- *Entering the first name and phone number (must be entered):*

  Code:

```
if(($choice == 1))
then

printf "Please Enter The Firstname !!\n"

f=0

while [ $f -eq 0 ]
do

read firstname
f=$(echo $firstname | grep -q [0-9])
f=$?

if [ $f -eq 0 ]
then
printf "INVALID NAME !! Please Re-enter it !!\n"
fi

done

#=========================================
n=0
if [ $n -eq 0 ]
then

printf "Please Enter A Phone number !!\n"
read phonenumber

a=$(echo $phonenumber | grep -q [A-Za-z])
a=$?


while [ $a -eq 0 -o ${#phonenumber} -gt 10 -o ${#phonenumber} -lt 9 ] #reads the first phone number and checks wether its valid or not
do

printf "INVALID NUMBER !! Please Re-enter it !!\n"
```

```
read phonenumber

a=$(echo $phonenumber | grep -q [A-Za-z])
a=$?

done

var1="$phonenumber"
n=$((n+1))

fi

while [ 5 ]
do


printf "WOULD LIKE TO ENTER ANOTHER PHONE NUMBER? (YES or NO)\n" # reads the other phone numbers if wanted by user and enters them
read v


if [ $v = "no" ]
then

break

elif [ $v = "yes" ]
then


printf "ENTER PHONE NUMBER !!\n"
read phonenumber

a=$(echo $phonenumber | grep -q [A-Za-z])
a=$?


while [ $a -eq 0 -o ${#phonenumber} -gt 10 -o ${#phonenumber} -lt 9 ]
do

printf "INVALID NUMBER !! Please Re-enter it !!\n"

read phonenumber

a=$(echo $phonenumber | grep -q [A-Za-z])
a=$?

done

var1+=";${phonenumber}"
```

```
else
printf "what you entered is inavlid\n"

fi
done
```

Idea:

The idea of the first name is for the name to not contain any numeric values as it only accepts alphabet characters.
For the phone number, the phone numbers has 3 restrictions in order to be true, with the first being that the number shouldnt have any alphabet characters, it also shouldnt be longer than 10 digits nor less than 9 characters, the command ($?) was used heavily in this task.

- *Adding Email and Lastname (Optional)*

Code:

```
printf "WOULD YOU LIKE TO ENTER AN E-mail ?? (YES or NO)\n"

read le #e-mail is optional so user is asked if you wants to enter one
if [ $le = "yes" ]
then
x=1
while [ $x == 1 ]
do
echo ENTER AN EMAIL !!
read email
x=$(echo $email | grep "^.\+@.\+\.com$") #here the e-mail is entered and checked wether its valid or not and must be reentered until it is right
x=$?
if [ $x == 1 ]
then
printf "the E-mail you entered was wrong. Please re-enter it\n"
fi
done
else
email="NULL"
fi
#=========================================================
printf "WOULD YOU LIKE TO ENTER THE LAST NAME?? (YES OR NO)\n"
read ll

if [ $ll = "yes" ] #lastname is optional
then
printf "PLEASE ENTER THE LAST NAME\n"
l=0
while [ $l -eq 0 ] #if it's not valid we re-enter it
do
read lastname
```

```
l=$(echo $lastname | grep -q [0-9])
l=$?

if [ $l -eq 0 ]

then
printf "the last name you entered isn't VALID, please re-enter it\n"
fi
done
Else

lastname="NULL"
fi
echo "$firstname $lastname $var1 $email" >> $fileN
```

Idea:

When adding the email we make sure the Email is valid by making sure it contains “@” and “.com” with characters before the “@” and characters after it to make sure of the data integrity.

For the last name, it is so similar to the first name in terms of restrictions and the implementation.

*please note that these two options are optional.

Test cases:

1) Basic test

```
================Welcome To Contact Management System==================

 Main Menu
 ==============================
 [1] Add A New Contact
 [2] List All Contacts
 [3] Search For Contact
 [4] Edit A Contact
 [5] Delete A Contact
 [0] Exit
Enter Your Choice !!
1
Please Enter The Firstname !!
2331
INVALID NAME !! Please Re-enter it !!
ra34
INVALID NAME !! Please Re-enter it !!
Ali
Please Enter A Phone number !!
rer43443
INVALID NUMBER !! Please Re-enter it !!
0599434
INVALID NUMBER !! Please Re-enter it !!
0599123455
WOULD LIKE TO ENTER ANOTHER PHONE NUMBER? (YES or NO)
no
WOULD YOU LIKE TO ENTER AN E-mail ?? (YES or NO)
no
WOULD YOU LIKE TO ENTER THE LAST NAME?? (YES OR NO)
no
Enter Your Choice !!
```

