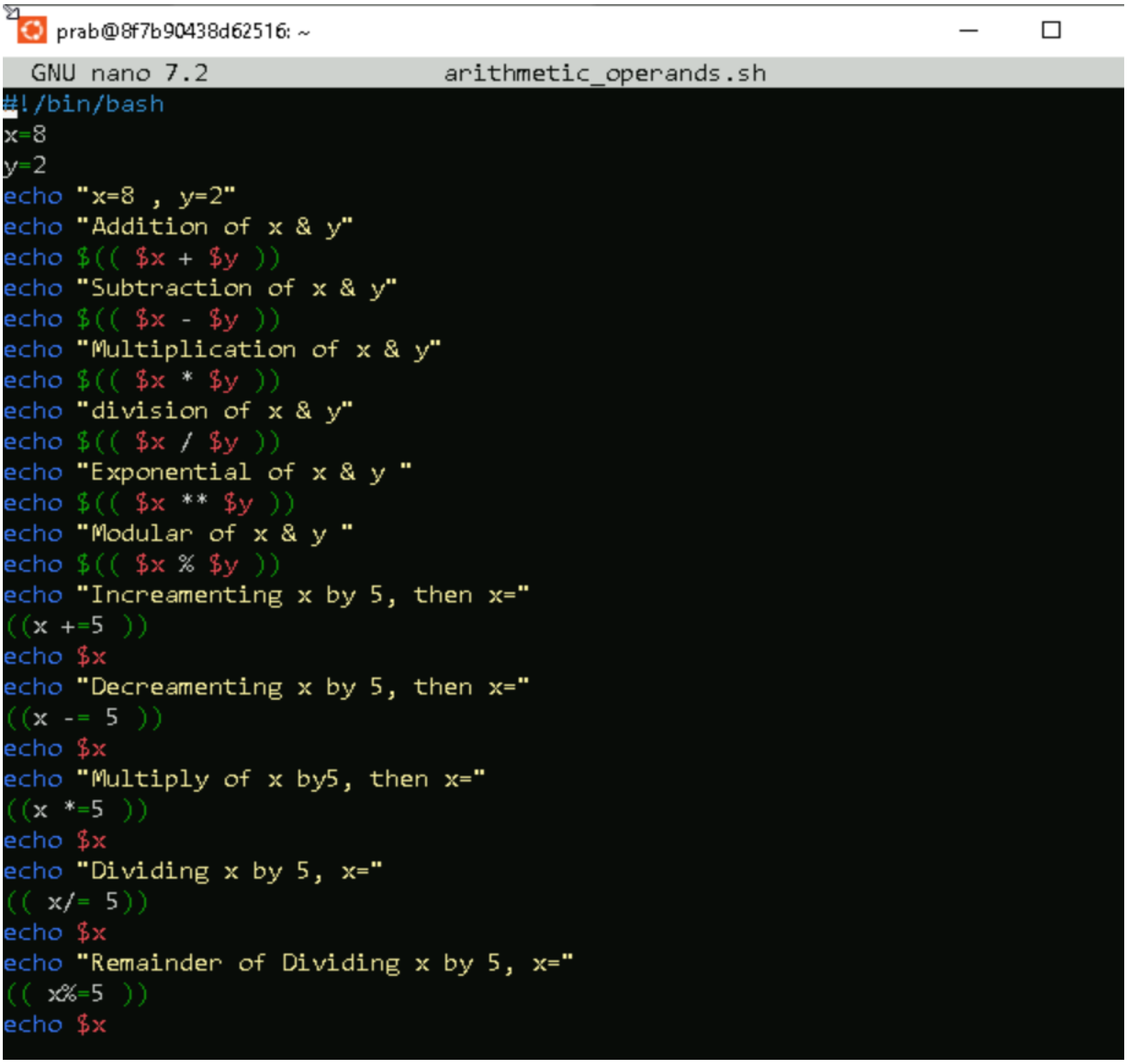
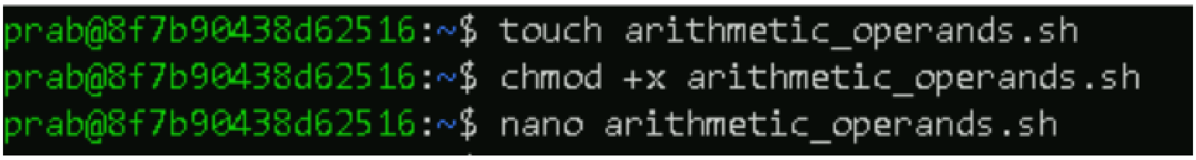
BASH Arithmetic Operators

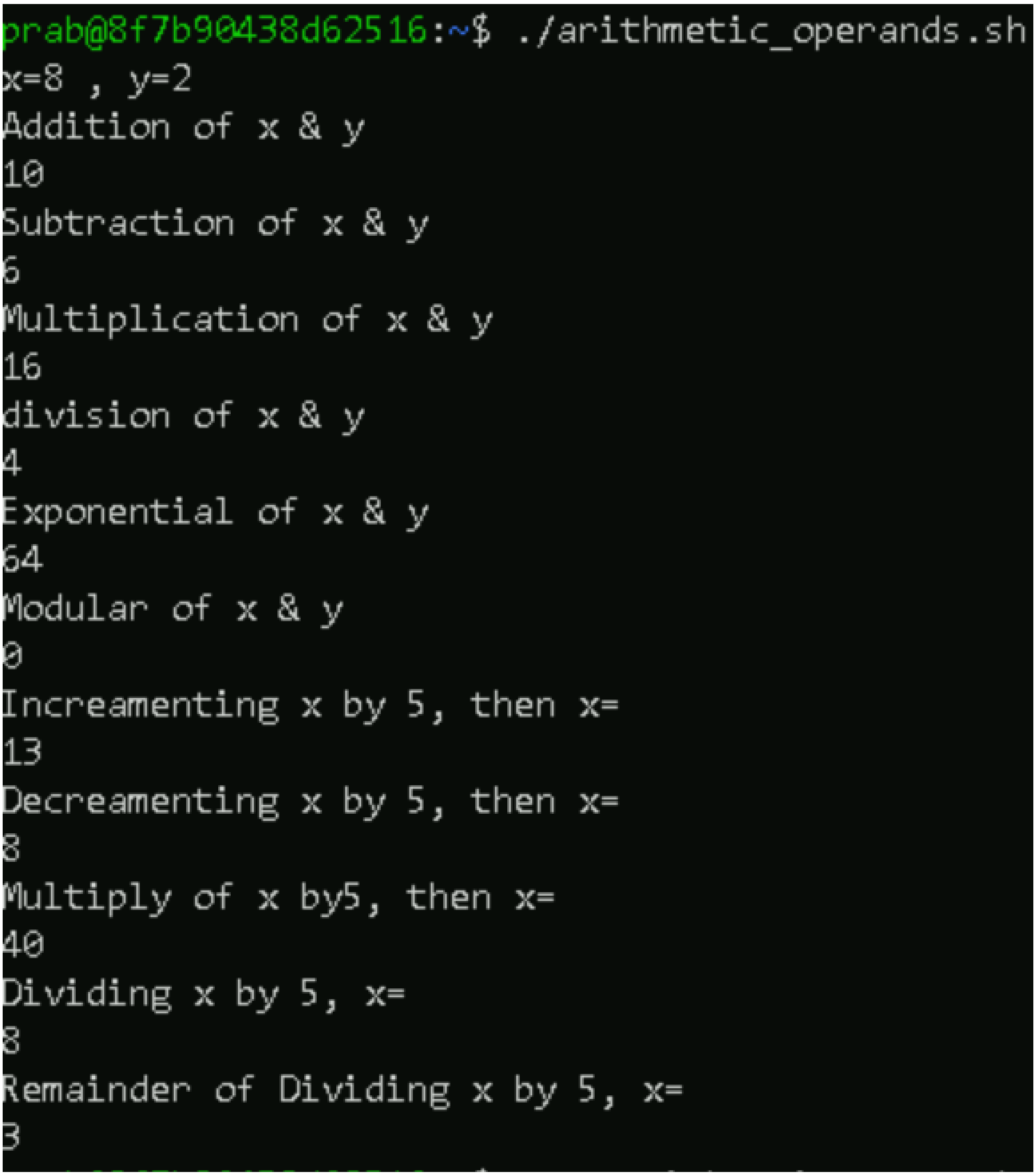
1) ((expression)



```
  GNU nano 7.2                    arithmetic_operands.sh
#!/bin/bash
x=8
y=2
echo "x=8 , y=2"
echo "Addition of x & y"
echo $(( $x + $y ))
echo "Subtraction of x & y"
echo $(( $x - $y ))
echo "Multiplication of x & y"
echo $(( $x * $y ))
echo "division of x & y"
echo $(( $x / $y ))
echo "Exponential of x & y "
echo $(( $x ** $y ))
echo "Modular of x & y "
echo $(( $x % $y ))
echo "Increamenting x by 5, then x="
((x +=5 ))
echo $x
echo "Decreamenting x by 5, then x="
((x -= 5 ))
echo $x
echo "Multiply of x by5, then x="
((x *=5 ))
echo $x
echo "Dividing x by 5, x="
(( x/= 5))
echo $x
echo "Remainder of Dividing x by 5, x="
(( x%=5 ))
echo $x
```

