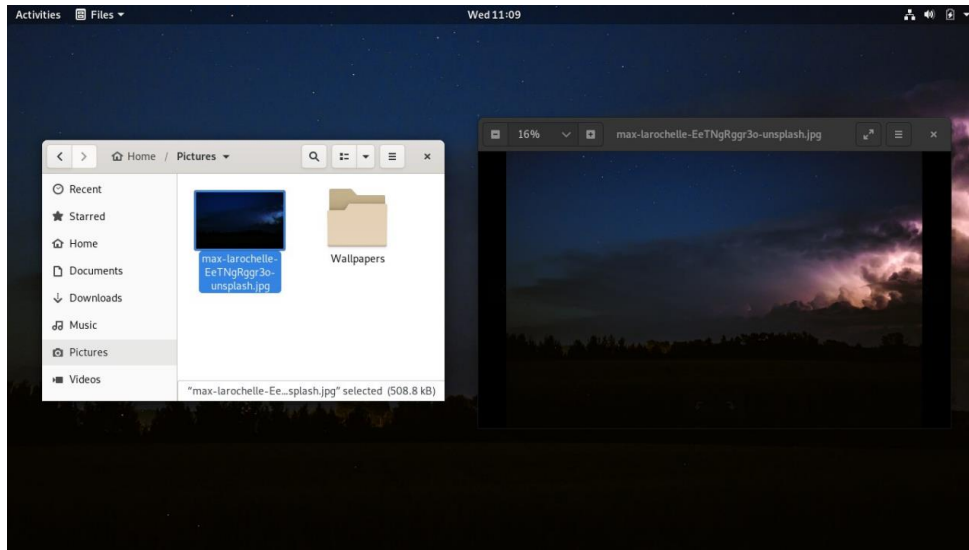


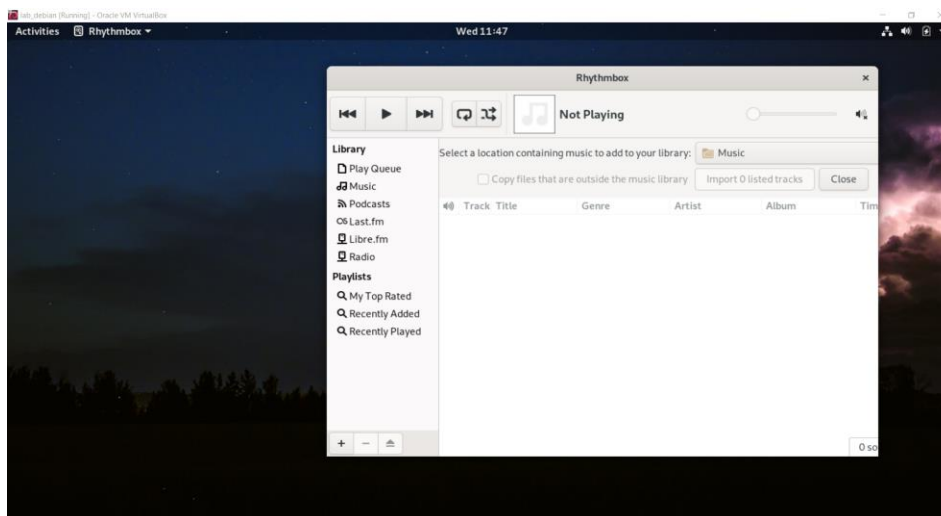
## LAB 3: Text console: shells, basic commands, scripts