2) Unique cases test

```
================Welcome To Contact Management System==================

 Main Menu
 ==============================
 [1] Add A New Contact
 [2] List All Contacts
 [3] Search For Contact
 [4] Edit A Contact
 [5] Delete A Contact
 [0] Exit
Enter Your Choice !!
1
Please Enter The Firstname !!
Aziz
Please Enter A Phone number !!
0599666666
WOULD LIKE TO ENTER ANOTHER PHONE NUMBER? (YES or NO)
yes
ENTER PHONE NUMBER !!
rertr43
INVALID NUMBER !! Please Re-enter it !!
0599445555
WOULD LIKE TO ENTER ANOTHER PHONE NUMBER? (YES or NO)
yes
ENTER PHONE NUMBER !!
0577889999
WOULD LIKE TO ENTER ANOTHER PHONE NUMBER? (YES or NO)
no
WOULD YOU LIKE TO ENTER AN E-mail ?? (YES or NO)
yes
ENTER AN EMAIL !!
aziz
the E-mail you entered was wrong. Please re-enter it
ENTER AN EMAIL !!
gmail
the E-mail you entered was wrong. Please re-enter it
ENTER AN EMAIL !!
@gmail
the E-mail you entered was wrong. Please re-enter it
ENTER AN EMAIL !!
rami@
the E-mail you entered was wrong. Please re-enter it
ENTER AN EMAIL !!
rami@gmail
the E-mail you entered was wrong. Please re-enter it
ENTER AN EMAIL !!
rami@gmail.com
WOULD YOU LIKE TO ENTER THE LAST NAME?? (YES OR NO)
yes
PLEASE ENTER THE LAST NAME
qw333424
the last name you entered isn't VALID, please re-enter it
Qaroush
Enter Your Choice !!
^Cramibarakat@ramibarakat-VirtualBox:~/Desktop$ cat contacts.txt
Rami Majadbeh 0595321977 rami@gmail.com
Rami Farhat 0595321955  ramif@gmail.com
Nasser Awad 0599321234;0599123456 nasser@gmail.com
Aziz Qaroush 0599666666;0599445555;0577889999 rami@gmail.com
ramibarakat@ramibarakat-VirtualBox:~/Desktop$
```

2. Listing contacts to user

Code:

```
elif(($choice == 2))
then
cat contacts.txt > cr7.txt
echo "Based On The First Name Or The Last Name?"
read ans
if [ "$ans" = "first" ] #sorted based on firstname
then
sort -k 1 cr7.txt > b.txt
printf "contacts sorted based on Firstname\n"
elif [ "$ans" = "last" ] #sorted based on Lastname
then
sort -k 2 cr7.txt > b.txt
printf "contacts sorted based on lastname\n"
fi

var=
printf "would you like to show Firstname? YES OR NO\n"

read first
if [ $first = "yes" ] #firstname
then
var+="1 "
fi
printf "Would you to show the Lastname\n"
read second
if [ $second = "yes" ] #lastname
then
var+="2 "
fi
printf "Would you to show the Phone numbers\n"
read third
if [ $third = "yes" ] #phone number
then
var+="3 "
fi
printf "Would you to show the E-mail\n"
read fourth
if [ $fourth = "yes" ] #e-mails
then
var+="4"
fi
printf "contacts is shown below\n"
var=$(echo $var | tr ' ' ',')

if [ -z $var ] #if no fields are picked
then
echo
```

```
printf "No Picked Fields\n"

else
cut -d' ' -f$(echo $var | tr ' ' ',') b.txt #print it to user
fi
```

Idea:

In this task, sorting the contacts then listing the wanted fields was done by first sorting the file based on the first name or last name (determined by user) and the asking the user which fields they want to contain one by one, string concatenation was used as well as the cut to cut the wanted fields command and tr command to help implement the cut command.