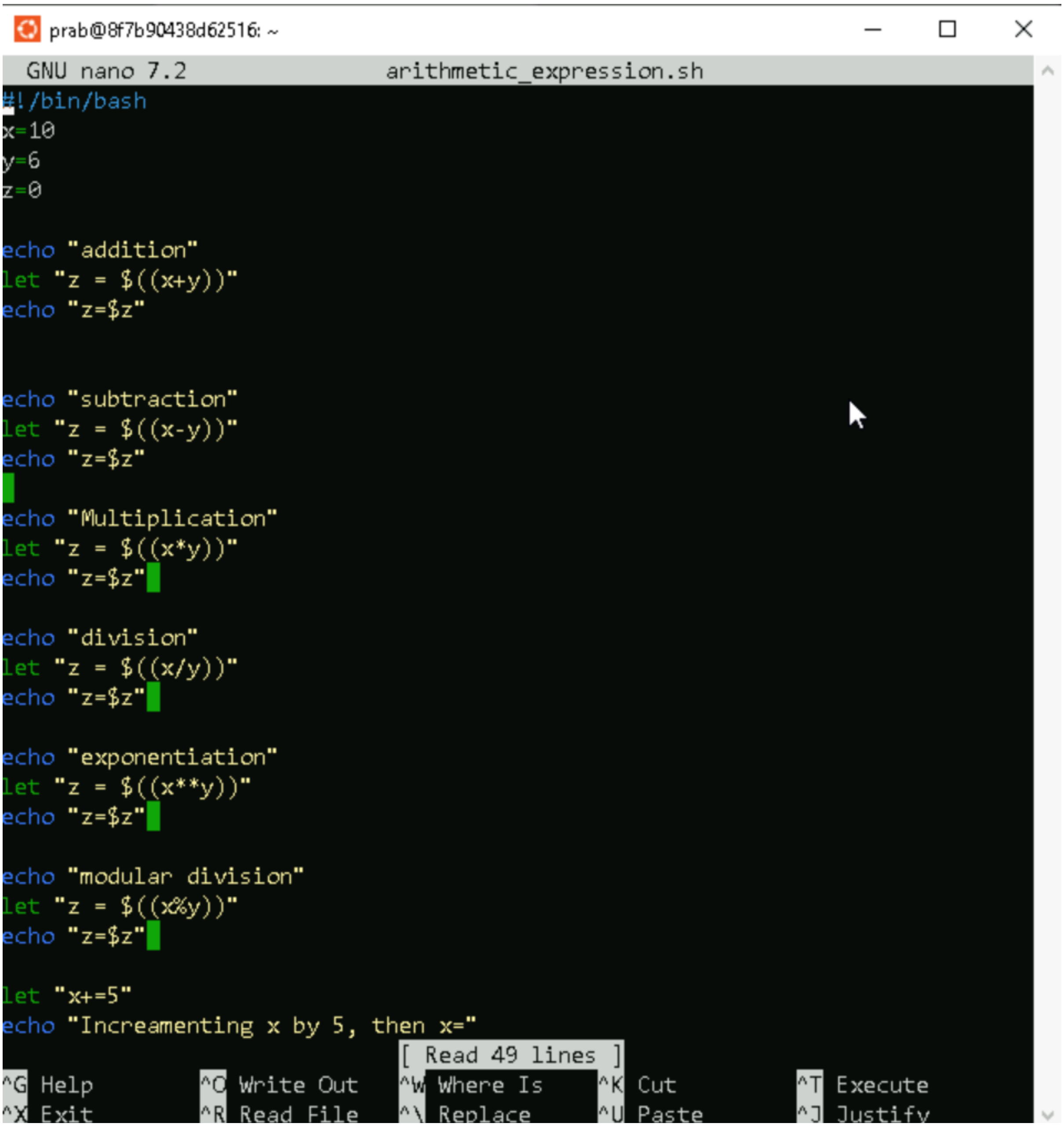


```
prab@8f7b90438d62516:~$ touch arithmetic_operands.sh
prab@8f7b90438d62516:~$ chmod +x arithmetic_operands.sh
prab@8f7b90438d62516:~$ nano arithmetic_operands.sh
```

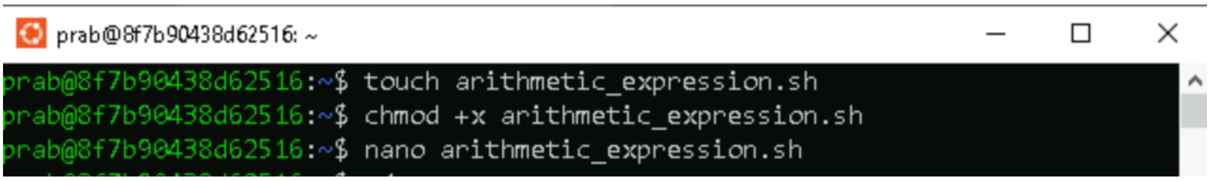


```
prab@8f7b90438d62516:~$ ./arithmetic_operands.sh
x=8 , y=2
Addition of x & y
10
Subtraction of x & y
6
Multiplication of x & y
16
division of x & y
4
Exponential of x & y
64
Modular of x & y
0
Increamenting x by 5, then x=
13
Decreamenting x by 5, then x=
8
Multiply of x by5, then x=
40
Dividing x by 5, x=
8
Remainder of Dividing x by 5, x=
3
```

