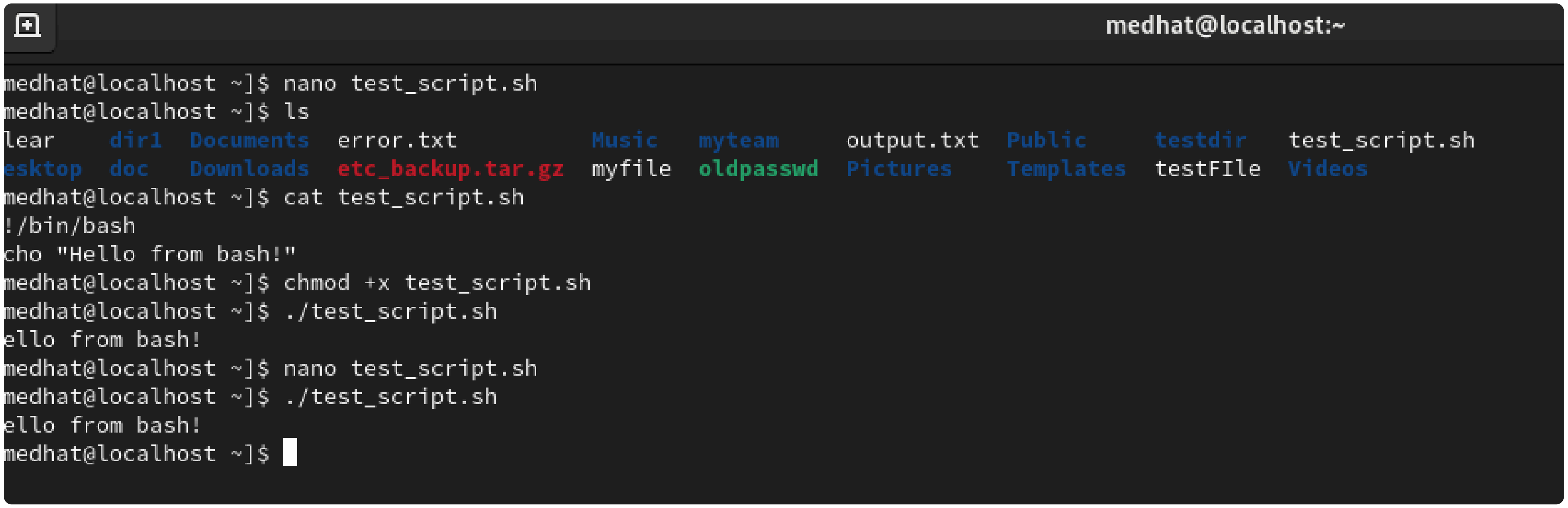
Medhat Mohamed Sobhy

---

1. **.What does #!/bin/bash do? Test removing it from a script and observe the results.**
   - #!/bin/bash --> it tells the system which interpreter to use to execute the script .. it's called shebang/hashbang

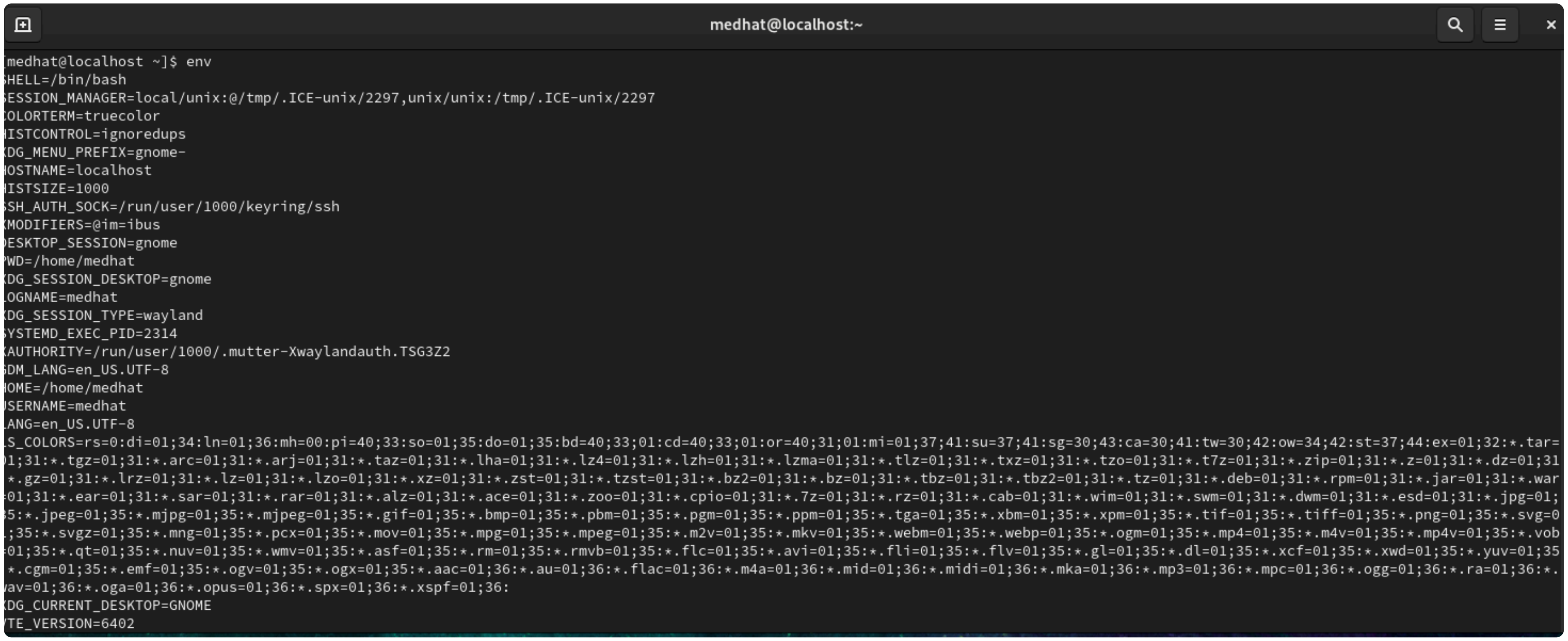
     

     ```
     medhat@localhost ~]$ nano test_script.sh
     medhat@localhost ~]$ ls
     lear    dir1  Documents  error.txt          Music   myteam     output.txt  Public     testdir   test_script.sh
     esktop  doc   Downloads  etc_backup.tar.gz  myfile  oldpasswd  Pictures    Templates  testFIle  Videos
     medhat@localhost ~]$ cat test_script.sh
     !/bin/bash
     cho "Hello from bash!"
     medhat@localhost ~]$ chmod +x test_script.sh
     medhat@localhost ~]$ ./test_script.sh
     ello from bash!
     medhat@localhost ~]$ nano test_script.sh
     medhat@localhost ~]$ ./test_script.sh
     ello from bash!
     medhat@localhost ~]$ 
     ```

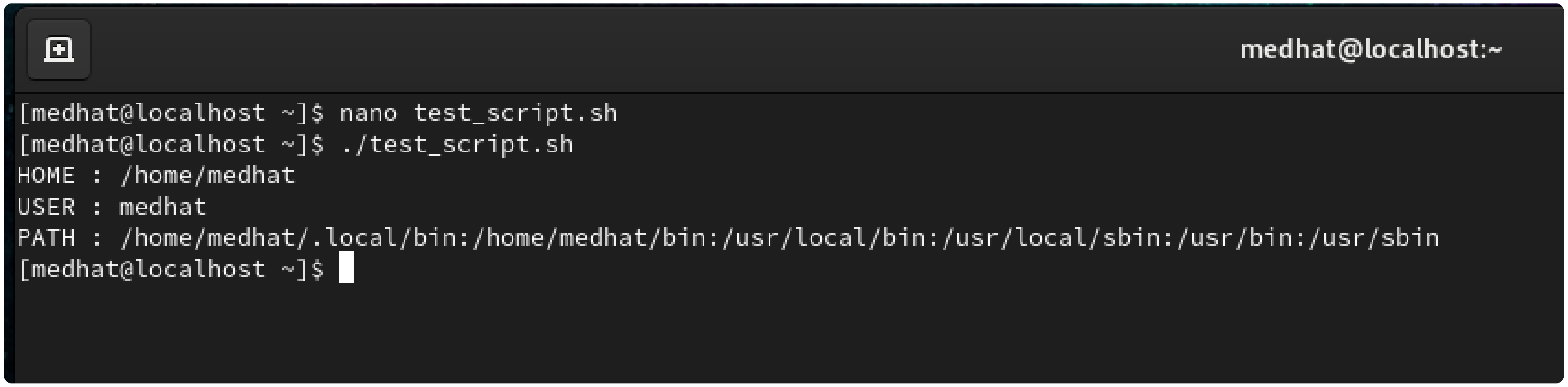
   - system shell is compatible o it still runs so it depends on the default shell configured for the system