### Task 1. Creating the Perfect Linux GNOME Desktop

#### 1. Screenshot of background change



#### Screenshot of a player

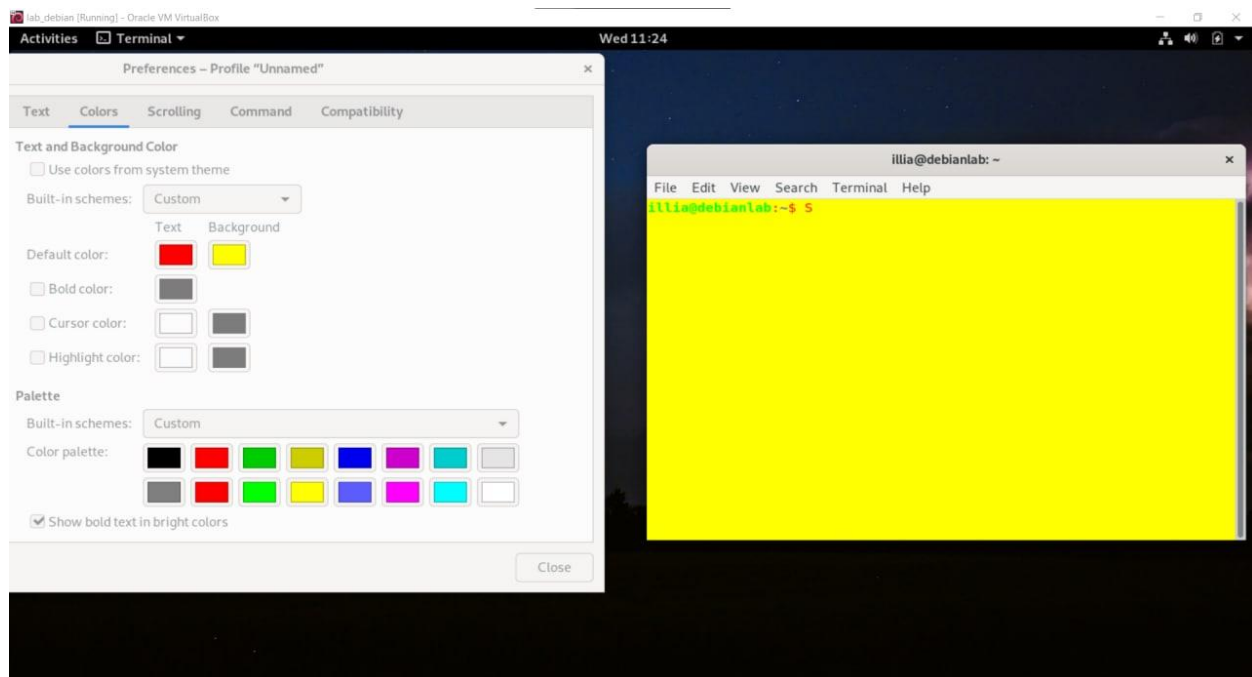


## Task 2. Using the Shell

### 1. third virtual console

```
illia@debianlab:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
illia@debianlab:~$ pwd
/home/illia
illia@debianlab:~$ history
1  cvt
2  cvt 1920 1080
3  xrandr --newmode "1920x1080" 173.00 1920 2048 2248 2576 1080 1083 1088 1120 -hsync +vsync
4  xrandr --addmode VGA1 "1920x1080"
5  xrandr --addmode
6  173.00 1920 2048 2248 2576 1080 1083 1088 1120 -hsync +vsync
7  find /sys/devices -name "edid"
8  xrandr --addmode "VGA1" "1920x1080"
9  xrandr --addmode "VGA1" "1920x1080"
10 sdf
11 sdf
12 xrandr --output card-0-Virtual-1 --mode "1920x1080"
13 id
14 ls
15 passwd
16 231116
17 clear
18 ls
19 pwd
20 history
illia@debianlab:~$ echo hello
hello
illia@debianlab:~$ _
```

### 2. Terminal coloring



### 3. Mount location folder

```
illia@debianlab:~$ type mount
mount is hashed (/usr/bin/mount)
```

### 4. Common commands

```
illia@debianlab: /home
File Edit View Search Terminal Help
illia@debianlab:~$ ls
Desktop Documents Downloads Music Pictures Public Templates Videos
illia@debianlab:~$ cd ..
illia@debianlab:/home$ pwd
/home
illia@debianlab:/home$ history
1  cvt
2  cvt 1920 1080
3  xrandr --newmode "1920x1080" 173.00 1920 2048 2248 2576 1080 1083 1088 1120 -hsync +vsync
4  xrandr --addmode VGA1 "1920x1080"
5  xrandr --addmode
6  173.00 1920 2048 2248 2576 1080 1083 1088 1120 -hsync +vsync
7  find /sys/devices -name "edid"
8  xrandr --addmode "VGA1" "1920x1080"
9  xrandr --addmode "VGA1" "1920x1080"
10 sdf
11 sdf
12 xrandr --output card-0-Virtual-1 --mode "1920x1080"
13 id
14 ls
15 passwd
```

### Recall

```
illia@debianlab:~$ ls -t $HOME
Pictures Downloads Documents Music Public Templates Videos Desktop
illia@debianlab:~$ date +%D
03/24/21
```