Test cases:

1) Basic test

```
 Main Menu
 ==============================
 [1] Add A New Contact
 [2] List All Contacts
 [3] Search For Contact
 [4] Edit A Contact
 [5] Delete A Contact
 [0] Exit
Enter Your Choice !!
2
Based On The First Name Or The Last Name?
first
contacts sorted based on Firstname
would you like to show Firstname? YES OR NO
yes
Would you to show the Lastname
yes
Would you to show the Phone numbers
yes
Would you to show the E-mail
yes
contacts is shown below
Nasser Awad 0599321234;0599123456 nasser@gmail.com
Rami Farhat 0595321955 ramif@gmail.com
Rami Majadbeh 0595321977 rami@gmail.com
Enter Your Choice !!
```

2) test with some variations

```
Enter Your Choice !!
2
Based On The First Name Or The Last Name?
last
contacts sorted based on lastname
would you like to show Firstname? YES OR NO
yes
Would you to show the Lastname
no
Would you to show the Phone numbers
yes
Would you to show the E-mail
no
contacts is shown below
Nasser 0599321234;0599123456
Rami 0595321955
Rami 0595321977
```

3. Searching for a contacts

Code:

```
elif (($choice == 3))
then
echo "" > temp5.txt #create a new file
num=
file=
read search #type the fields you want to search for
num=$(echo $search | tr ' ' '\n' | wc -l)
i=1
while [ $num -ge $i ] #if multiple fields
do
split=$(echo $search | cut -d' ' -f$i) # we cut them and search for each for them in a loop, but when searching for each one we create a contact file based on the search result.
if [ $i -eq 1 ] #to create a new file and put the found items into
then
grep "$split" contacts.txt > temp5.txt
[ -s temp5.txt ]
if [ $? == 1 ]
then
echo Nothing Is Found !!
fi

elif [ $i -gt 1 ] #same as above but for multiple fields
then

file=$(cat temp5.txt | grep "$split")
echo $file > temp5.txt
fi

i=$((i+1))
done
if [ $num -eq 1 ] #print the result
then
cat temp5.txt
else
echo $file

fi
```

Idea:

In the searching sections, first the user enters the contacts they want to find, it can be composed of multiple fields, then the program takes the entered value and finds how many

fields the user has entered by the use of tr and wc -l commands, then a while loop is initiated that as long as there is fields, iterate through each of them, then we cant the wanted field by the use of $(echo $search | cut -d' ' -f$i), where $i is the field number, after that grep command is used, if nothing is found it raises an error, subsequently it puts the found contacts in a new file to minimize the searching to the wanted fields of the contacts then, the program continues to execute in the same order, so whenever a field is found it overwrites the file with the newest values until there is no more fields to iterate through, afterwards it prints the result to the terminal.

Test cases:

1) Multiple searching examples

```
 Main Menu
 ============================
 [1] Add A New Contact
 [2] List All Contacts
 [3] Search For Contact
 [4] Edit A Contact
 [5] Delete A Contact
 [0] Exit
Enter Your Choice !!
3
Rami
Rami Majadbeh 0595321977 rami@gmail.com
Rami Farhat 0595321955  ramif@gmail.com
Enter Your Choice !!
3
Rami Farhat
Rami Farhat 0595321955 ramif@gmail.com
Enter Your Choice !!
3
Rami 0595321977
Rami Majadbeh 0595321977 rami@gmail.com
Enter Your Choice !!
3
Rami Farhat 059
Rami Farhat 0595321955 ramif@gmail.com
Enter Your Choice !!
3
Nasser Awad @gmail
Nasser Awad 0599321234;0599123456 nasser@gmail.com
Enter Your Choice !!
```

2) When searching for contacts that dont exist

```
Enter Your Choice !!
3
ali
Nothing Is Found !!
Enter Your Choice !!
```