- 2. **Use the env command to list environment variables such as HOME, USER, and PATH. Create a script that prints their values.**

  -



```
medhat@localhost ~]$ env
HELL=/bin/bash
ESSION_MANAGER=local/unix:@/tmp/.ICE-unix/2297,unix/unix:/tmp/.ICE-unix/2297
OLORTERM=truecolor
ISTCONTROL=ignoredups
DG_MENU_PREFIX=gnome-
OSTNAME=localhost
ISTSIZE=1000
SH_AUTH_SOCK=/run/user/1000/keyring/ssh
MODIFIERS=@im=ibus
ESKTOP_SESSION=gnome
WD=/home/medhat
DG_SESSION_DESKTOP=gnome
OGNAME=medhat
DG_SESSION_TYPE=wayland
YSTEMD_EXEC_PID=2314
AUTHORITY=/run/user/1000/.mutter-Xwaylandauth.TSG3Z2
DM_LANG=en_US.UTF-8
OME=/home/medhat
SERNAME=medhat
ANG=en_US.UTF-8
S_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33;01:cd=40;33;01:or=40;31;01:mi=01;37;41:su=37;41:sg=30;43:ca=30;41:tw=30;42:ow=34;42:st=37;44:ex=01;32:*.tar=
1;31:*.tgz=01;31:*.arc=01;31:*.arj=01;31:*.taz=01;31:*.lha=01;31:*.lz4=01;31:*.lzh=01;31:*.lzma=01;31:*.tlz=01;31:*.txz=01;31:*.tzo=01;31:*.t7z=01;31:*.zip=01;31:*.z=01;31:*.dz=01;31
*.gz=01;31:*.lrz=01;31:*.lz=01;31:*.lzo=01;31:*.xz=01;31:*.zst=01;31:*.tzst=01;31:*.bz2=01;31:*.bz=01;31:*.tbz=01;31:*.tbz2=01;31:*.tz=01;31:*.deb=01;31:*.rpm=01;31:*.jar=01;31:*.war
01;31:*.ear=01;31:*.sar=01;31:*.rar=01;31:*.alz=01;31:*.ace=01;31:*.zoo=01;31:*.cpio=01;31:*.7z=01;31:*.rz=01;31:*.cab=01;31:*.wim=01;31:*.swm=01;31:*.dwm=01;31:*.esd=01;31:*.jpg=01;
5:*.jpeg=01;35:*.mjpg=01;35:*.mjpeg=01;35:*.gif=01;35:*.bmp=01;35:*.pbm=01;35:*.pgm=01;35:*.ppm=01;35:*.tga=01;35:*.xbm=01;35:*.xpm=01;35:*.tif=01;35:*.tiff=01;35:*.png=01;35:*.svg=0
;35:*.svgz=01;35:*.mng=01;35:*.pcx=01;35:*.mov=01;35:*.mpg=01;35:*.mpeg=01;35:*.m2v=01;35:*.mkv=01;35:*.webm=01;35:*.webp=01;35:*.ogm=01;35:*.mp4=01;35:*.m4v=01;35:*.mp4v=01;35:*.vob
01;35:*.qt=01;35:*.nuv=01;35:*.wmv=01;35:*.asf=01;35:*.rm=01;35:*.rmvb=01;35:*.flc=01;35:*.avi=01;35:*.fli=01;35:*.flv=01;35:*.gl=01;35:*.dl=01;35:*.xcf=01;35:*.xwd=01;35:*.yuv=01;35
*.cgm=01;35:*.emf=01;35:*.ogv=01;35:*.ogx=01;35:*.aac=01;36:*.au=01;36:*.flac=01;36:*.m4a=01;36:*.mid=01;36:*.midi=01;36:*.mka=01;36:*.mp3=01;36:*.mpc=01;36:*.ogg=01;36:*.ra=01;36:*.
av=01;36:*.oga=01;36:*.opus=01;36:*.spx=01;36:*.xspf=01;36:
DG_CURRENT_DESKTOP=GNOME
TE_VERSION=6402
```



```
[medhat@localhost ~]$ nano test_script.sh
[medhat@localhost ~]$ ./test_script.sh
HOME : /home/medhat
USER : medhat
PATH : /home/medhat/.local/bin:/home/medhat/bin:/usr/local/bin:/usr/local/sbin:/usr/bin:/usr/sbin
[medhat@localhost ~]$ 
```

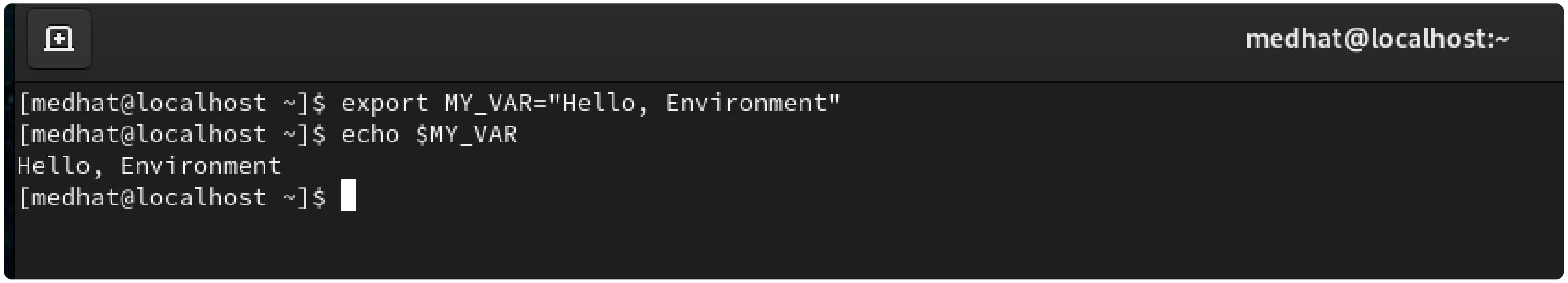
script : #!/bin/bash

echo "HOME: $HOME"

echo "USER: $USER"

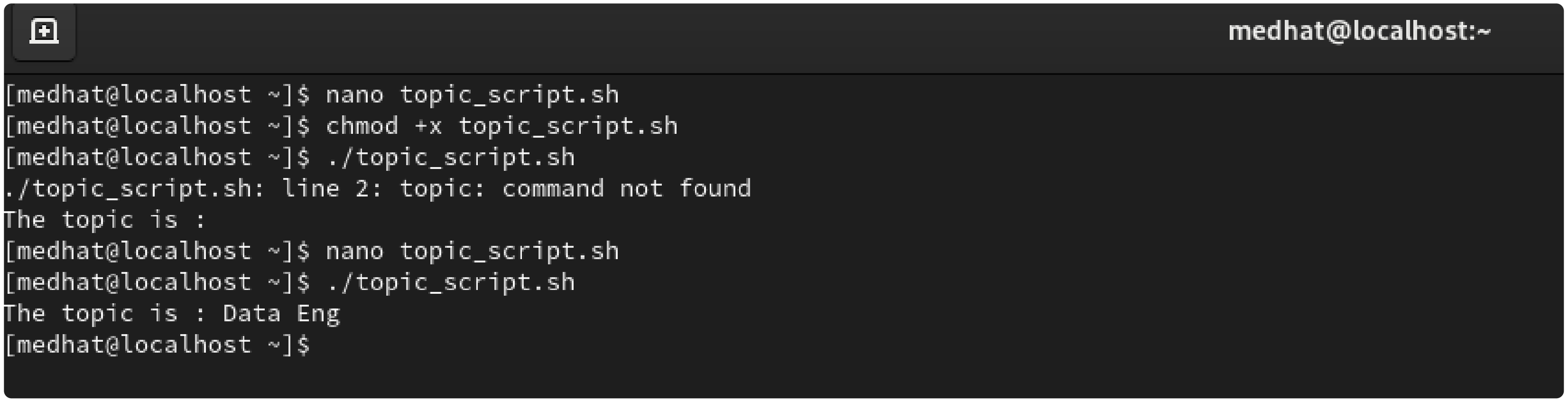
echo "PATH: $PATH"

3. **Export a custom variable MY_VAR="Hello, Environment!" and print its value.**



```
[medhat@localhost ~]$ export MY_VAR="Hello, Environment"
[medhat@localhost ~]$ echo $MY_VAR
Hello, Environment
[medhat@localhost ~]$ 
```

4. **Create a script to define a variable topic with the value “Data Eng” and print it. Modify the script to accept user input and store it in topic**



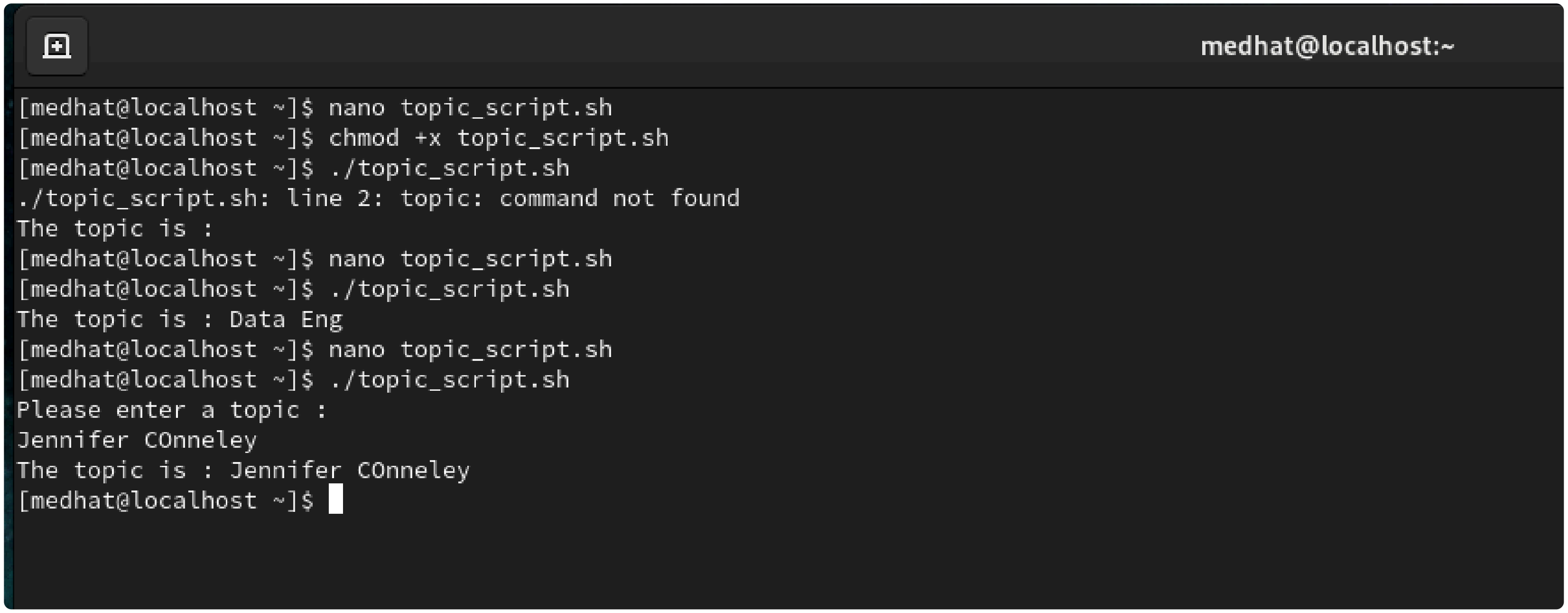
```
[medhat@localhost ~]$ nano topic_script.sh
[medhat@localhost ~]$ chmod +x topic_script.sh
[medhat@localhost ~]$ ./topic_script.sh
./topic_script.sh: line 2: topic: command not found
The topic is :
[medhat@localhost ~]$ nano topic_script.sh
[medhat@localhost ~]$ ./topic_script.sh
The topic is : Data Eng
[medhat@localhost ~]$
```

The script : #!/bin/bash

topic="Data Eng"

echo "The topic is: $topic"