### 5. Tab usage

```
illia@debianlab:~$ basename /usr/share/doc
doc
```

## 6. Cat command

```
illia@debianlab: ~  
File Edit View Search Terminal Help  
# Network services, Internet style  
#  
# Note that it is presently the policy of IANA to assign a single well-known  
# port number for both TCP and UDP; hence, officially ports have two entries  
# even if the protocol doesn't support UDP operations.  
#  
# Updated from https://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xhtml .  
#  
# New ports will be added on request if they have been officially assigned  
# by IANA and used in the real-world or are needed by a debian package.  
# If you need a huge list of used numbers please install the nmap package.  
  
tcpmux      1/tcp          # TCP port service multiplexer  
echo        7/tcp  
echo        7/udp  
discard     9/tcp          sink null  
discard     9/udp          sink null  
systat      11/tcp         users  
daytime     13/tcp  
daytime     13/udp  
netstat     15/tcp  
qotd        17/tcp          quote  
msp         18/tcp          # message send protocol  
msp         18/udp  
chargen     19/tcp          ttytst source
```

## 7. Echo

```
illia@debianlab:~$ echo "Today is $(date +%A,%B %d,%Y)"  
Today is Wednesday, March 24, 2021
```

## 8. Echo with variables

```
illia@debianlab:~$ echo $HOSTNAME  
debianlab  
illia@debianlab:~$ echo $USERNAME  
illia  
illia@debianlab:~$ echo $SHELL  
/bin/bash  
illia@debianlab:~$ echo $HOME  
/home/illia
```

## 9. Alias

```
illia@debianlab: ~  
File Edit View Search Terminal Help  
illia@debianlab:~$ source $HOME/.bashrc  
illia@debianlab:~$ m  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
bin:x:2:2:bin:/bin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin  
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/var/run/ircd:/usr/sbin/nologin  
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
_apt:x:100:65534:./nonexistent:/usr/sbin/nologin  
systemd-timesync:x:101:102:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin  
systemd-network:x:102:103:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin  
systemd-resolve:x:103:104:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin  
messagebus:x:104:110:./nonexistent:/usr/sbin/nologin  
tss:x:105:111:TPM2 software stack,,,:/var/lib/tpm:/bin/false  
dnsmasq:x:106:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin  
avahi-autoipd:x:107:114:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin  
usbmux:x:108:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin  
rtkit:x:109:115:RealtimeKit,,,:/proc:/usr/sbin/nologin  
pulse:x:110:119:PulseAudio daemon,,,:/var/run/pulse:/usr/sbin/nologin  
speech-dispatcher:x:111:29:Speech Dispatcher,,,:/var/run/speech-dispatcher:/bin/false  
avahi:x:112:121:Avahi mDNS daemon,,,:/var/run/avahi-daemon:/usr/sbin/nologin  
saned:x:113:122:./var/lib/saned:/usr/sbin/nologin  
colord:x:114:123:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin  
geoclue:x:115:124:./var/lib/geoclue:/usr/sbin/nologin  
hplip:x:116:7:HPLIP system user,,,:/var/run/hplip:/bin/false  
Debian-gdm:x:117:125:Gnome Display Manager:/var/lib/gdm3:/bin/false
```

## 10. Man page for the mount call

```
illia@debianlab: ~  
File Edit View Search Terminal Help  
illia@debianlab:~$ man -k mount  
free (1) - Display amount of free and used memory in the system  
fstrim (8) - discard unused blocks on a mounted filesystem  
fusermount (1) - unmount FUSE filesystems  
gnome-disk-image-mounter (1) - Attach and mount disk images  
grub-mount (1) - export GRUB filesystem with FUSE  
gvfs-mount (1) - (unknown subject)  
mklost+found (8) - create a lost+found directory on a mounted Linux second extended file system  
mount (8) - mount a filesystem  
mount.exfat (8) - mount an exFAT file system  
mount.exfat-fuse (8) - mount an exFAT file system  
mount.fuse (8) - format and options for the fuse file systems  
mount.lowntfs-3g (8) - Third Generation Read/Write NTFS Driver  
mount.ntfs (8) - Third Generation Read/Write NTFS Driver  
mount.ntfs-3g (8) - Third Generation Read/Write NTFS Driver  
mount namespaces (7) - overview of Linux mount namespaces  
mountpoint (1) - see if a directory or file is a mountpoint  
ntfs-3g.probe (8) - Probe an NTFS volume mountability  
sleep (1) - delay for a specified amount of time  
switch_root (8) - switch to another filesystem as the root of the mount tree  
systemd-gpt-auto-generator (8) - Generator for automatically discovering and mounting root, /home and /srv partitions, as well as discovering and ...  
systemd-mount (1) - Establish and destroy transient mount or auto-mount points  
systemd-remount-fs.service (8) - Remount root and kernel file systems  
systemd-umount (1) - Establish and destroy transient mount or auto-mount points  
systemd.automount (5) - Automount unit configuration  
systemd.mount (5) - Mount unit configuration  
umount (8) - unmount file systems  
umount.udisks2 (8) - unmount file systems that have been mounted by UDisks2  
illia@debianlab:~$ man -k mount |grep ^mount  
mount (8) - mount a filesystem  
mount.exfat (8) - mount an exFAT file system  
mount.exfat-fuse (8) - mount an exFAT file system  
mount.fuse (8) - format and options for the fuse file systems  
mount.lowntfs-3g (8) - Third Generation Read/Write NTFS Driver  
mount.ntfs (8) - Third Generation Read/Write NTFS Driver  
mount.ntfs-3g (8) - Third Generation Read/Write NTFS Driver  
mount namespaces (7) - overview of linux mount namespaces
```