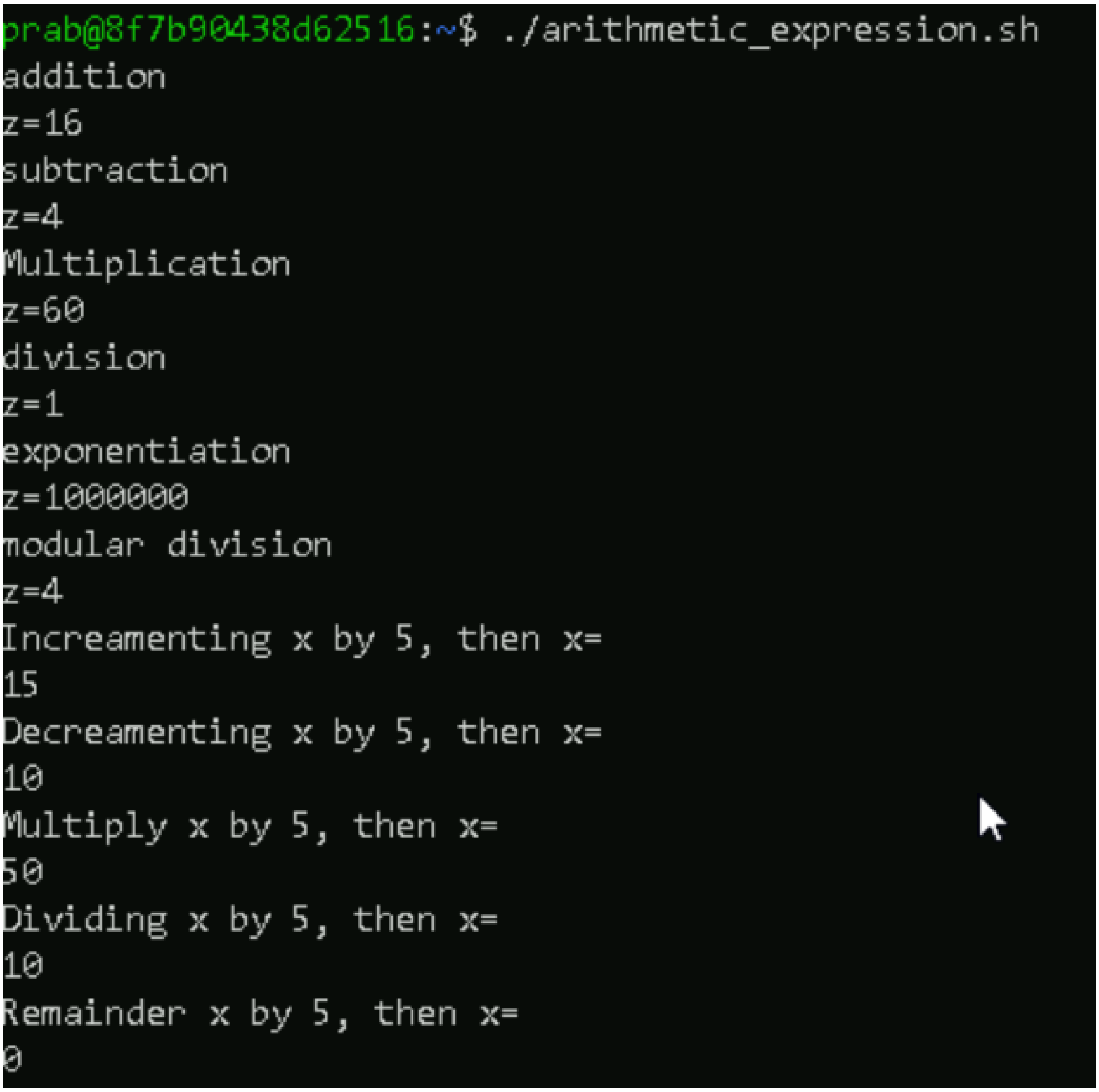
2)Arithmetic Expression



```
  GNU nano 7.2                     arithmetic_expression.sh
#!/bin/bash
x=10
y=6
z=0

echo "addition"
let "z = $((x+y))"
echo "z=$z"


echo "subtraction"
let "z = $((x-y))"
echo "z=$z"

echo "Multiplication"
let "z = $((x*y))"
echo "z=$z"

echo "division"
let "z = $((x/y))"
echo "z=$z"

echo "exponentiation"
let "z = $((x**y))"
echo "z=$z"

echo "modular division"
let "z = $((x%y))"
echo "z=$z"

let "x+=5"
echo "Increamenting x by 5, then x="
                              [ Read 49 lines ]
```

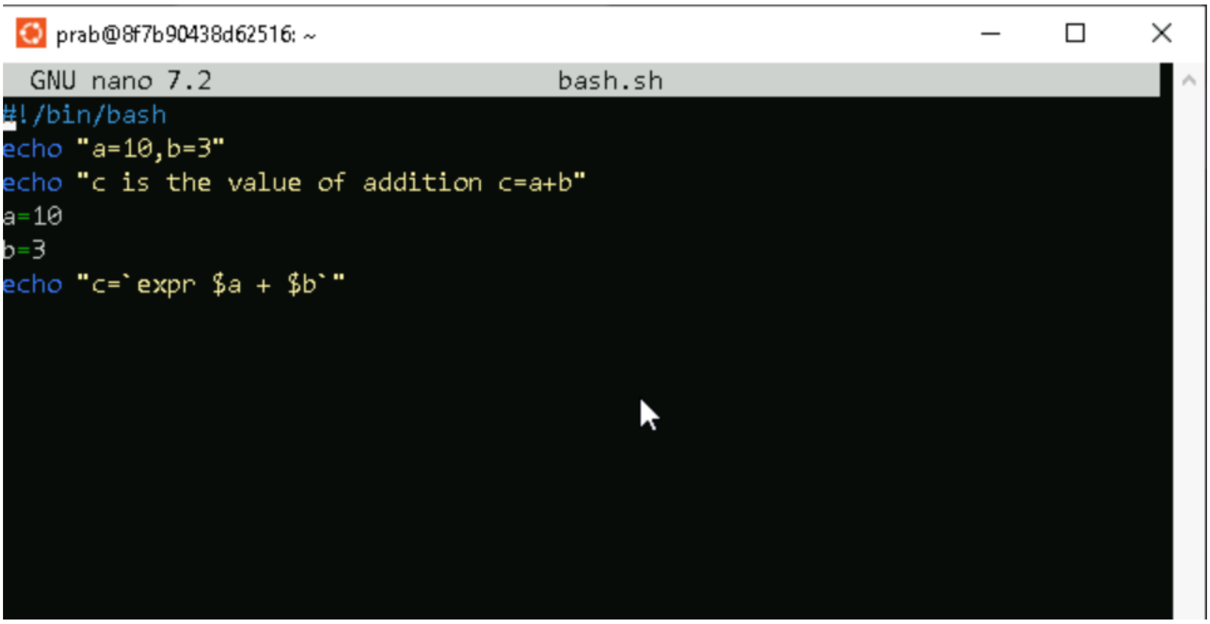


```
prab@8f7b90438d62516:~$ touch arithmetic_expression.sh
prab@8f7b90438d62516:~$ chmod +x arithmetic_expression.sh
prab@8f7b90438d62516:~$ nano arithmetic_expression.sh
```