- Accepting user input



```
[medhat@localhost ~]$ nano topic_script.sh
[medhat@localhost ~]$ chmod +x topic_script.sh
[medhat@localhost ~]$ ./topic_script.sh
./topic_script.sh: line 2: topic: command not found
The topic is :
[medhat@localhost ~]$ nano topic_script.sh
[medhat@localhost ~]$ ./topic_script.sh
The topic is : Data Eng
[medhat@localhost ~]$ nano topic_script.sh
[medhat@localhost ~]$ ./topic_script.sh
Please enter a topic :
Jennifer COnneley
The topic is : Jennifer COnneley
[medhat@localhost ~]$
```

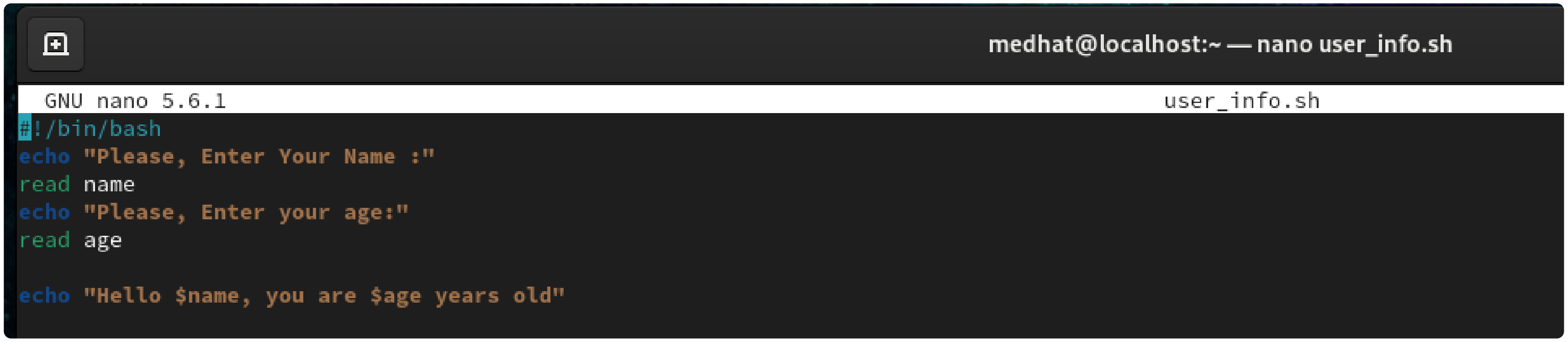
Script : #!/bin/bash

echo "Please enter a topic:"

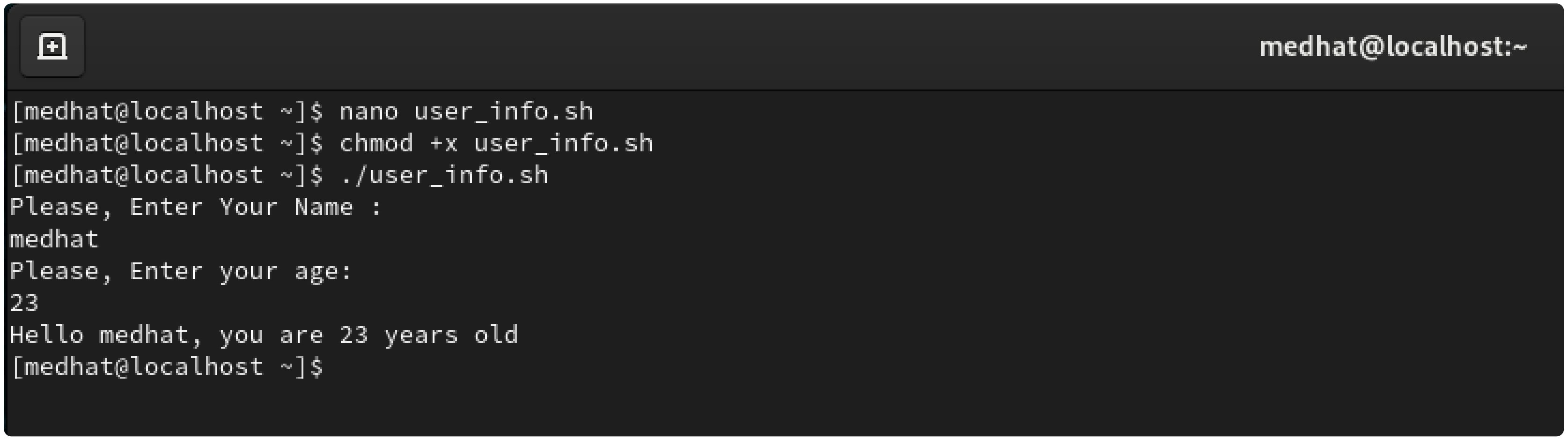
read topic

echo "The topic is: $topic"

- 5).**Write a script that prompts the user for their name and age, then prints: “Hello [Name], you are [Age] years old!”.**

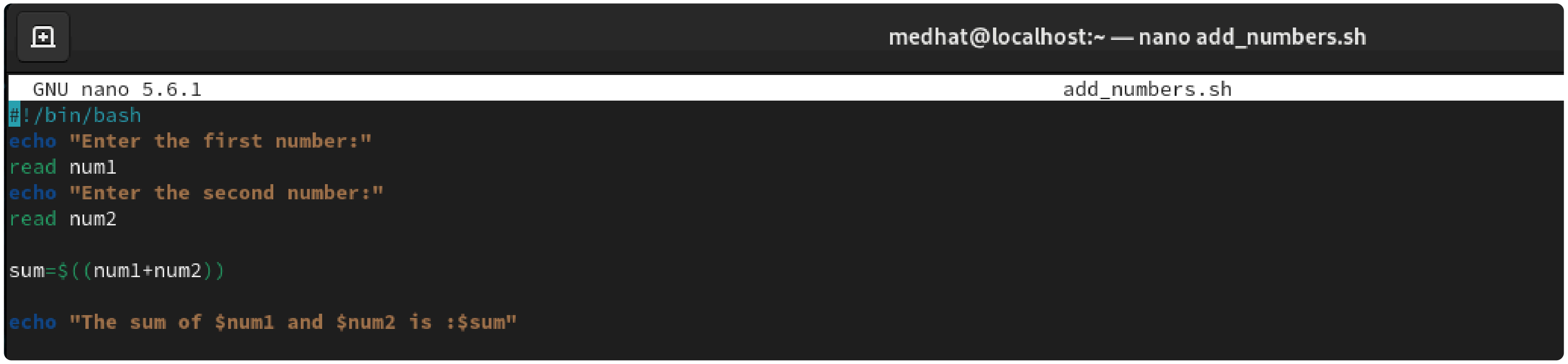


```
  GNU nano 5.6.1                                                                      user_info.sh
#!/bin/bash
echo "Please, Enter Your Name :"
read name
echo "Please, Enter your age:"
read age

echo "Hello $name, you are $age years old"
```

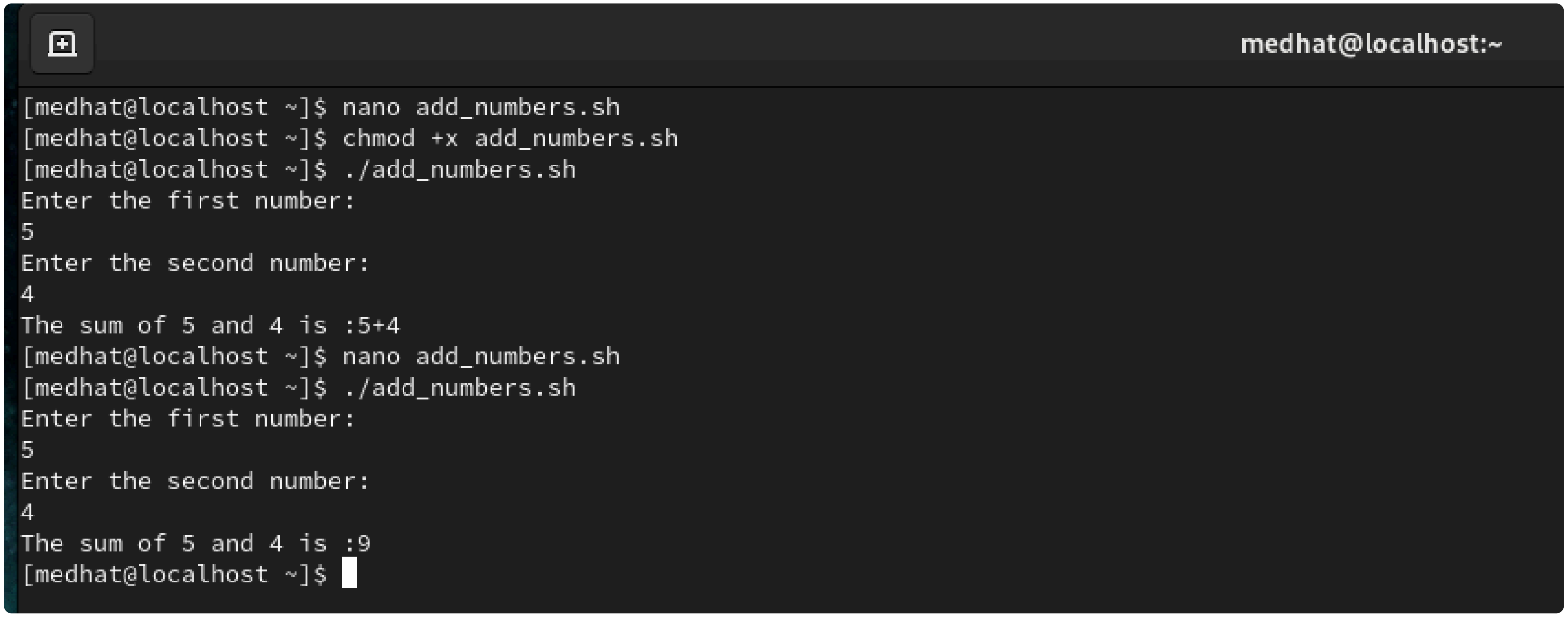
- 

```
[medhat@localhost ~]$ nano user_info.sh
[medhat@localhost ~]$ chmod +x user_info.sh
[medhat@localhost ~]$ ./user_info.sh
Please, Enter Your Name :
medhat
Please, Enter your age:
23
Hello medhat, you are 23 years old
[medhat@localhost ~]$
```

- 6. **Create a script that reads two numbers, adds them, and displays the sum.**