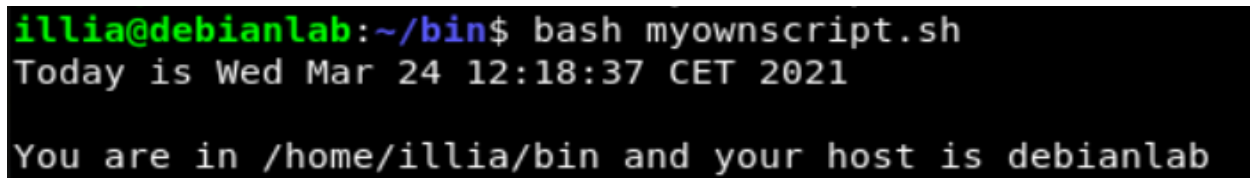
## TASK 3. SCRIPTS

### 1. ECHO:



```
illia@debianlab: ~/bin
File Edit View Search Terminal Help
GNU nano 3.2 myownscript.sh
#!/bin/bash
echo "Today is $(date +%a %b %d %H:%M:%S %Z %Y)"
echo ""
echo "You are in $(pwd) and your host is $(hostname)"
[ Read 5 lines ]
^G Get Help  ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify    ^C Cur Pos    M-U Undo
^X Exit       ^R Read File  ^\ Replace    ^U Uncut Text ^T To Spell   ^_ Go To Line  M-E Redo
```

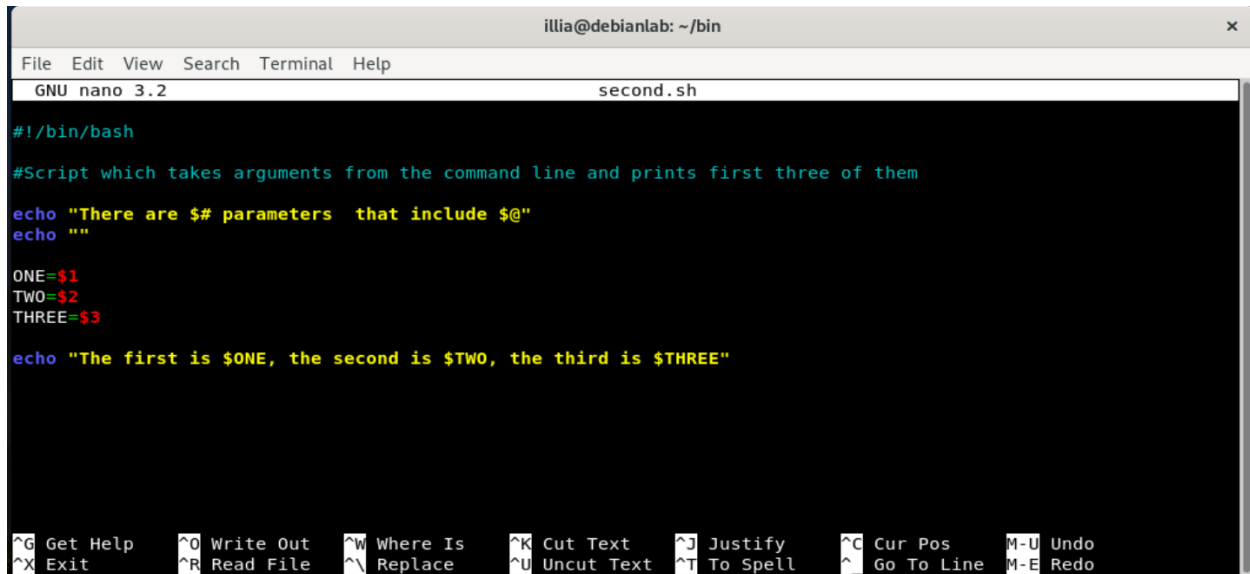
Output:



```
illia@debianlab:~/bin$ bash myownscript.sh
Today is Wed Mar 24 12:18:37 CET 2021

You are in /home/illia/bin and your host is debianlab
```