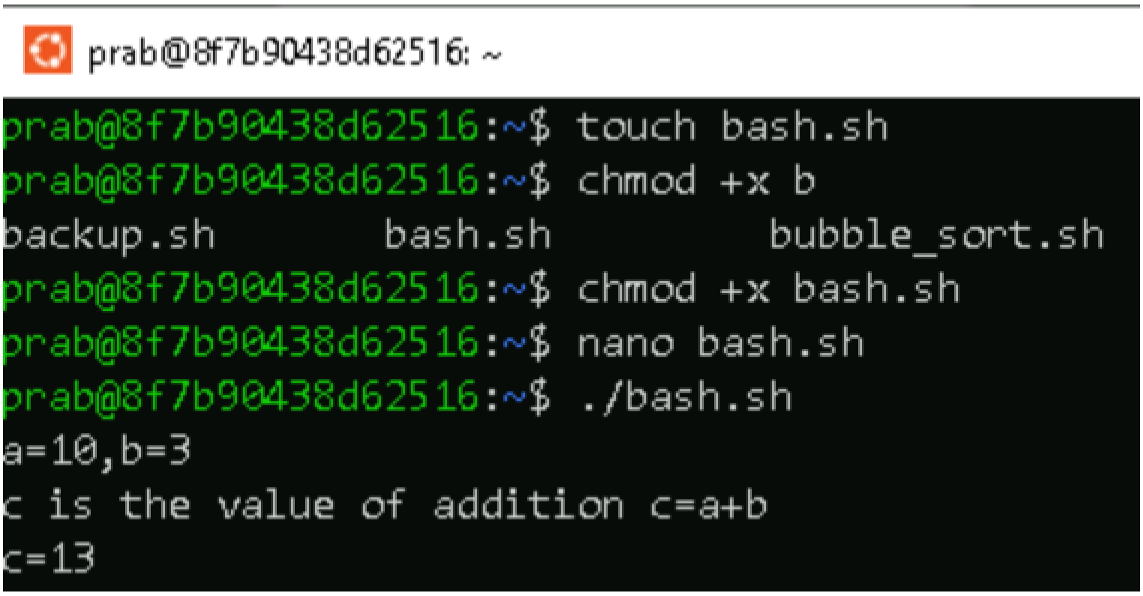


```
prab@8f7b90438d62516:~$ ./arithmetic_expression.sh
addition
z=16
subtraction
z=4
Multiplication
z=60
division
z=1
exponentiation
z=1000000
modular division
z=4
Increamenting x by 5, then x=
15
Decreamenting x by 5, then x=
10
Multiply x by 5, then x=
50
Dividing x by 5, then x=
10
Remainder x by 5, then x=
0
```

3) Backticks



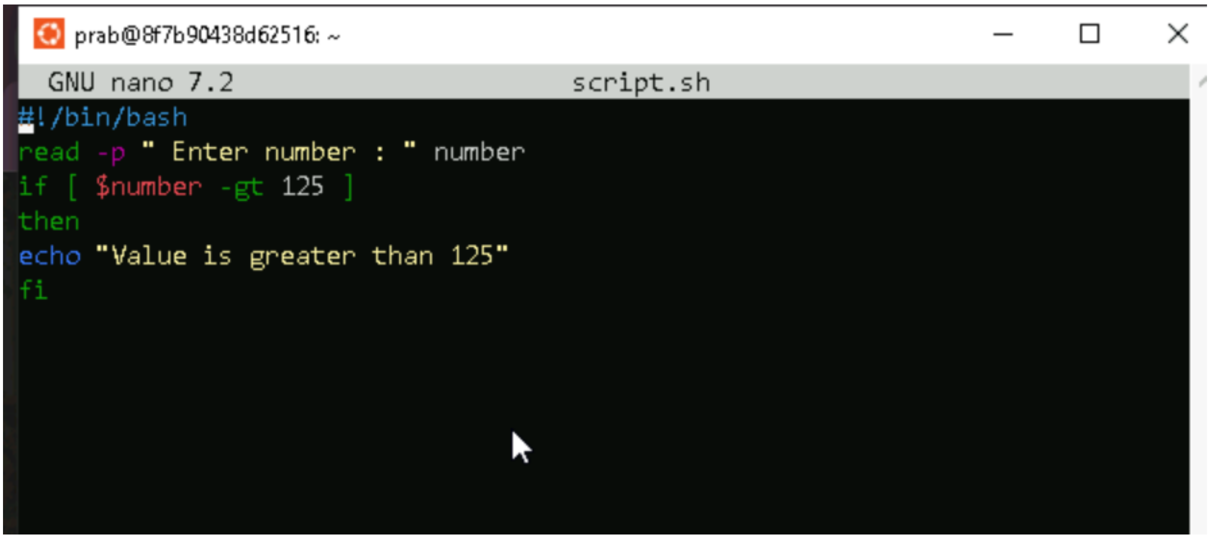
```
GNU nano 7.2                         bash.sh
#!/bin/bash
echo "a=10,b=3"
echo "c is the value of addition c=a+b"
a=10
b=3
echo "c=`expr $a + $b`"
```



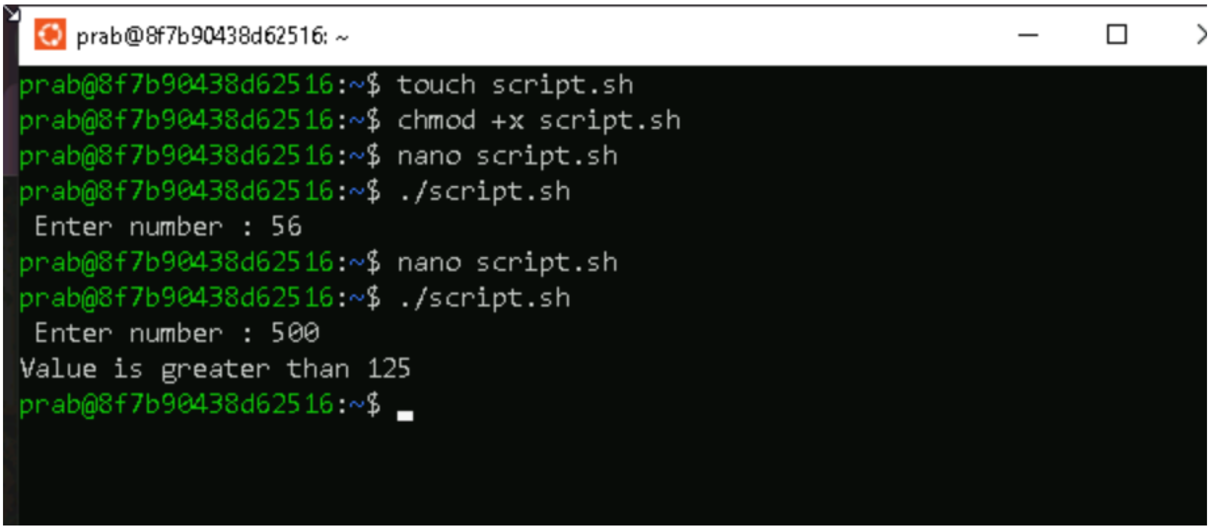
```
prab@8f7b90438d62516:~$ touch bash.sh
prab@8f7b90438d62516:~$ chmod +x b
backup.sh          bash.sh            bubble_sort.sh
prab@8f7b90438d62516:~$ chmod +x bash.sh
prab@8f7b90438d62516:~$ nano bash.sh
prab@8f7b90438d62516:~$ ./bash.sh
a=10,b=3
c is the value of addition c=a+b
c=13
```