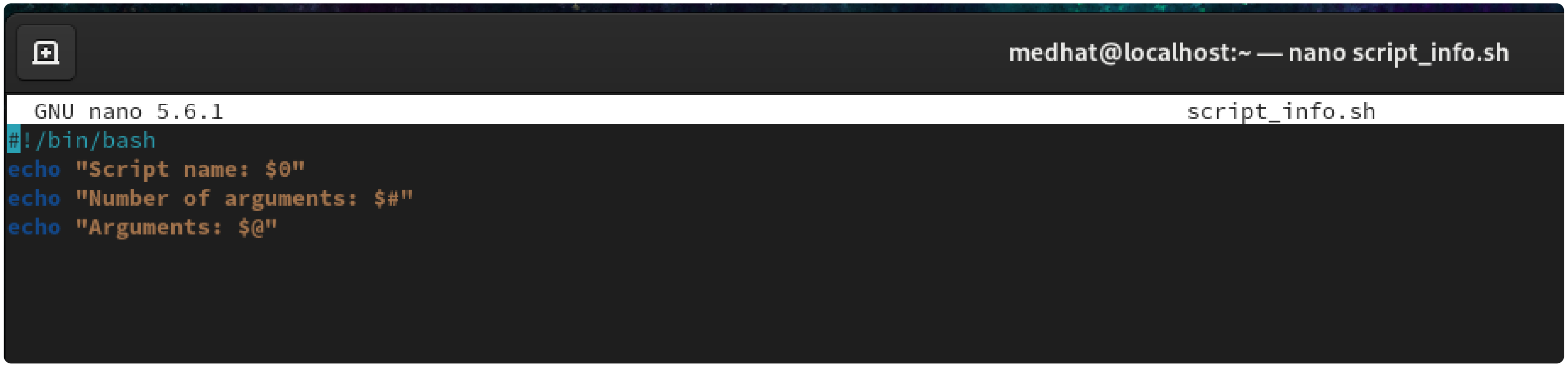


```
  GNU nano 5.6.1                                                             add_numbers.sh
#!/bin/bash
echo "Enter the first number:"
read num1
echo "Enter the second number:"
read num2

sum=$((num1+num2))

echo "The sum of $num1 and $num2 is :$sum"
```

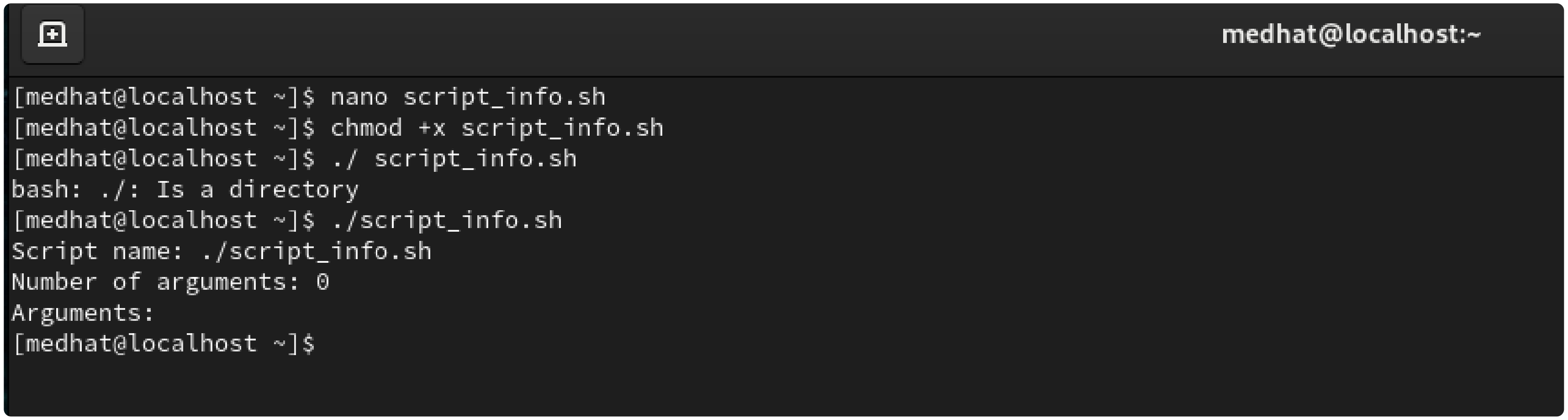


```
[medhat@localhost ~]$ nano add_numbers.sh
[medhat@localhost ~]$ chmod +x add_numbers.sh
[medhat@localhost ~]$ ./add_numbers.sh
Enter the first number:
5
Enter the second number:
4
The sum of 5 and 4 is :5+4
[medhat@localhost ~]$ nano add_numbers.sh
[medhat@localhost ~]$ ./add_numbers.sh
Enter the first number:
5
Enter the second number:
4
The sum of 5 and 4 is :9
[medhat@localhost ~]$ 
```

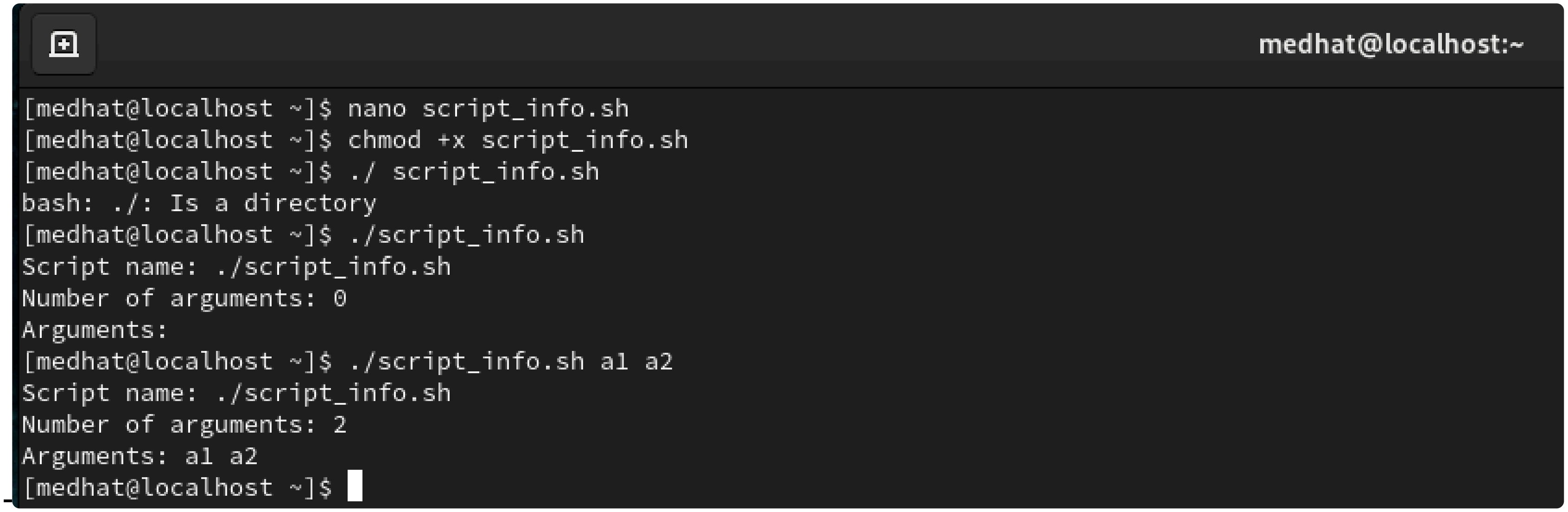
- 7) **Create a script to print the script name, the number of arguments, and all arguments.**



```
  GNU nano 5.6.1                                                       script_info.sh
#!/bin/bash
echo "Script name: $0"
echo "Number of arguments: $#"
echo "Arguments: $@"
```



```
[medhat@localhost ~]$ nano script_info.sh
[medhat@localhost ~]$ chmod +x script_info.sh
[medhat@localhost ~]$ ./ script_info.sh
bash: ./: Is a directory
[medhat@localhost ~]$ ./script_info.sh
Script name: ./script_info.sh
Number of arguments: 0
Arguments:
[medhat@localhost ~]$
```

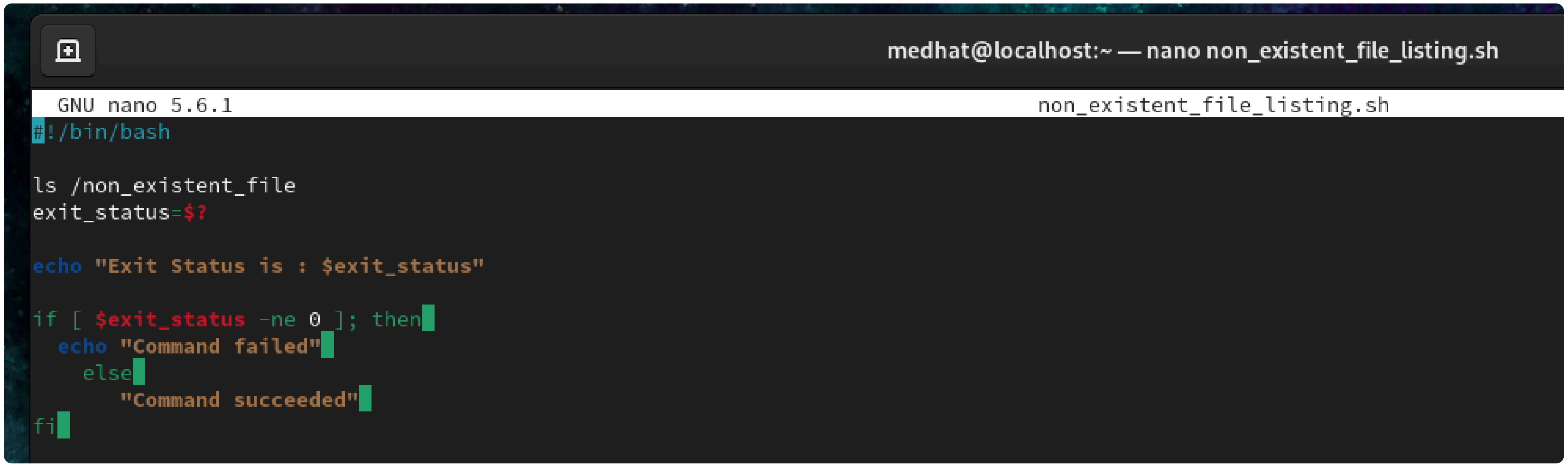


```
[medhat@localhost ~]$ nano script_info.sh
[medhat@localhost ~]$ chmod +x script_info.sh
[medhat@localhost ~]$ ./ script_info.sh
bash: ./: Is a directory
[medhat@localhost ~]$ ./script_info.sh
Script name: ./script_info.sh
Number of arguments: 0
Arguments:
[medhat@localhost ~]$ ./script_info.sh a1 a2
Script name: ./script_info.sh
Number of arguments: 2
Arguments: a1 a2
[medhat@localhost ~]$ 
```