## 2. Script:



The screenshot shows a terminal window with the title bar "illia@debianlab: ~/bin". The window contains the GNU nano 3.2 text editor editing a file named "second.sh". The script content is as follows:

```
#!/bin/bash
#Script which takes arguments from the command line and prints first three of them

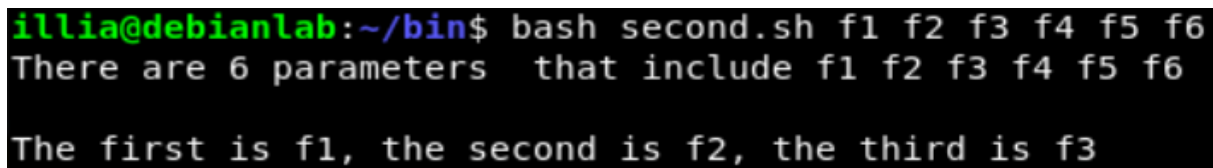
echo "There are $# parameters that include $@"
echo ""

ONE=$1
TWO=$2
THREE=$3

echo "The first is $ONE, the second is $TWO, the third is $THREE"
```

The bottom of the window displays a row of keyboard shortcuts for nano editor functions: ^G Get Help, ^O Write Out, ^W Where Is, ^K Cut Text, ^J Justify, ^C Cur Pos, M-U Undo, ^X Exit, ^R Read File, ^\ Replace, ^U Uncut Text, ^T To Spell, ^\_ Go To Line, M-E Redo.

Code:



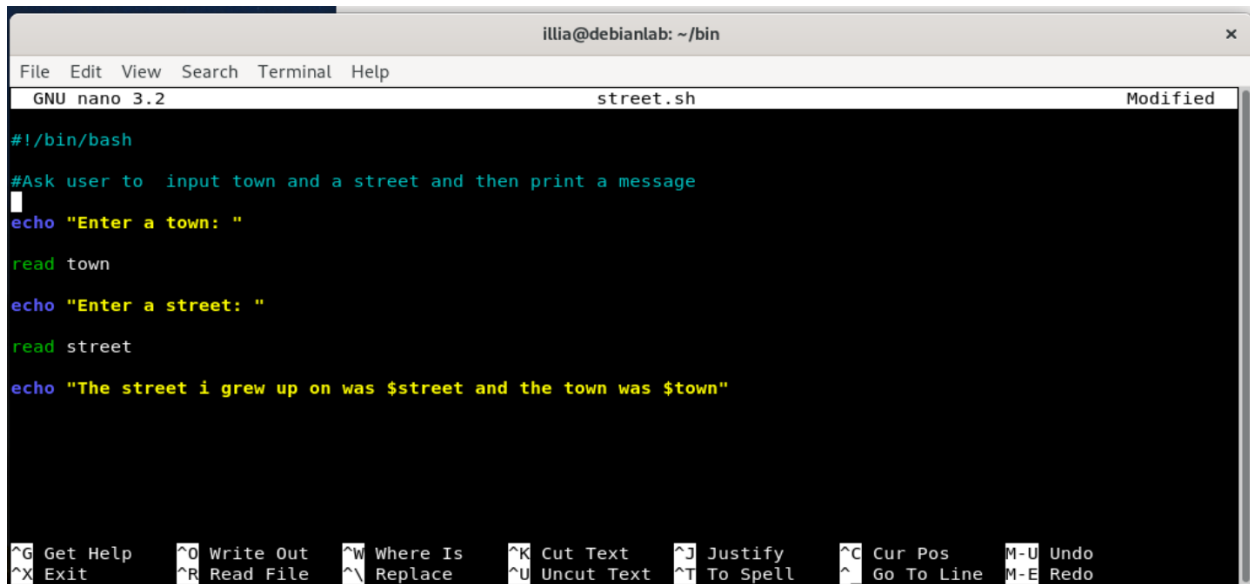
The screenshot shows a terminal window with the prompt "illia@debianlab:~/bin\$". The command "bash second.sh f1 f2 f3 f4 f5 f6" has been executed, resulting in the following output:

```
There are 6 parameters that include f1 f2 f3 f4 f5 f6

The first is f1, the second is f2, the third is f3
```