BASH IF

1) Basic If Statements

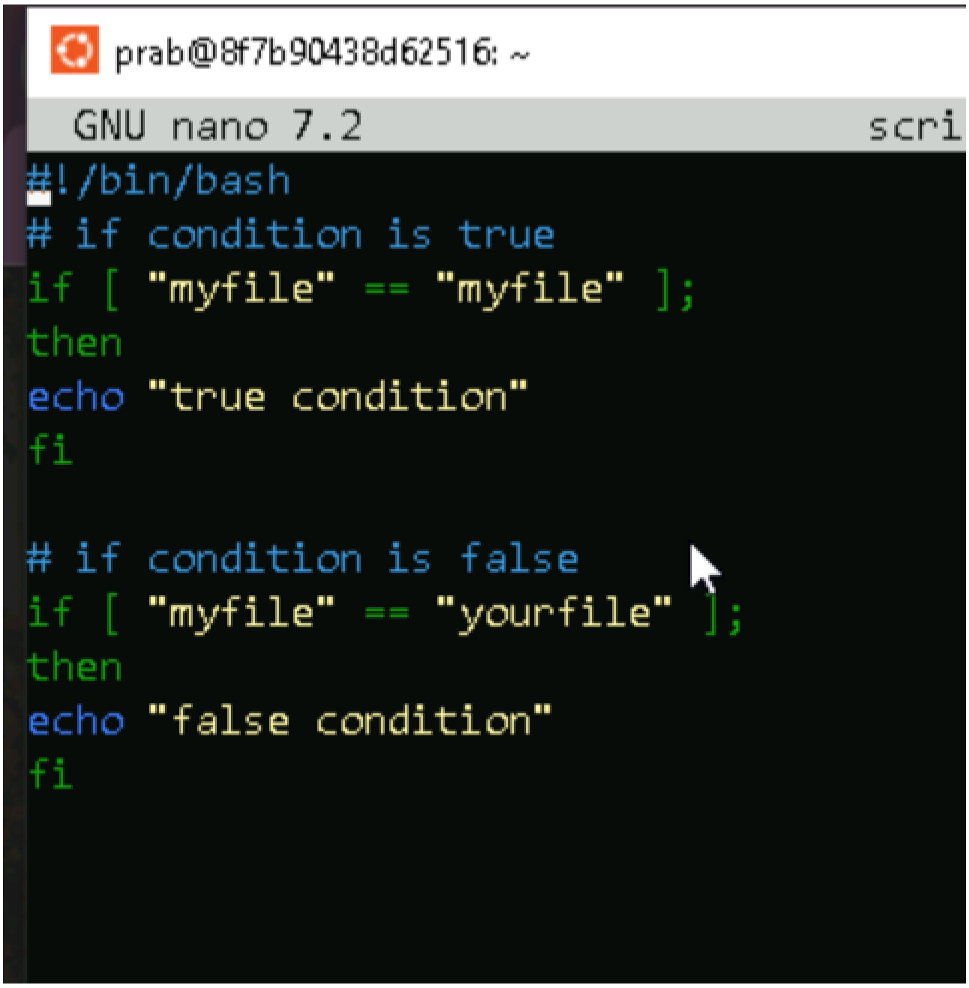


```
#!/bin/bash
read -p " Enter number : " number
if [ $number -gt 125 ]
then
echo "Value is greater than 125"
fi
```

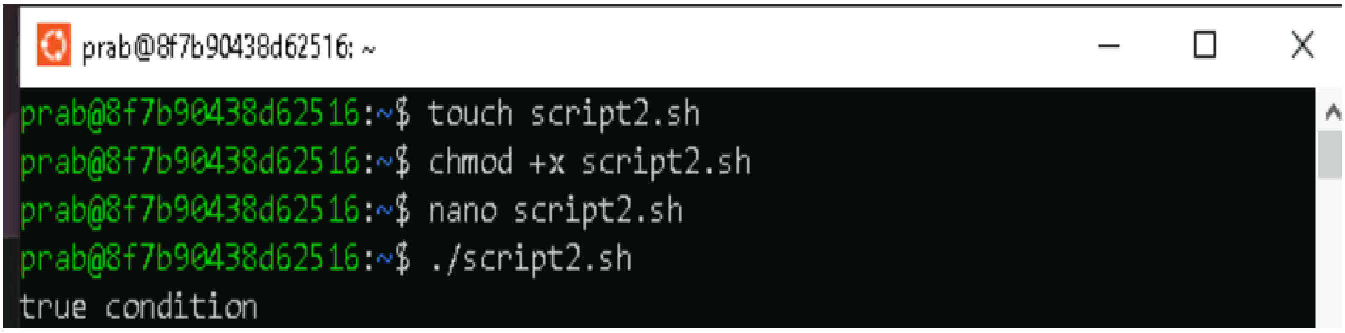


```
prab@8f7b90438d62516:~$ touch script.sh
prab@8f7b90438d62516:~$ chmod +x script.sh
prab@8f7b90438d62516:~$ nano script.sh
prab@8f7b90438d62516:~$ ./script.sh
 Enter number : 56
prab@8f7b90438d62516:~$ nano script.sh
prab@8f7b90438d62516:~$ ./script.sh
 Enter number : 500
Value is greater than 125
prab@8f7b90438d62516:~$
```