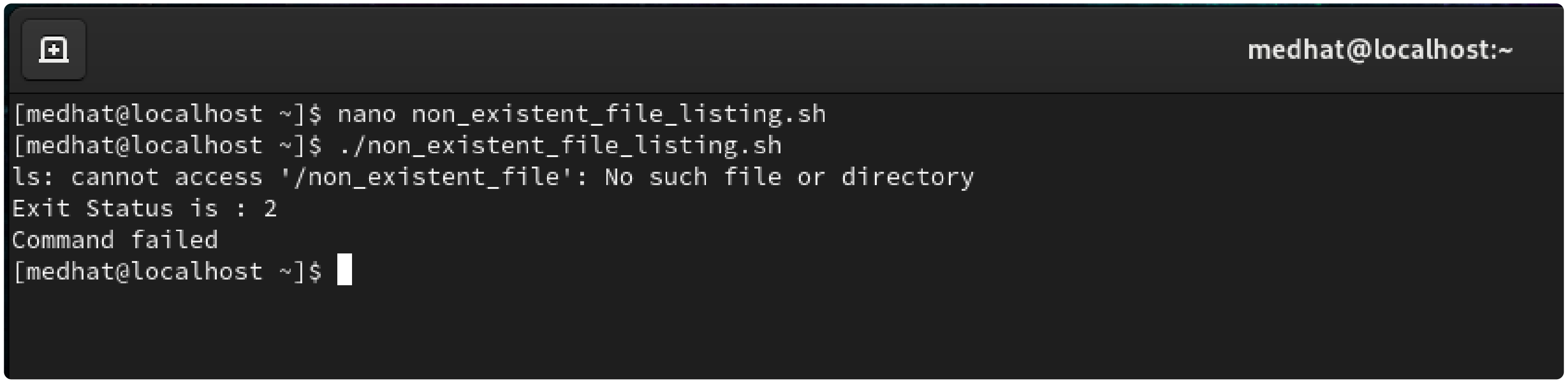
-

8. **Write a script to attempt to list a non-existent file, capture the exit status, and print the result.**

   -

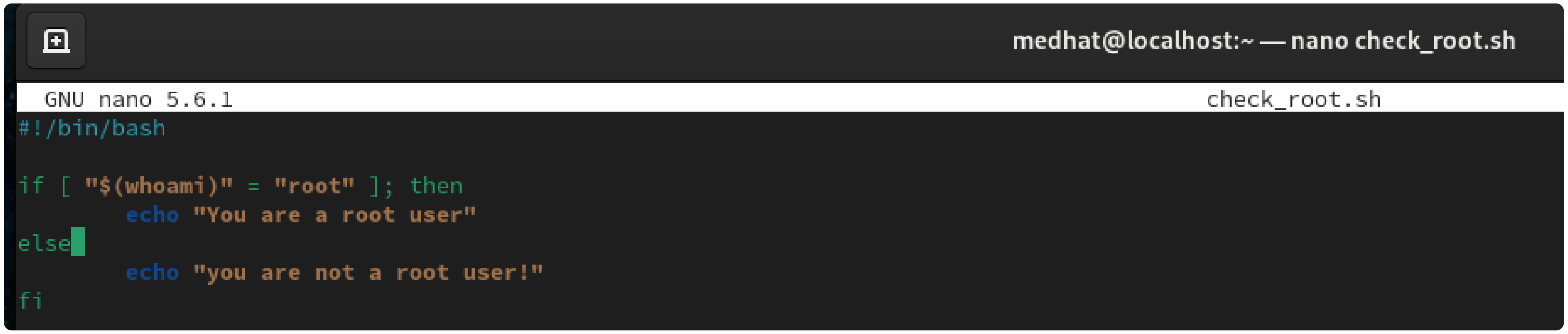


```
  GNU nano 5.6.1                                                              non_existent_file_listing.sh
#!/bin/bash

ls /non_existent_file
exit_status=$?

echo "Exit Status is : $exit_status"

if [ $exit_status -ne 0 ]; then
  echo "Command failed"
    else
       "Command succeeded"
fi
```

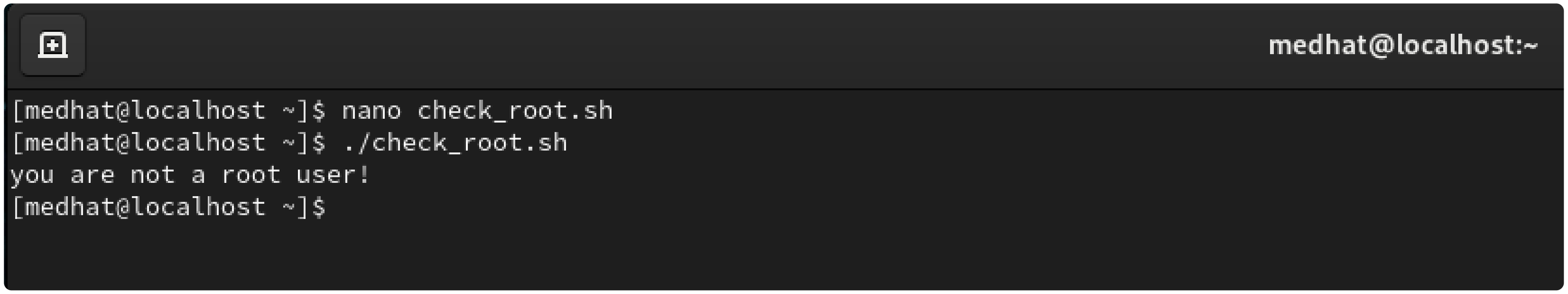


```
[medhat@localhost ~]$ nano non_existent_file_listing.sh
[medhat@localhost ~]$ ./non_existent_file_listing.sh
ls: cannot access '/non_existent_file': No such file or directory
Exit Status is : 2
Command failed
[medhat@localhost ~]$ 
```

- 9)**Create a script to check if the current user is root and print an appropriate message.**

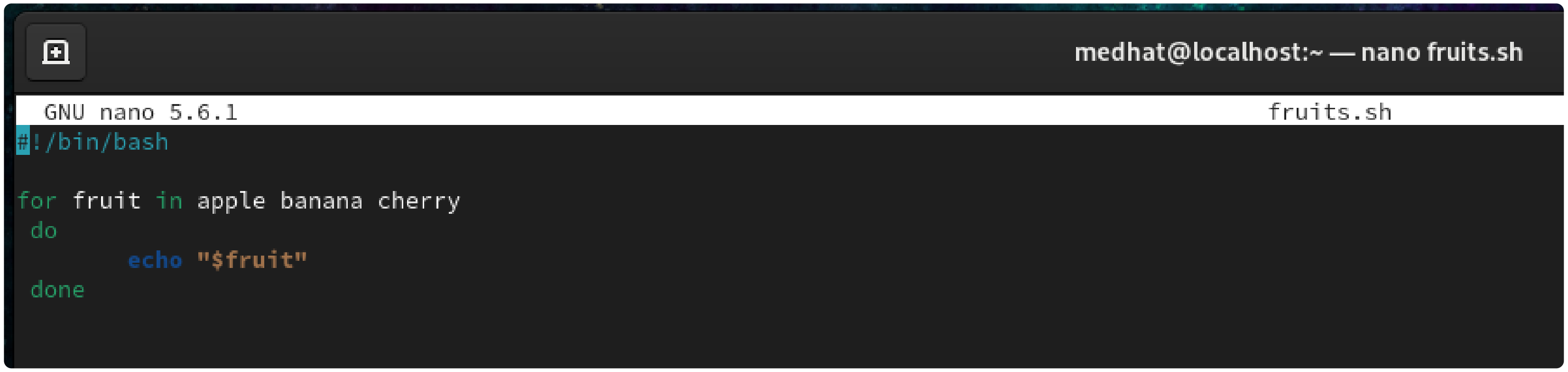


```
 GNU nano 5.6.1                                                                  check_root.sh
#!/bin/bash

if [ "$(whoami)" = "root" ]; then
        echo "You are a root user"
else
        echo "you are not a root user!"
fi
```

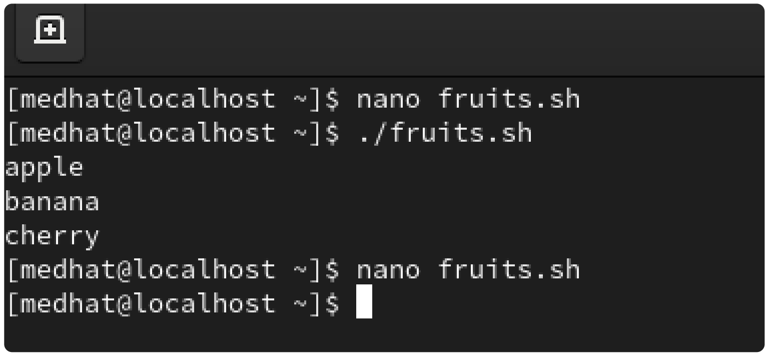


```
[medhat@localhost ~]$ nano check_root.sh
[medhat@localhost ~]$ ./check_root.sh
you are not a root user!
[medhat@localhost ~]$
```

10. **Write a script to iterate through the words apple, banana, and cherry, printing each word.**

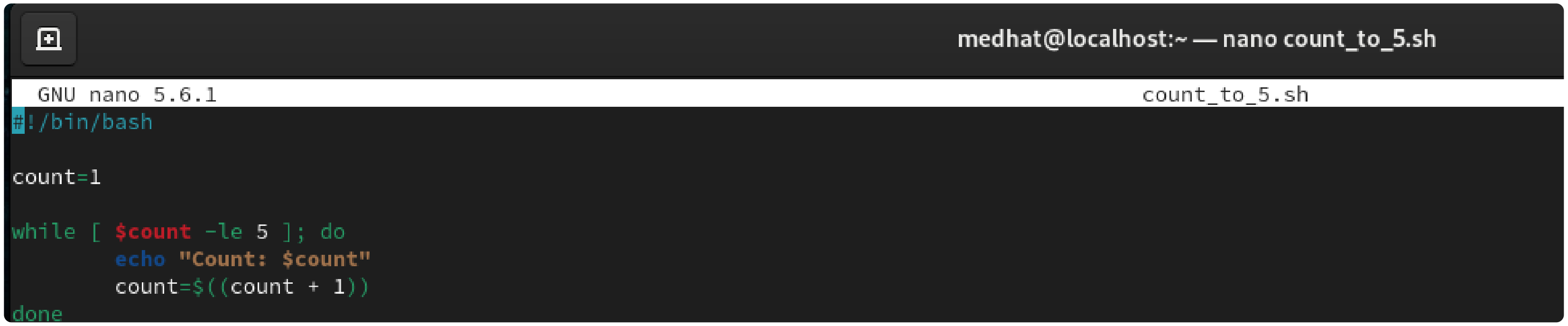


```
 GNU nano 5.6.1                                                                     fruits.sh
#!/bin/bash

for fruit in apple banana cherry
 do
        echo "$fruit"
 done
```