### 3. Script:

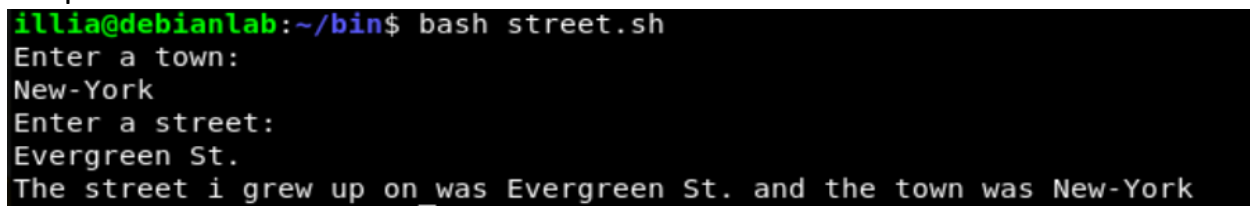


The screenshot shows a terminal window with the nano text editor open. The window title is 'illia@debianlab: ~/bin'. The menu bar includes 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The status bar at the top indicates 'GNU nano 3.2' and 'street.sh Modified'. The script content is as follows:

```
#!/bin/bash
#Ask user to input town and a street and then print a message
echo "Enter a town: "
read town
echo "Enter a street: "
read street
echo "The street i grew up on was $street and the town was $town"
```

The bottom status bar displays various keyboard shortcuts: ^G Get Help, ^O Write Out, ^W Where Is, ^K Cut Text, ^J Justify, ^C Cur Pos, M-U Undo, ^X Exit, ^R Read File, ^\ Replace, ^U Uncut Text, ^T To Spell, ^\_ Go To Line, and M-E Redo.

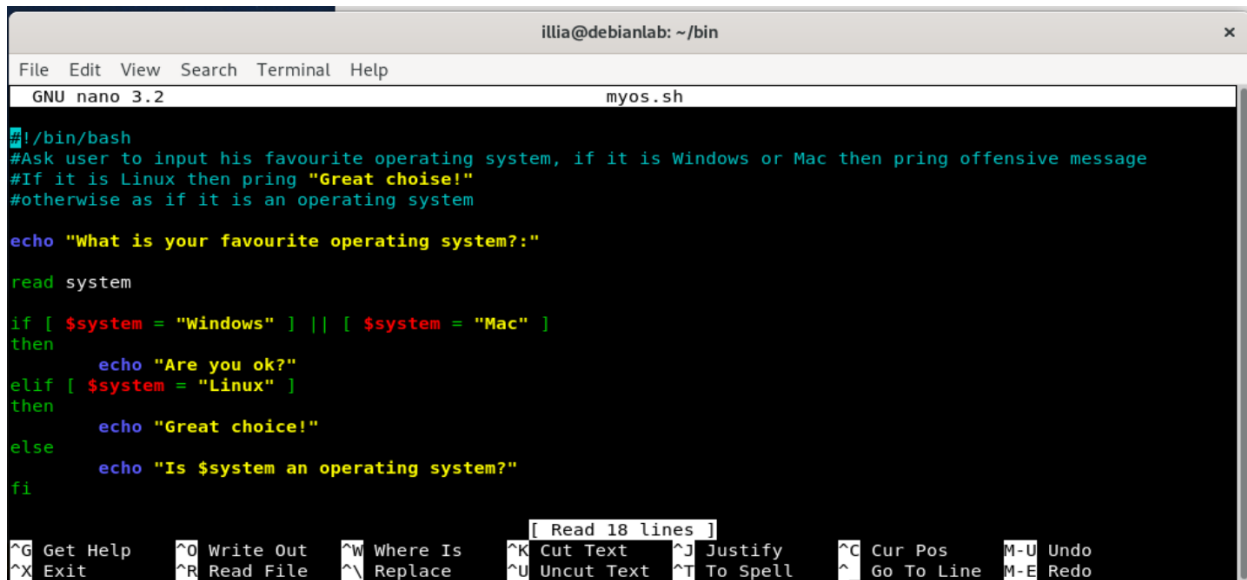
Output:



The screenshot shows the terminal output of the script. The prompt is 'illia@debianlab:~/bin\$'. The user enters 'bash street.sh'. The script prompts for a town and a street, and then prints the result.

```
illia@debianlab:~/bin$ bash street.sh
Enter a town:
New-York
Enter a street:
Evergreen St.
The street i grew up on was Evergreen St. and the town was New-York
```

#### 4. Script:



The screenshot shows a terminal window titled 'illia@debianlab: ~/bin' with a nano 3.2 editor open to a file named 'myos.sh'. The script content is as follows:

```
#!/bin/bash
#Ask user to input his favourite operating system, if it is Windows or Mac then pring offensive message
#If it is Linux then pring "Great choise!"
#otherwise as if it is an operating system

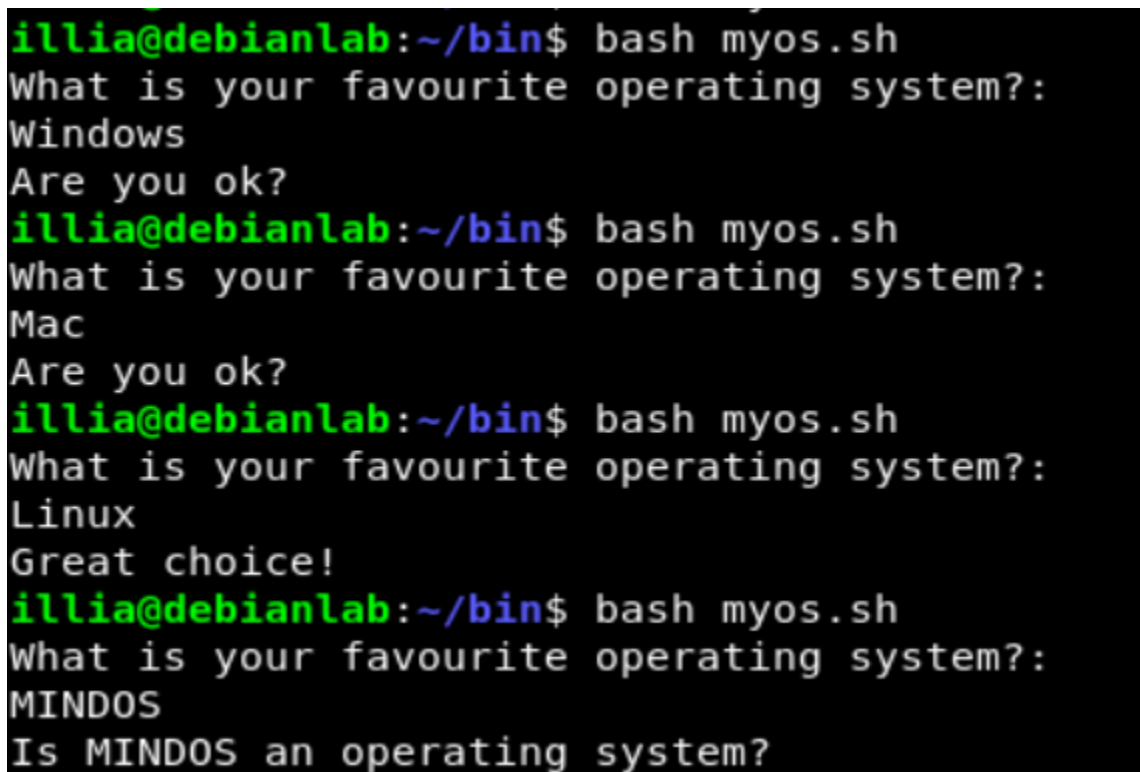
echo "What is your favourite operating system?:"

read system

if [ $system = "Windows" ] || [ $system = "Mac" ]
then
    echo "Are you ok?"
elif [ $system = "Linux" ]
then
    echo "Great choice!"
else
    echo "Is $system an operating system?"
fi
```

The bottom status bar of the nano editor shows various keyboard shortcuts: ^G Get Help, ^O Write Out, ^W Where Is, ^K Cut Text, ^J Justify, ^C Cur Pos, ^M-U Undo, ^X Exit, ^R Read File, ^\ Replace, ^U Uncut Text, ^T To Spell, ^\_ Go To Line, and ^M-E Redo.