2) If statements to compare two strings

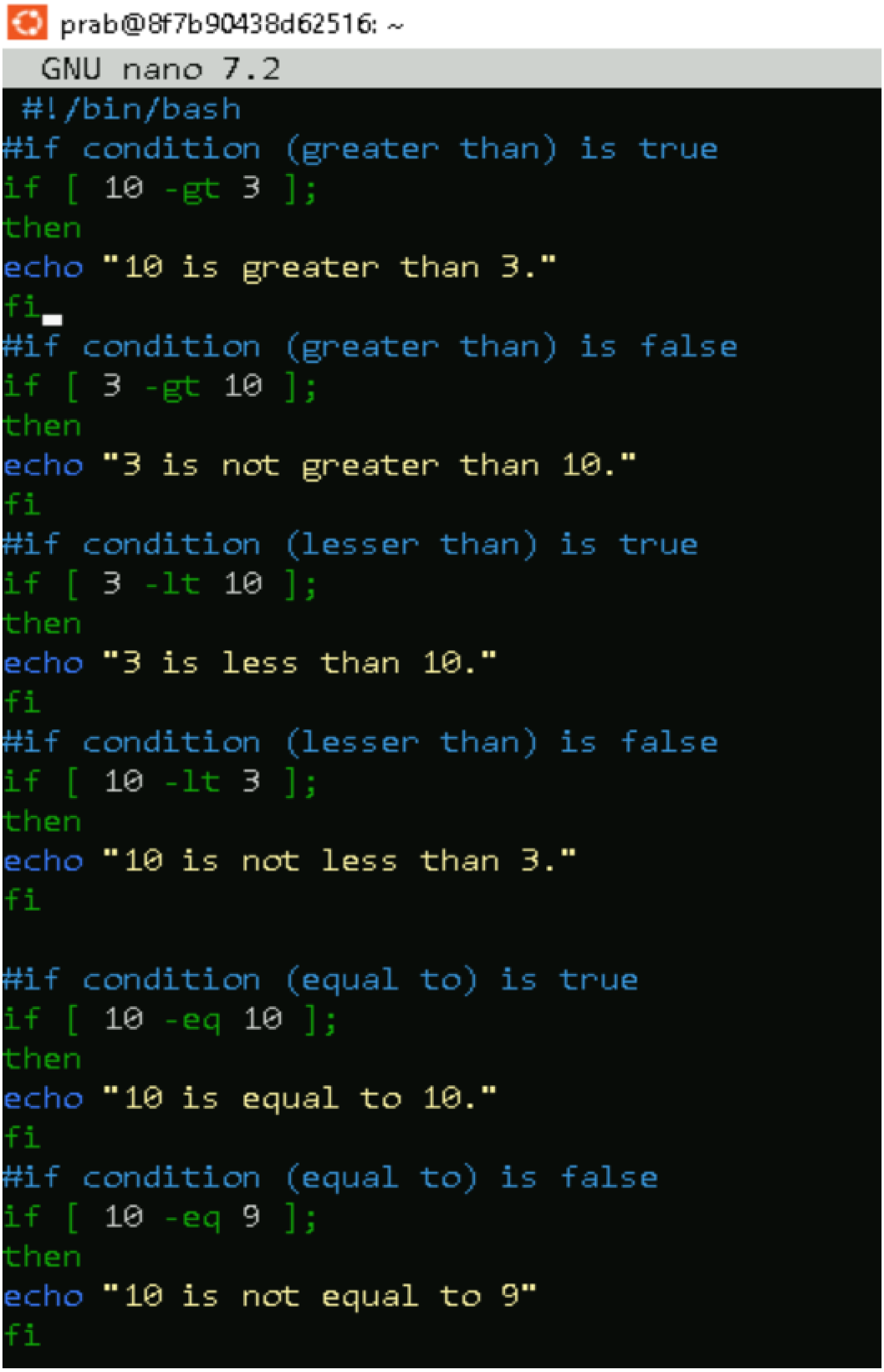


```
#!/bin/bash
# if condition is true
if [ "myfile" == "myfile" ];
then
echo "true condition"
fi

# if condition is false
if [ "myfile" == "yourfile" ];
then
echo "false condition"
fi
```



```
prab@8f7b90438d62516:~$ touch script2.sh
prab@8f7b90438d62516:~$ chmod +x script2.sh
prab@8f7b90438d62516:~$ nano script2.sh
prab@8f7b90438d62516:~$ ./script2.sh
true condition
```

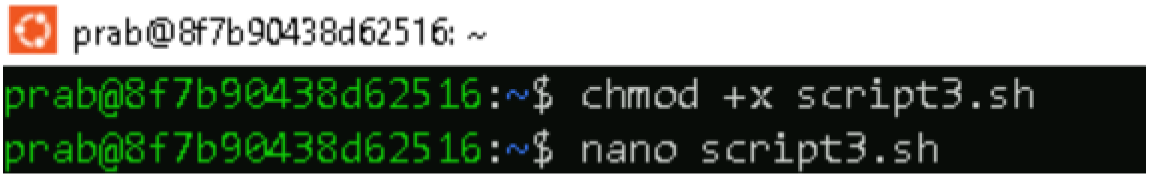
3) Compare number by using if statements



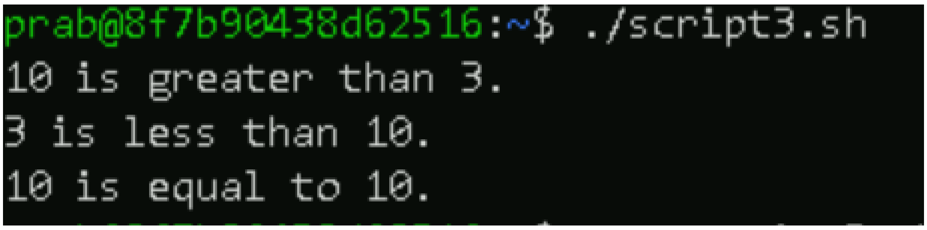
prab@8f7b90438d62516: ~

GNU nano 7.2

```
 #!/bin/bash
#if condition (greater than) is true
if [ 10 -gt 3 ];
then
echo "10 is greater than 3."
fi
#if condition (greater than) is false
if [ 3 -gt 10 ];
then
echo "3 is not greater than 10."
fi
#if condition (lesser than) is true
if [ 3 -lt 10 ];
then
echo "3 is less than 10."
fi
#if condition (lesser than) is false
if [ 10 -lt 3 ];
then
echo "10 is not less than 3."
fi

#if condition (equal to) is true
if [ 10 -eq 10 ];
then
echo "10 is equal to 10."
fi
#if condition (equal to) is false
if [ 10 -eq 9 ];
then
echo "10 is not equal to 9"
fi
```