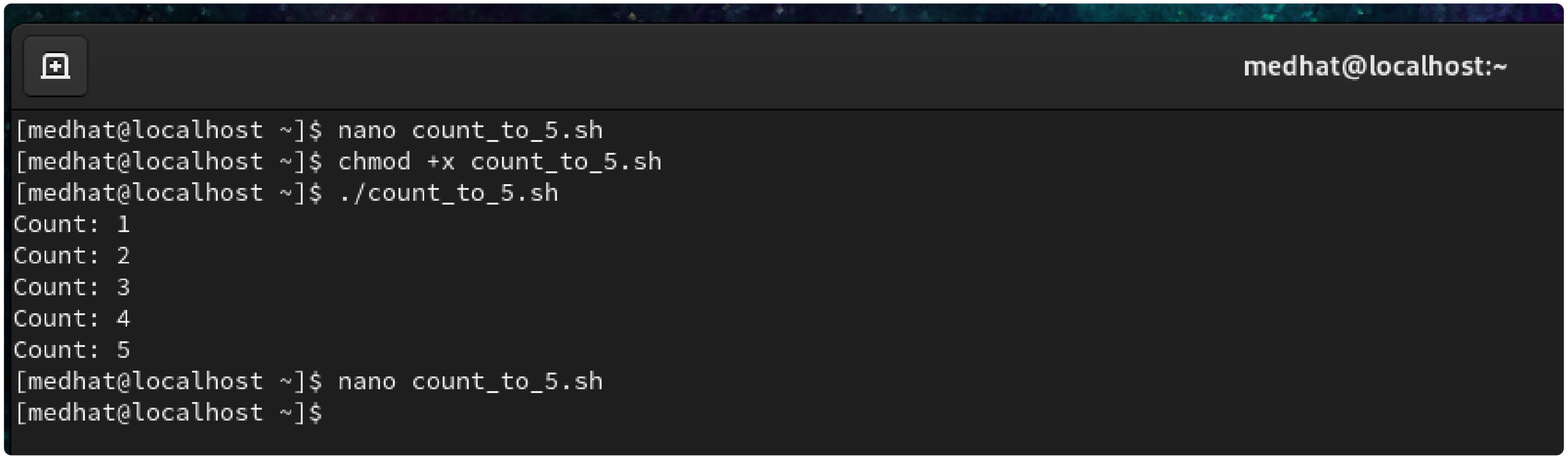


```
[medhat@localhost ~]$ nano fruits.sh
[medhat@localhost ~]$ ./fruits.sh
apple
banana
cherry
[medhat@localhost ~]$ nano fruits.sh
[medhat@localhost ~]$ 
```

11. **Create a script that counts from 1 to 5 using a while loop and prints each count.**

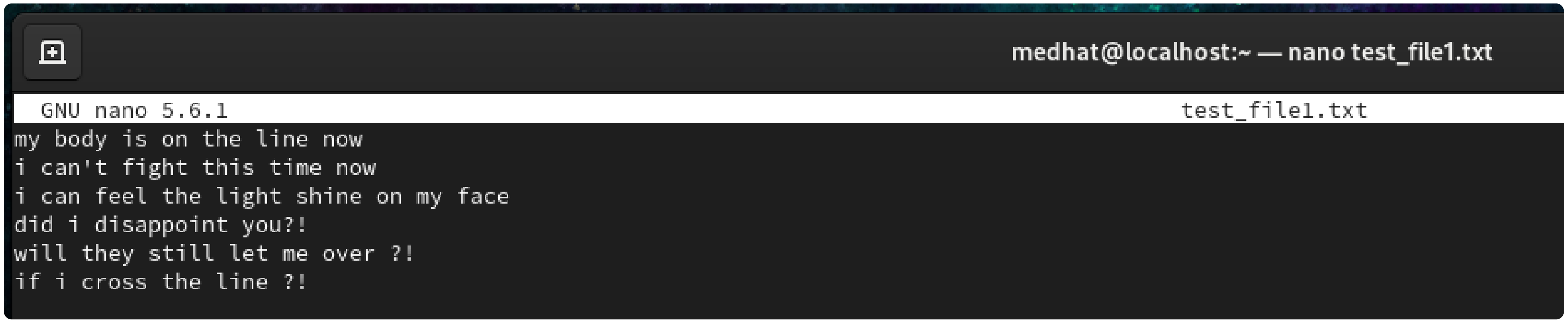


```
#!/bin/bash

count=1

while [ $count -le 5 ]; do
        echo "Count: $count"
        count=$((count + 1))
done
```

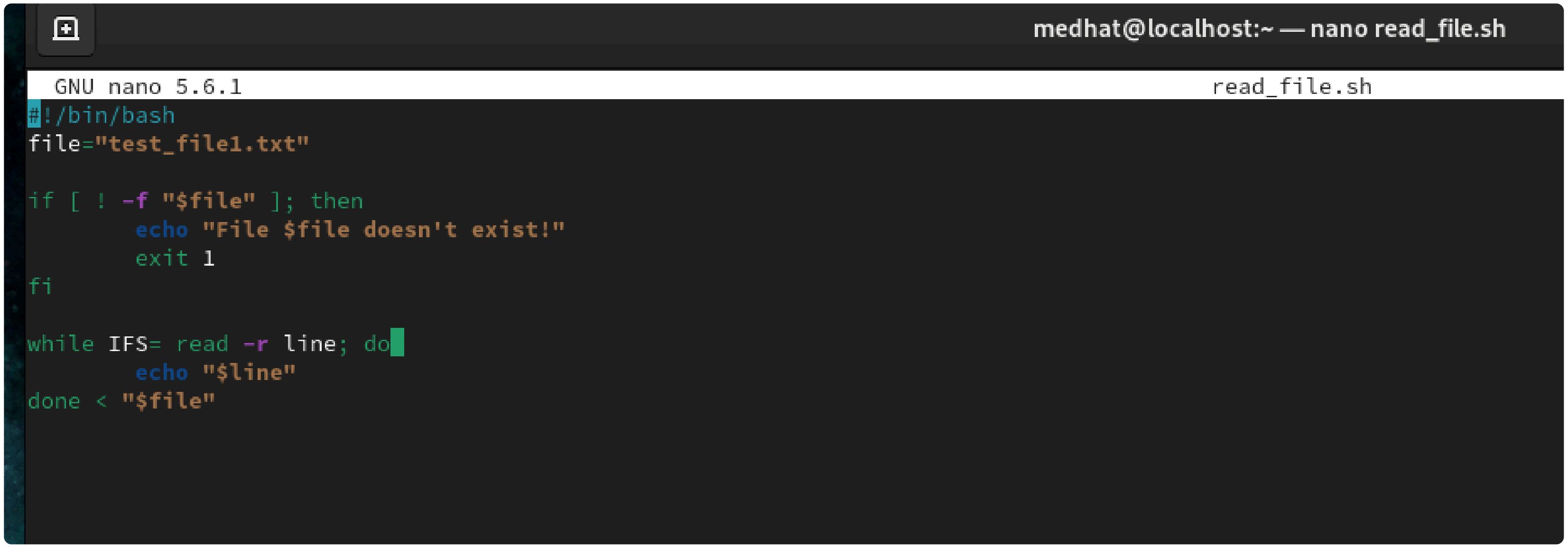


```
[medhat@localhost ~]$ nano count_to_5.sh
[medhat@localhost ~]$ chmod +x count_to_5.sh
[medhat@localhost ~]$ ./count_to_5.sh
Count: 1
Count: 2
Count: 3
Count: 4
Count: 5
[medhat@localhost ~]$ nano count_to_5.sh
[medhat@localhost ~]$
```

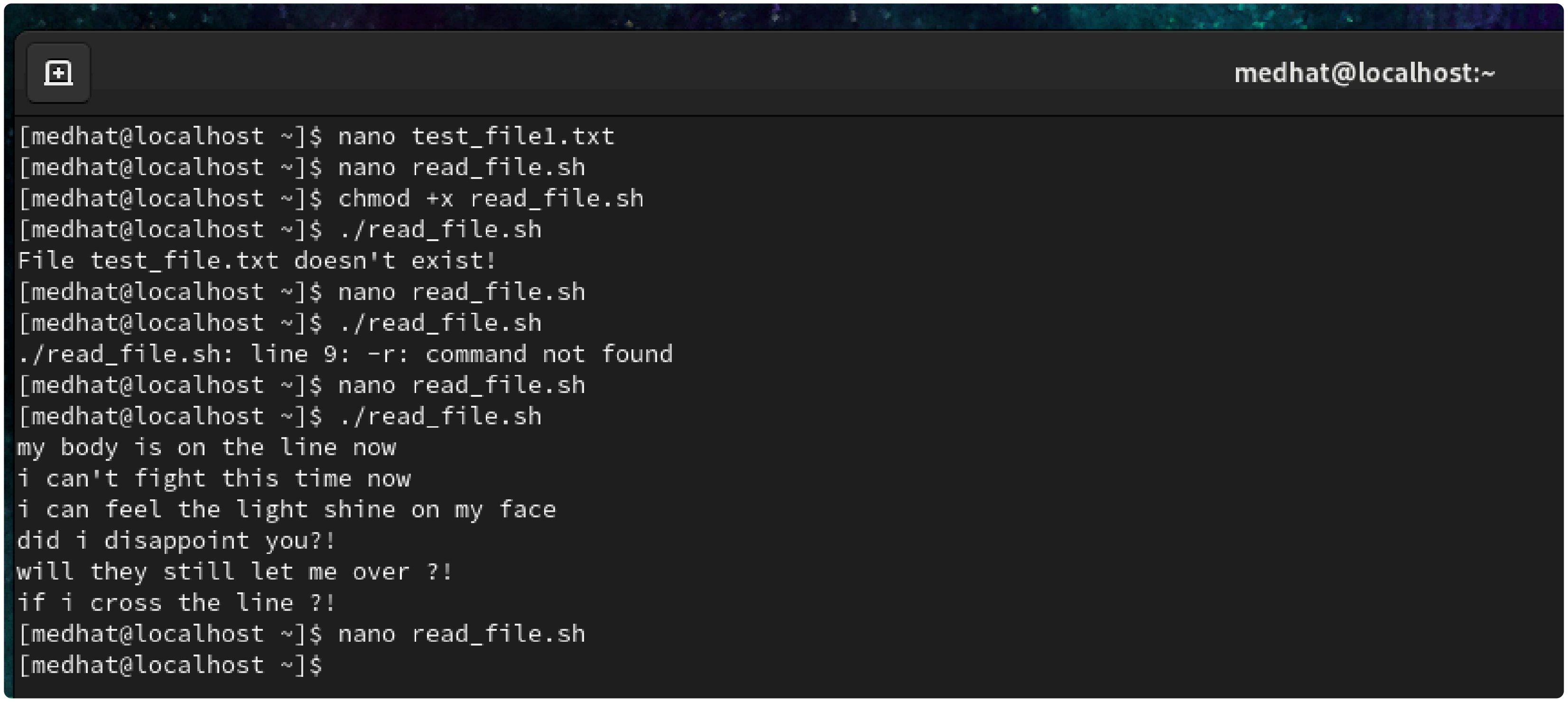
12. **Write a script to read a file line by line using a while loop and print each line.**

- 

```
 GNU nano 5.6.1                                                                              test_file1.txt
my body is on the line now
i can't fight this time now
i can feel the light shine on my face
did i disappoint you?!
will they still let me over ?!
if i cross the line ?!
```