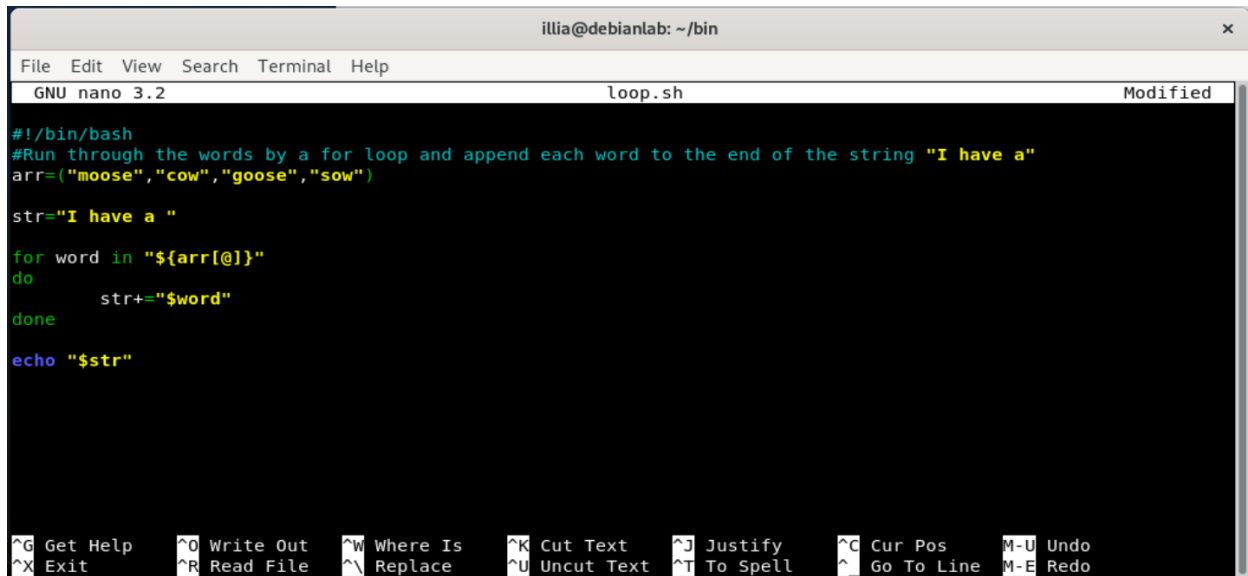
Output:



The screenshot displays the output of running the 'myos.sh' script four times in a terminal. The prompt is 'illia@debianlab:~/bin\$'.

```
illia@debianlab:~/bin$ bash myos.sh
What is your favourite operating system?:
Windows
Are you ok?
illia@debianlab:~/bin$ bash myos.sh
What is your favourite operating system?:
Mac
Are you ok?
illia@debianlab:~/bin$ bash myos.sh
What is your favourite operating system?:
Linux
Great choice!
illia@debianlab:~/bin$ bash myos.sh
What is your favourite operating system?:
MINDOS
Is MINDOS an operating system?
```

## 5. Script:



The screenshot shows a terminal window with the nano text editor open. The window title is 'illia@debianlab: ~/bin'. The editor's menu bar includes 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The status bar at the bottom shows 'GNU nano 3.2', the filename 'loop.sh', and 'Modified'. The script content is as follows:

```
#!/bin/bash
#Run through the words by a for loop and append each word to the end of the string "I have a"
arr=("moose","cow","goose","sow")

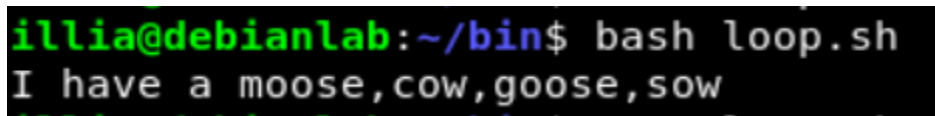
str="I have a "

for word in "${arr[@]}"
do
    str+="$word"
done

echo "$str"
```

The bottom status bar contains the following shortcuts: ^G Get Help, ^O Write Out, ^W Where Is, ^K Cut Text, ^J Justify, ^C Cur Pos, M-U Undo, ^X Exit, ^R Read File, ^\ Replace, ^U Uncut Text, ^T To Spell, ^\_ Go To Line, M-E Redo.

Output:



The screenshot shows a terminal window with the command 'bash loop.sh' executed. The output is 'I have a moose,cow,goose,sow'.