4. Editing a contact

Code:

```
elif(($choice == 4))
then

flag=1
FINAL=
echo "What Is The First Name Of The Contact?"    # ASK THE USER ABOUT THE FIRST NAME OF THE CONTACT

read name1

NAME=$(cat $fileN | grep "^\b$name1\b")
number=$(echo "$NAME" | wc -l)    # TO DETERMINE THE NUMBER OF OCCURANCES

if [ "$number" == 1 ]
then
words=$(echo "$NAME" | wc -w)
if [ "$words" == 0 ]
then
flag=0
echo "No Contact Exists With This Name"

else
grep -v "$name1" $fileN > temp.txt
cat temp.txt > $fileN
FINAL=$(echo $NAME)

fi

else
echo There are Many Contacts With This Name    # IF THERE ARE MANY CONTACTS WITH THIS FIRST NAME
echo Enter The Last Name Please !!

read last

LAST=$(echo "$NAME" | grep "\b$last\b")
number=$(echo "$LAST" | wc -l)


if [ "$number" == 1 ]
then

words=$(echo "$LAST" | wc -w)
if [ "$words" == 0 ]
then
flag=0
echo "No Contact Exists With This Full Name"
```

```
else
grep -v "$LAST" $fileN > temp.txt
cat temp.txt > $fileN
FINAL=$(echo $LAST)
fi

else
echo There are Many Contacts With This Full Name
echo Enter The Phone Number Please !!    # ENTER PHONE NUMBER

read phone
PHONE=$(echo "$LAST" | grep "\b$phone\b")

words=$(echo "$PHONE" | wc -w)
if [ "$words" == 0 ]
then
flag=0
echo "No Contact Exists With This Phone Number"
else

grep -v "$PHONE" $fileN > temp.txt
cat temp.txt > $fileN
FINAL=$(echo $PHONE)
fi

fi

fi

if [ "$flag" == 1 ]
then
# I PUT THEM IN VARIABLES TO EDIT THEN BELOW
temp=$(echo $FINAL | tr ' ' '\n')
firstname1=$(echo $temp | cut -d' ' -f1)
lastname1=$(echo $temp| cut -d' ' -f2)
PhoneNumber1=$(echo $temp| cut -d' ' -f3)
Email1=$(echo $temp | cut -d' ' -f4)

n=1
while [ "$n" -ne 0 ]
do

echo
echo Row Details:
echo $FINAL
echo

echo "What Do You Want To Change"
echo "[1] First Name"
echo "[2] Last Name"
echo "[3] Phone Number"
```

```
echo "[4] Email"
echo "[0] Quit"

n=
read n


case "$n"
in
# EDIT THE FIELDS
1)
echo Enter New First Name !!
read fn
firstname1=$(echo $fn)
FINAL=$(echo "$firstname1 $lastname1 $PhoneNumber1 $Email1");;

2)
echo Enter New Last Name !!
read fn
lastname1=$(echo $fn)
FINAL=$(echo "$firstname1 $lastname1 $PhoneNumber1 $Email1");;

3)
echo $PhoneNumber1 | tr ';' '\n' > temp.txt
check=$(cat temp.txt | wc -l )
echo Number Of Phone Numbers is $check

if [ $check == 1 ]
then

echo ENTER THE NEW NUMBER !!

else

echo WHICH NUMBER DO YOU WANT TO CHANGE ??
read num
line=$(sed -n "${num}p" temp.txt)
line1=$(grep -v "$line" temp.txt)
echo CHANGE IT TO:
fi



read phonenumber

a=$(echo $phonenumber | grep -q [A-Za-z])
a=$?

while [ $a -eq 0 -o ${#phonenumber} -gt 10 -o ${#phonenumber} -lt 9 ]
do

printf "INVALID NUMBER, please Re-enter it\n"
```

```
read phonenumber

a=$(echo $phonenumber | grep -q [A-Za-z])
a=$?

done

if [ $check == 1 ]
then
PhoneNumber1=$(echo "$phonenumber")
else
PhoneNumber1=$(echo "$phonenumber;$line1")

fi
FINAL=$(echo "$firstname1 $lastname1 $PhoneNumber1 $Email1");;

4)
echo Enter New Email !!
x=1
while [ $x -eq 1 ]
do

read email
x=$(echo $email | grep  "^.\+@.\+\.com$")   #here the e-mail is entered and checked wether its valid or not and must be reentered until it is right
x=$?

if [ $x -eq 1 ]
then
printf "the E-mail you entered was wrong. Please re-enter it\n"

else
x=0
Email1=$(echo $email)
fi

done

FINAL=$(echo "$firstname1 $lastname1 $PhoneNumber1 $Email1");;

0) echo Done of Editing
echo $FINAL
;;

*)echo Incorrect Index;;
esac

done

echo $FINAL >> $fileN
fi
```

Idea:

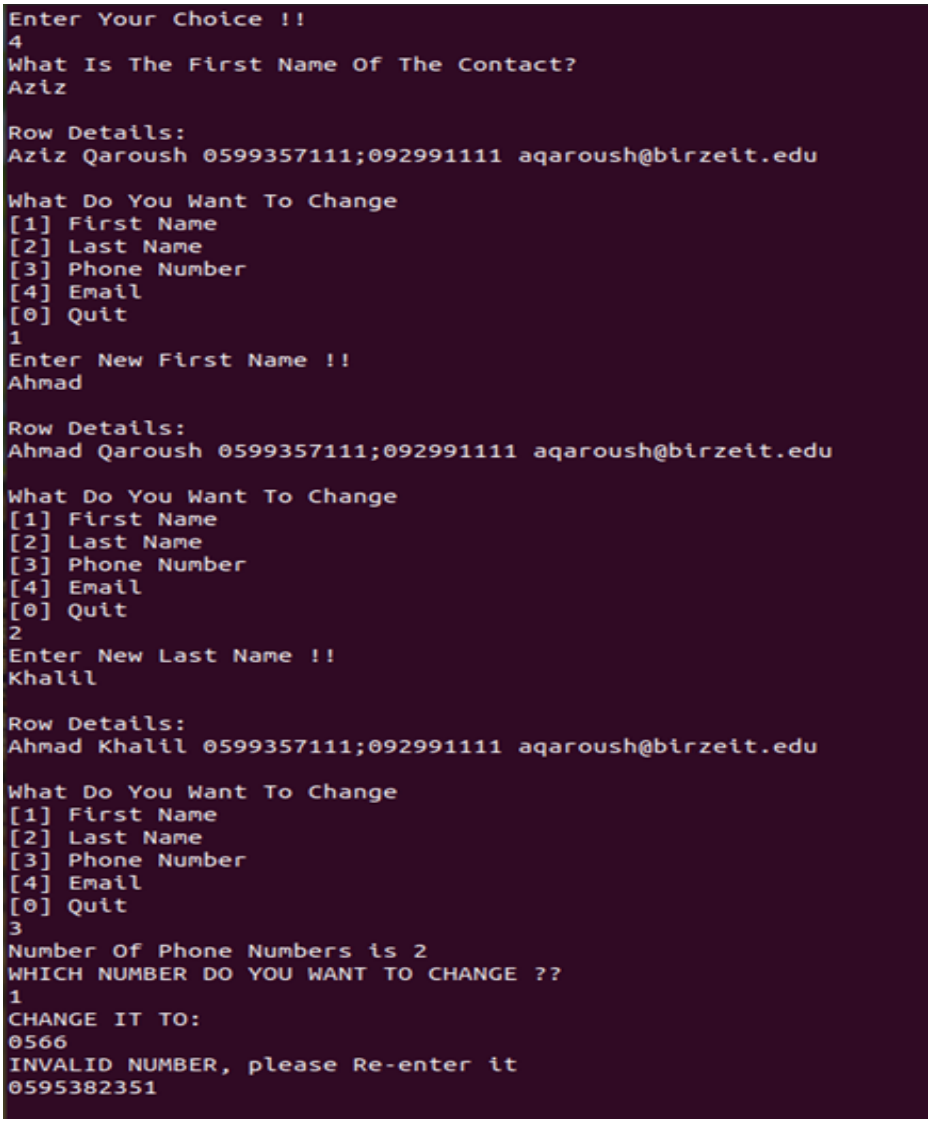
This part is divided into two parts: searching and editing

In part one, we searched for a unique row so first we searched for the first name and checked if it's unique. If not we asked the user to enter the last name. also if the last name is not unique we asked for the phone number which is always unique for the contacts.

In part two, we asked the user in which fields he want to edit and edit whatever he wants with some limitations like email having the @ symbol.

Test cases:

1) Unique Names with changing all the fields



```
Row Details:
Ahmad Khalil 0595382351;092991111 aqaroush@birzeit.edu

What Do You Want To Change
[1] First Name
[2] Last Name
[3] Phone Number
[4] Email
[0] Quit
3
Number Of Phone Numbers is 2
WHICH NUMBER DO YOU WANT TO CHANGE ??
2
CHANGE IT TO:
092992222

Row Details:
Ahmad Khalil 092992222;0595382351 aqaroush@birzeit.edu

What Do You Want To Change
[1] First Name
[2] Last Name
[3] Phone Number
[4] Email
[0] Quit
4
Enter New Email !!
Ahmadhotmail.com
the E-mail you entered was wrong. Please re-enter it
aKhalil@gmail.com

Row Details:
Ahmad Khalil 092992222;0595382351 aKhalil@gmail.com

What Do You Want To Change
[1] First Name
[2] Last Name
[3] Phone Number
[4] Email
[0] Quit
0
Done of Editing
Ahmad Khalil 092992222;0595382351 aKhalil@gmail.com
```