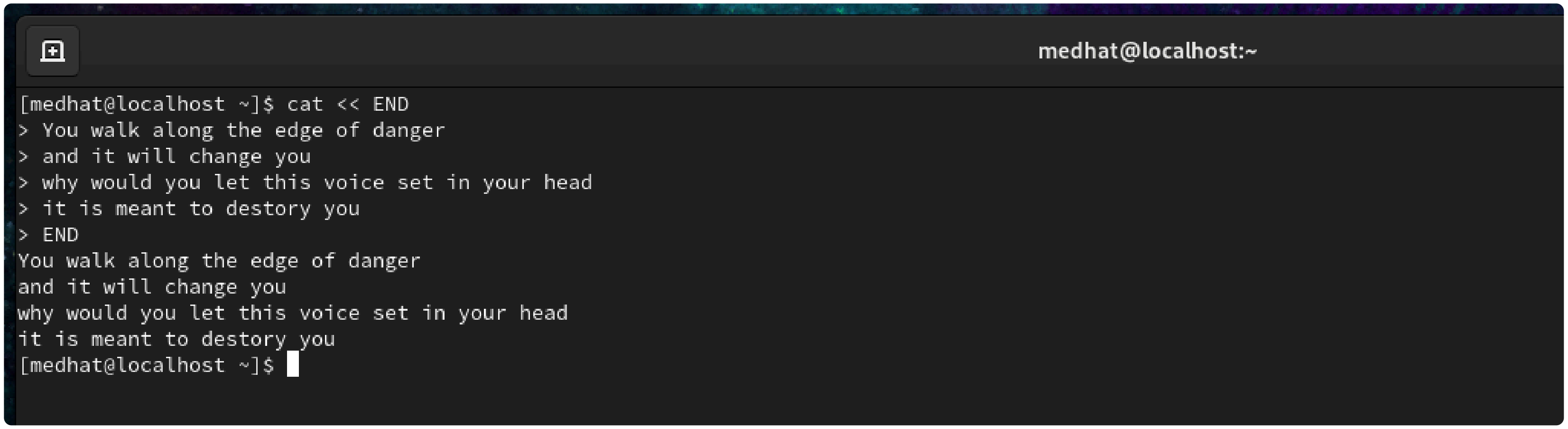
- 

```
 GNU nano 5.6.1                                                                              read_file.sh
#!/bin/bash
file="test_file1.txt"

if [ ! -f "$file" ]; then
        echo "File $file doesn't exist!"
        exit 1
fi

while IFS= read -r line; do
        echo "$line"
done < "$file"
```



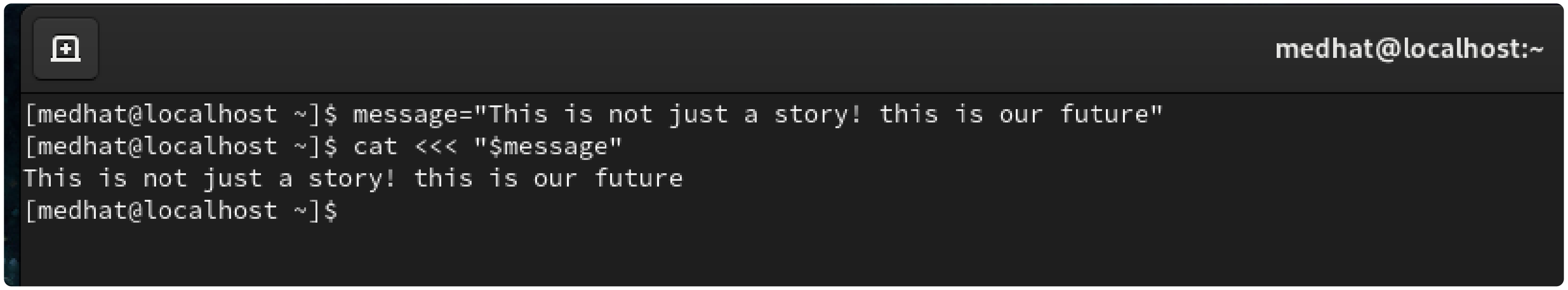
```
[medhat@localhost ~]$ nano test_file1.txt
[medhat@localhost ~]$ nano read_file.sh
[medhat@localhost ~]$ chmod +x read_file.sh
[medhat@localhost ~]$ ./read_file.sh
File test_file.txt doesn't exist!
[medhat@localhost ~]$ nano read_file.sh
[medhat@localhost ~]$ ./read_file.sh
./read_file.sh: line 9: -r: command not found
[medhat@localhost ~]$ nano read_file.sh
[medhat@localhost ~]$ ./read_file.sh
my body is on the line now
i can't fight this time now
i can feel the light shine on my face
did i disappoint you?!
will they still let me over ?!
if i cross the line ?!
[medhat@localhost ~]$ nano read_file.sh
[medhat@localhost ~]$
```

- 13) **Use << to print a multi-line message with cat.**

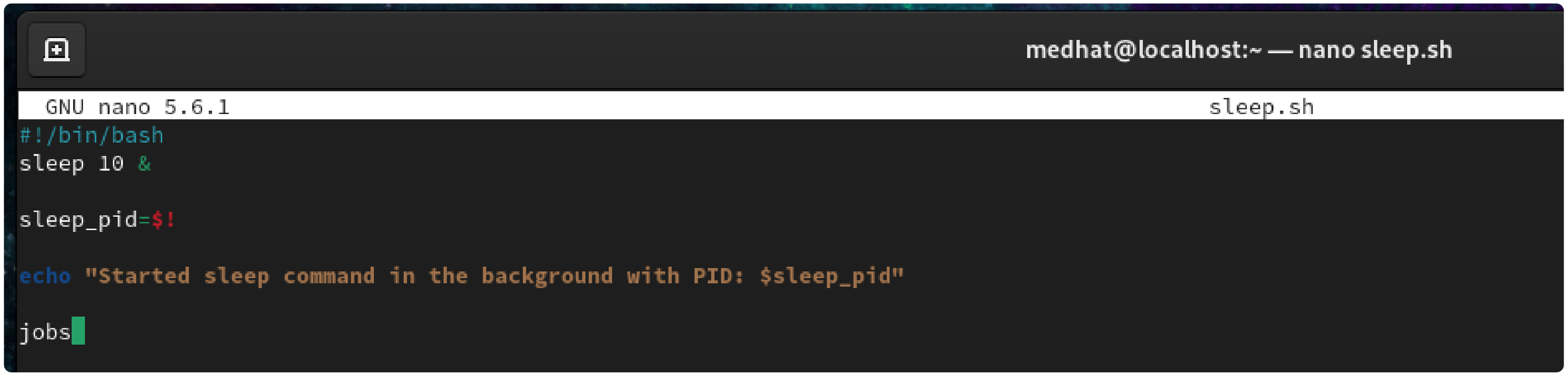


```
[medhat@localhost ~]$ cat << END
> You walk along the edge of danger
> and it will change you
> why would you let this voice set in your head
> it is meant to destory you
> END
You walk along the edge of danger
and it will change you
why would you let this voice set in your head
it is meant to destory you
[medhat@localhost ~]$
```

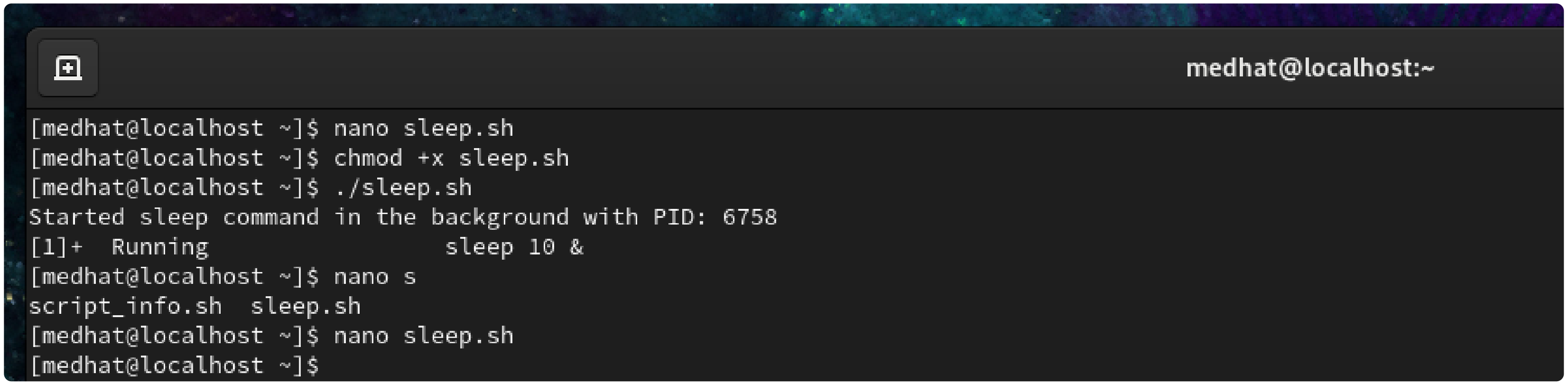
- 14) **Use <<< to pass the string “This is a test” to cat.**

- 

```
[medhat@localhost ~]$ message="This is not just a story! this is our future"
[medhat@localhost ~]$ cat <<< "$message"
This is not just a story! this is our future
[medhat@localhost ~]$
```