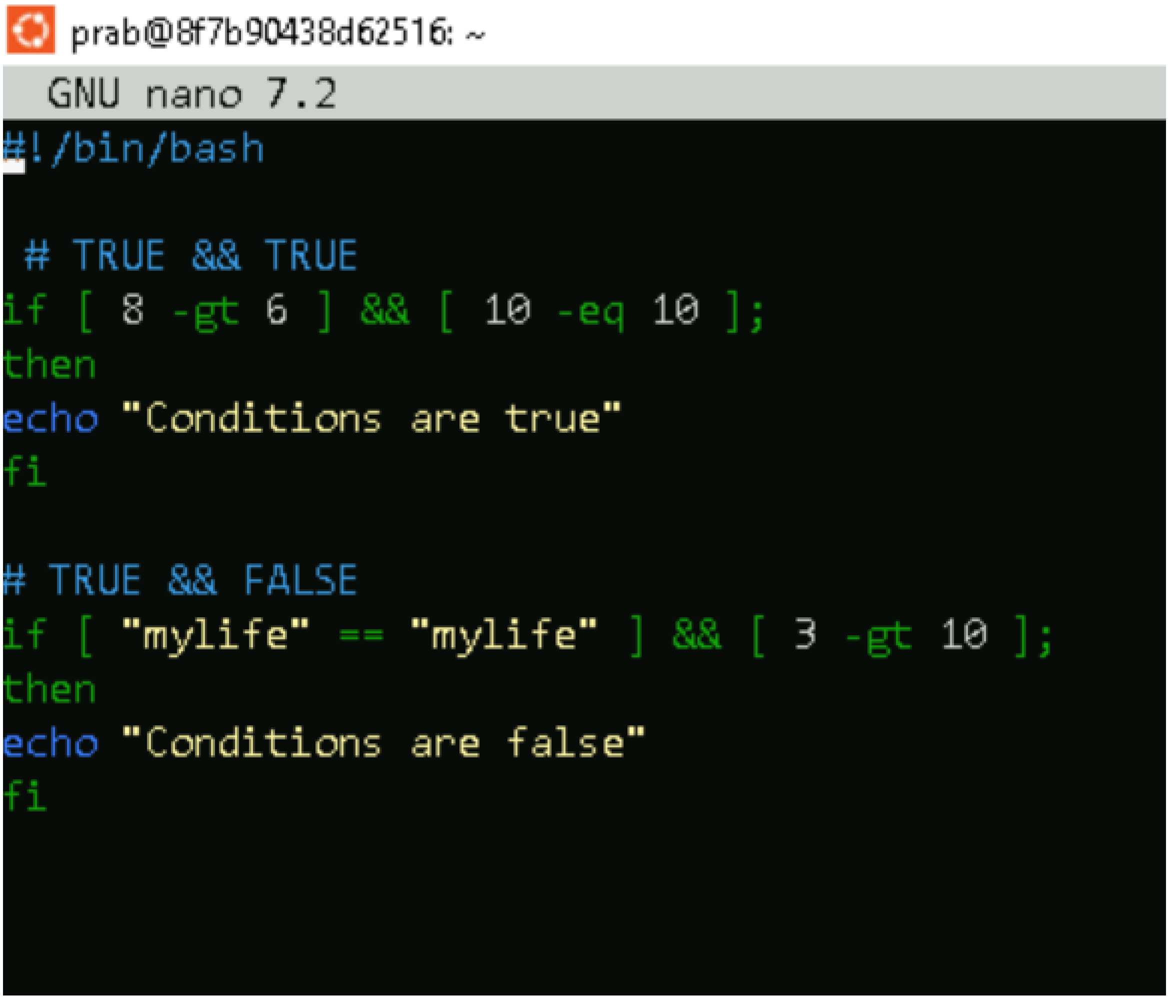


```
prab@8f7b90438d62516:~$ chmod +x script3.sh
prab@8f7b90438d62516:~$ nano script3.sh
```

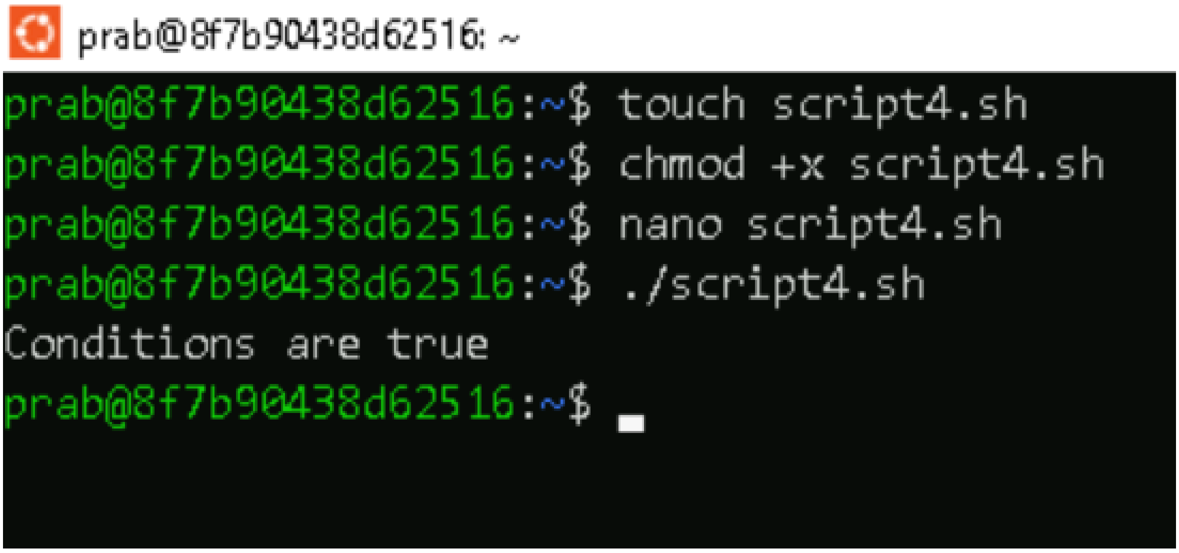


```
prab@8f7b90438d62516:~$ ./script3.sh
10 is greater than 3.
3 is less than 10.
10 is equal to 10.
```

4) AND Operator

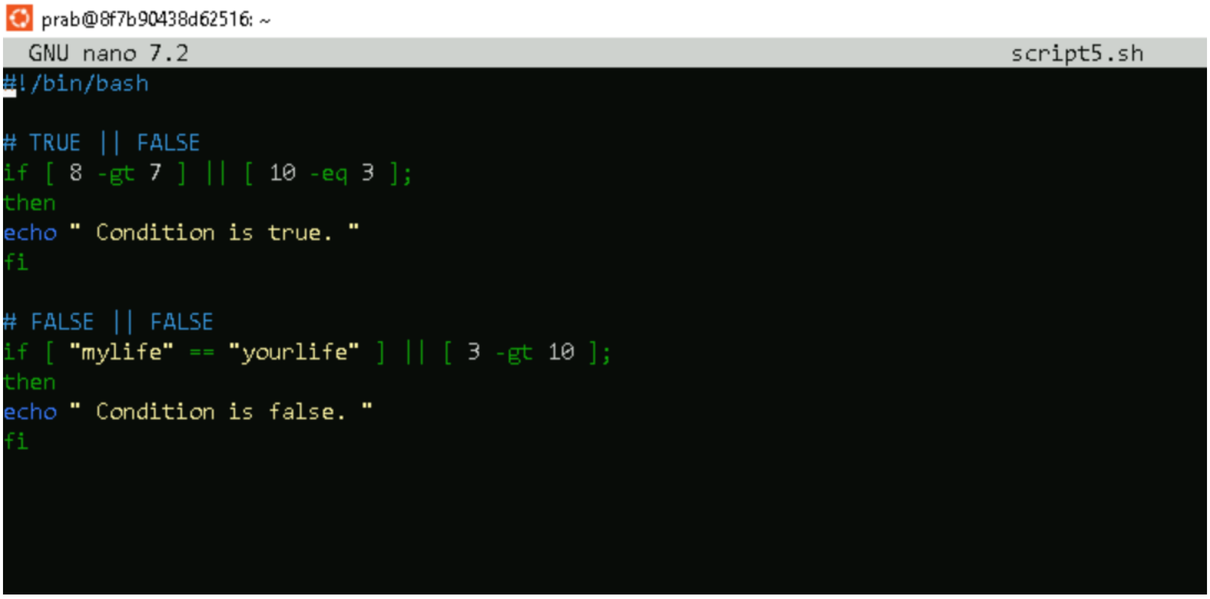


```
  GNU nano 7.2
#!/bin/bash

 # TRUE && TRUE
if [ 8 -gt 6 ] && [ 10 -eq 10 ];
then
echo "Conditions are true"
fi

# TRUE && FALSE
if [ "mylife" == "mylife" ] && [ 3 -gt 10 ];
then
echo "Conditions are false"
fi
```