2) case of having two contacts with same names

```
1 Aziz, Qaroush, 0599357111;092991111, aqaroush@birzeit.edu
2 Aziz, Qaroush, 0595382351, azizqaroush@birzeit.edu
3 Ahmad, Khalil, 0569345673, khalil@gmail.com
```

```
Enter Your Choice !!
4
What Is The First Name Of The Contact?
Aziz
There are Many Contacts With This Name
Enter The Last Name Please !!
Qaroush
There are Many Contacts With This Full Name
Enter The Phone Number Please !!
0599357111

Row Details:
Aziz Qaroush 0599357111;092991111 aqaroush@birzeit.edu

What Do You Want To Change
[1] First Name
[2] Last Name
[3] Phone Number
[4] Email
[0] Quit
1
Enter New First Name !!
Ahmad

Row Details:
Ahmad Qaroush 0599357111;092991111 aqaroush@birzeit.edu

What Do You Want To Change
[1] First Name
[2] Last Name
[3] Phone Number
[4] Email
[0] Quit
0
Done of Editing
Ahmad Qaroush 0599357111;092991111 aqaroush@birzeit.edu
```

5. Deleting a contact

Code:

```
elif(($choice == 5)) # DELETE A CONTACT
then

flag=1
FINAL=
echo "What Is The First Name Of The Contact?"
# DETERMINE WHICH CONTACT
read name1

NAME=$(cat $fileN | grep "^\b$name1\b")
number=$(echo "$NAME" | wc -l)
if [ "$number" == 1 ]
then
words=$(echo "$NAME" | wc -w)

if [ "$words" == 0 ]
then
flag=0
echo "No Contact Exists With This Name"

else
FINAL=$(echo $NAME)
fi

else
echo There are Many Contacts With This Name
echo Enter The Last Name Please !!

read last

LAST=$(echo "$NAME" | grep "\b$last\b")
number=$(echo "$LAST" | wc -l)

if [ "$number" == 1 ]
then

words=$(echo "$LAST" | wc -w)
if [ "$words" == 0 ]
then
flag=0
echo "No Contact Exists With This Full Name"

else
```

```
FINAL=$(echo $LAST)
fi

else
echo There are Many Contacts With This Full Name
echo Enter The Phone Number Please !!

read phone
PHONE=$(echo "$LAST" | grep "\b$phone\b")

words=$(echo "$PHONE" | wc -w)
if [ "$words" == 0 ]
then
flag=0
echo "No Contact Exists With This Phone Number"
else

FINAL=$(echo $PHONE)

fi
fi
fi

if [ "$flag" == 1 ]
then
echo $FINAL
grep -v "$FINAL" $fileN > temp.txt
cat temp.txt > $fileN
echo THE CONTACT IS DELETED SUCCESSFULLY
fi

############################################################
elif(($choice == 6))
then
cat $fileN | cut -d' ' -f1 > temp5.txt

grep 'a' $fileN


fi

done
```

Idea:

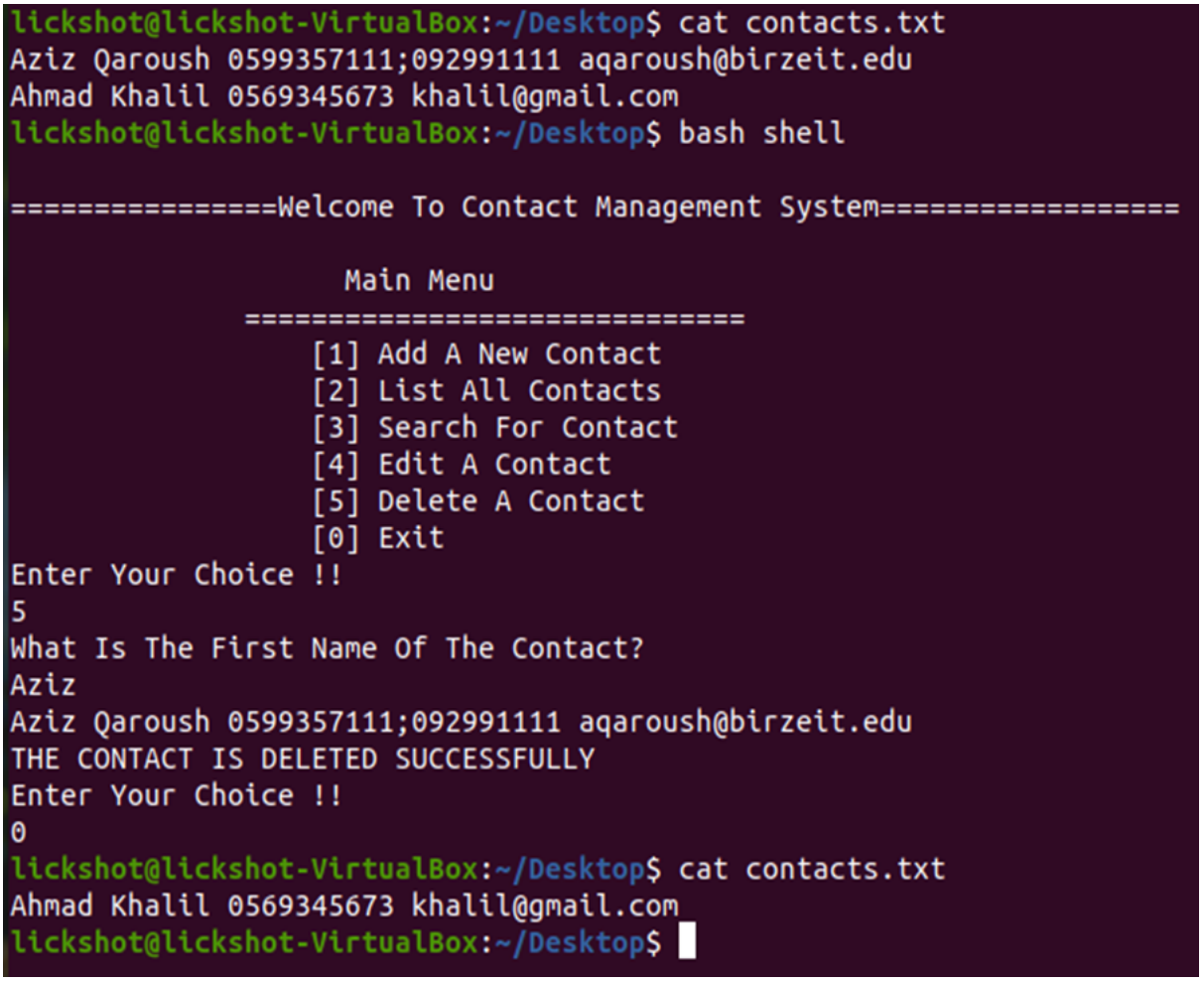
This part is divided into two parts: searching and Deleting

In part one, we searched for a unique row so first we searched for the first name and checked if it's unique. If not we asked the user to enter the last name. also if the last name is not unique we asked for the phone number which is always unique for the contacts

In part two, after finding the wanted row, it will be deleted from the contacts file.

Test cases:

1) Unique Names



2) identical Names

```
lickshot@lickshot-VirtualBox:~/Desktop$ cat contacts.txt
Aziz Qaroush 0599357111;092991111 aqaroush@birzeit.edu
Aziz Qaroush 0595382351 azizqaroush@birzeit.edu
Ahmad Khalil 0569345673 khalil@gmail.com
lickshot@lickshot-VirtualBox:~/Desktop$ bash shell

================Welcome To Contact Management System==================

                    Main Menu
               ==============================
                   [1] Add A New Contact
                   [2] List All Contacts
                   [3] Search For Contact
                   [4] Edit A Contact
                   [5] Delete A Contact
                   [0] Exit
Enter Your Choice !!
5
What Is The First Name Of The Contact?
Aziz
There are Many Contacts With This Name
Enter The Last Name Please !!
Qaroush
There are Many Contacts With This Full Name
Enter The Phone Number Please !!
0595382351
Aziz Qaroush 0595382351 azizqaroush@birzeit.edu
THE CONTACT IS DELETED SUCCESSFULLY
Enter Your Choice !!
0
lickshot@lickshot-VirtualBox:~/Desktop$ cat contacts.txt
Aziz Qaroush 0599357111;092991111 aqaroush@birzeit.edu
Ahmad Khalil 0569345673 khalil@gmail.com
lickshot@lickshot-VirtualBox:~/Desktop$
```