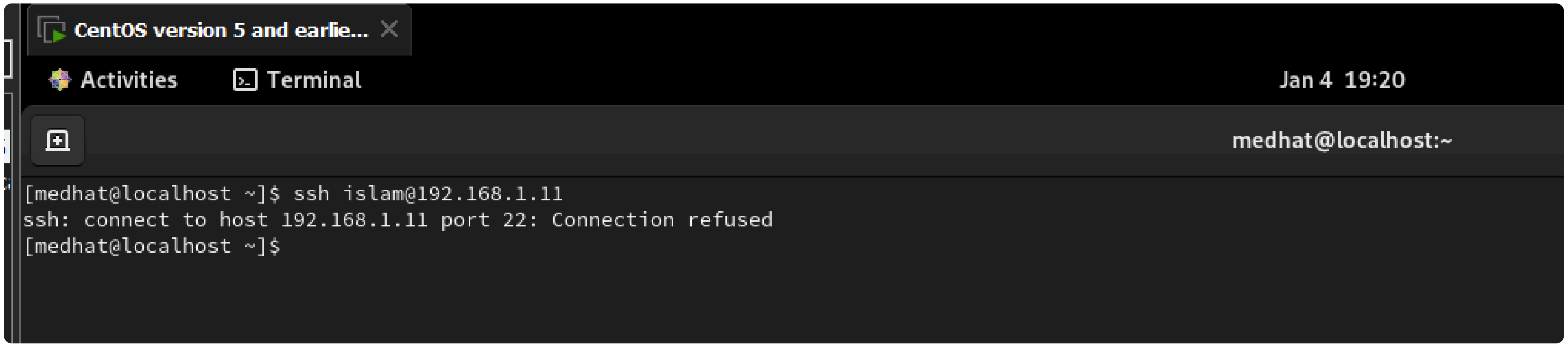
- 15.
  - 

```
  GNU nano 5.6.1                                                                          sleep.sh
#!/bin/bash
sleep 10 &

sleep_pid=$!

echo "Started sleep command in the background with PID: $sleep_pid"

jobs
```

  - 

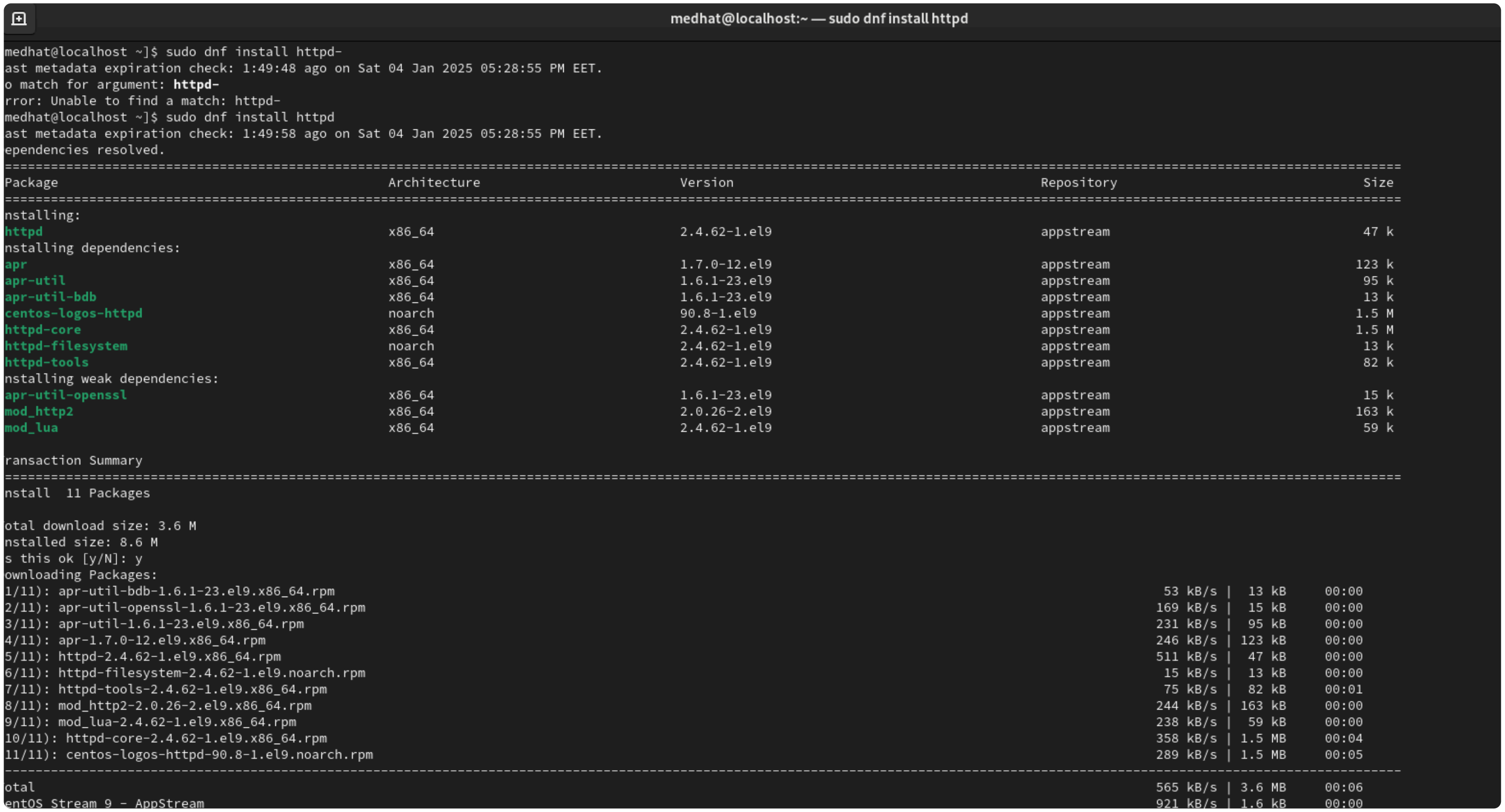
```
[medhat@localhost ~]$ nano sleep.sh
[medhat@localhost ~]$ chmod +x sleep.sh
[medhat@localhost ~]$ ./sleep.sh
Started sleep command in the background with PID: 6758
[1]+  Running                 sleep 10 &
[medhat@localhost ~]$ nano s
script_info.sh  sleep.sh
[medhat@localhost ~]$ nano sleep.sh
[medhat@localhost ~]$
```

- 16. **Write the command to SSH to the machine with IP 192.168.1.11 with user islam.**



```
[medhat@localhost ~]$ ssh islam@192.168.1.11
ssh: connect to host 192.168.1.11 port 22: Connection refused
[medhat@localhost ~]$
```

17. **Install httpd.**



```
medhat@localhost ~]$ sudo dnf install httpd-
ast metadata expiration check: 1:49:48 ago on Sat 04 Jan 2025 05:28:55 PM EET.
o match for argument: httpd-
rror: Unable to find a match: httpd-
medhat@localhost ~]$ sudo dnf install httpd
ast metadata expiration check: 1:49:58 ago on Sat 04 Jan 2025 05:28:55 PM EET.
ependencies resolved.
======================================================================================================================================================================================
Package                                           Architecture                          Version                                        Repository                                Size
======================================================================================================================================================================================
nstalling:
httpd                                             x86_64                                2.4.62-1.el9                                   appstream                                 47 k
nstalling dependencies:
apr                                               x86_64                                1.7.0-12.el9                                   appstream                                123 k
apr-util                                          x86_64                                1.6.1-23.el9                                   appstream                                 95 k
apr-util-bdb                                      x86_64                                1.6.1-23.el9                                   appstream                                 13 k
centos-logos-httpd                                noarch                                90.8-1.el9                                     appstream                                1.5 M
httpd-core                                        x86_64                                2.4.62-1.el9                                   appstream                                1.5 M
httpd-filesystem                                  noarch                                2.4.62-1.el9                                   appstream                                 13 k
httpd-tools                                       x86_64                                2.4.62-1.el9                                   appstream                                 82 k
nstalling weak dependencies:
apr-util-openssl                                  x86_64                                1.6.1-23.el9                                   appstream                                 15 k
mod_http2                                         x86_64                                2.0.26-2.el9                                   appstream                                163 k
mod_lua                                           x86_64                                2.4.62-1.el9                                   appstream                                 59 k

ransaction Summary
======================================================================================================================================================================================
nstall  11 Packages

otal download size: 3.6 M
nstalled size: 8.6 M
s this ok [y/N]: y
ownloading Packages:
1/11): apr-util-bdb-1.6.1-23.el9.x86_64.rpm                                                                                                             53 kB/s |  13 kB     00:00
2/11): apr-util-openssl-1.6.1-23.el9.x86_64.rpm                                                                                                        169 kB/s |  15 kB     00:00
3/11): apr-util-1.6.1-23.el9.x86_64.rpm                                                                                                                231 kB/s |  95 kB     00:00
4/11): apr-1.7.0-12.el9.x86_64.rpm                                                                                                                     246 kB/s | 123 kB     00:00
5/11): httpd-2.4.62-1.el9.x86_64.rpm                                                                                                                   511 kB/s |  47 kB     00:00
6/11): httpd-filesystem-2.4.62-1.el9.noarch.rpm                                                                                                         15 kB/s |  13 kB     00:00
7/11): httpd-tools-2.4.62-1.el9.x86_64.rpm                                                                                                              75 kB/s |  82 kB     00:01
8/11): mod_http2-2.0.26-2.el9.x86_64.rpm                                                                                                               244 kB/s | 163 kB     00:00
9/11): mod_lua-2.4.62-1.el9.x86_64.rpm                                                                                                                 238 kB/s |  59 kB     00:00
10/11): httpd-core-2.4.62-1.el9.x86_64.rpm                                                                                                             358 kB/s | 1.5 MB     00:04
11/11): centos-logos-httpd-90.8-1.el9.noarch.rpm                                                                                                       289 kB/s | 1.5 MB     00:05
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
otal                                                                                                                                                   565 kB/s | 3.6 MB     00:06
entOS Stream 9 - AppStream                                                                                                                             921 kB/s | 1.6 kB     00:00
```