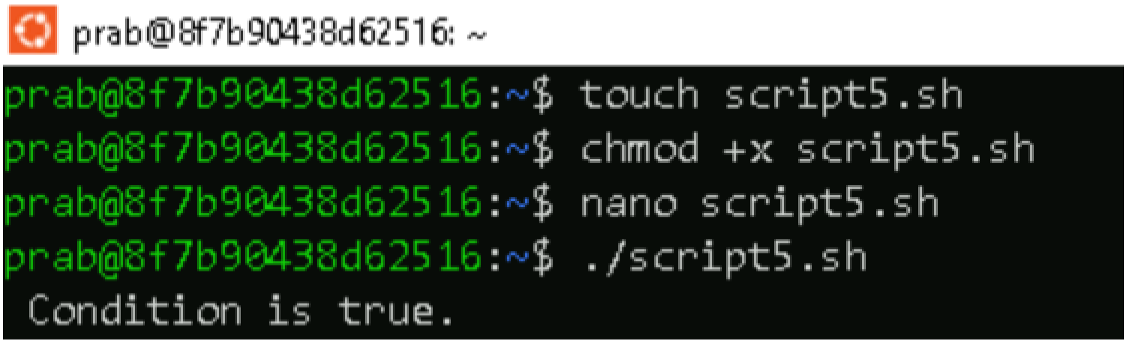
```
prab@8f7b90438d62516:~$ touch script4.sh
prab@8f7b90438d62516:~$ chmod +x script4.sh
prab@8f7b90438d62516:~$ nano script4.sh
prab@8f7b90438d62516:~$ ./script4.sh
Conditions are true
prab@8f7b90438d62516:~$
```

5) OR operator



prab@8f7b90438d62516: ~

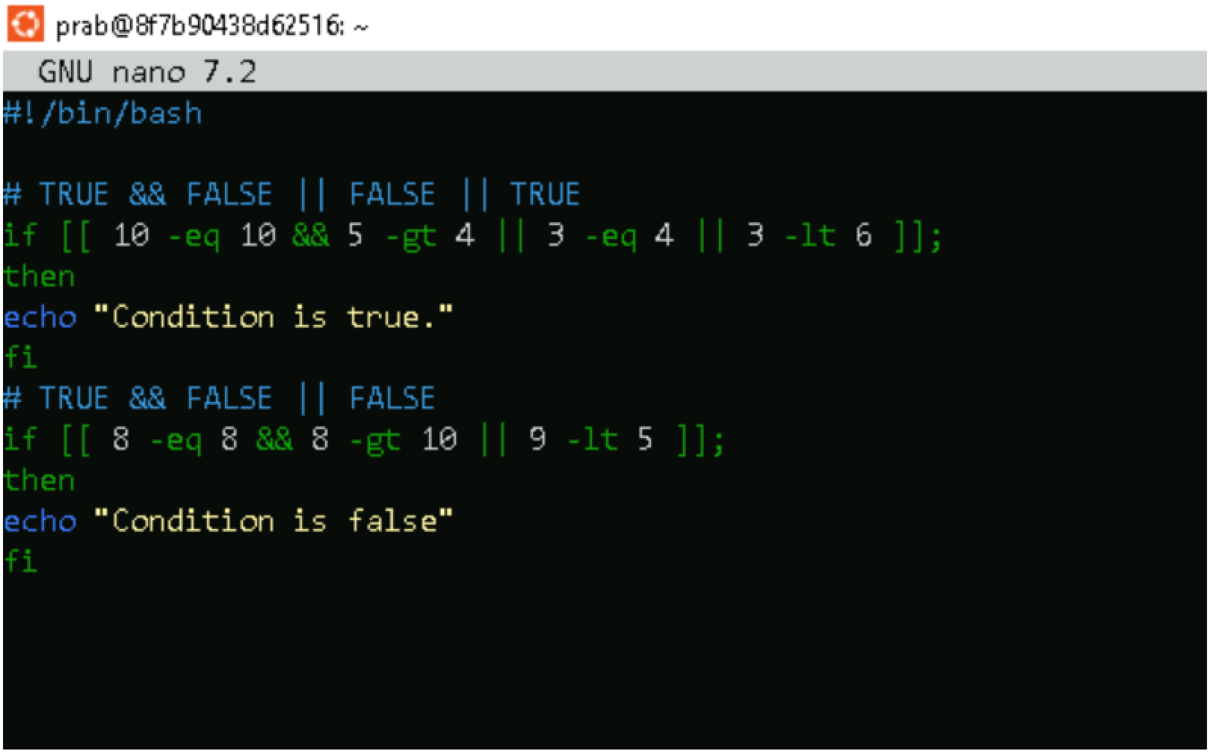
```
  GNU nano 7.2                                                      script5.sh
#!/bin/bash

# TRUE || FALSE
if [ 8 -gt 7 ] || [ 10 -eq 3 ];
then
echo " Condition is true. "
fi

# FALSE || FALSE
if [ "mylife" == "yourlife" ] || [ 3 -gt 10 ];
then
echo " Condition is false. "
fi
```



prab@8f7b90438d62516: ~

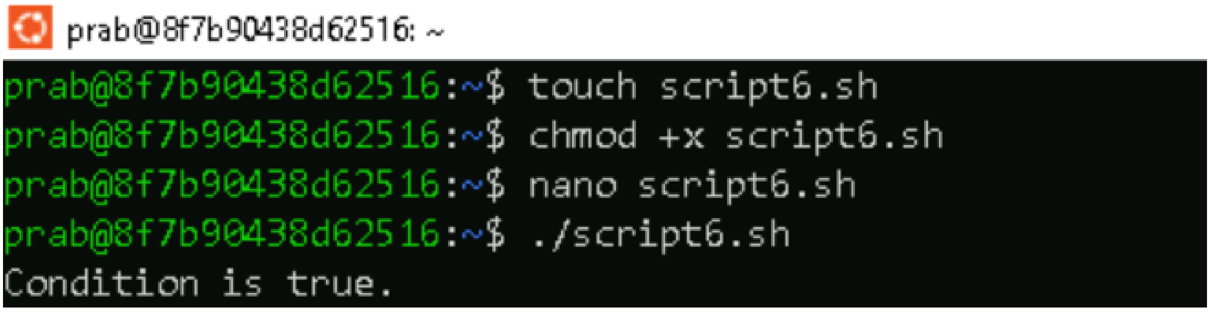
```
prab@8f7b90438d62516:~$ touch script5.sh
prab@8f7b90438d62516:~$ chmod +x script5.sh
prab@8f7b90438d62516:~$ nano script5.sh
prab@8f7b90438d62516:~$ ./script5.sh
 Condition is true.
```

6) AND and OR operator



prab@8f7b90438d62516: ~

```
  GNU nano 7.2
#!/bin/bash

# TRUE && FALSE || FALSE || TRUE
if [[ 10 -eq 10 && 5 -gt 4 || 3 -eq 4 || 3 -lt 6 ]];
then
echo "Condition is true."
fi
# TRUE && FALSE || FALSE
if [[ 8 -eq 8 && 8 -gt 10 || 9 -lt 5 ]];
then
echo "Condition is false"
fi
```

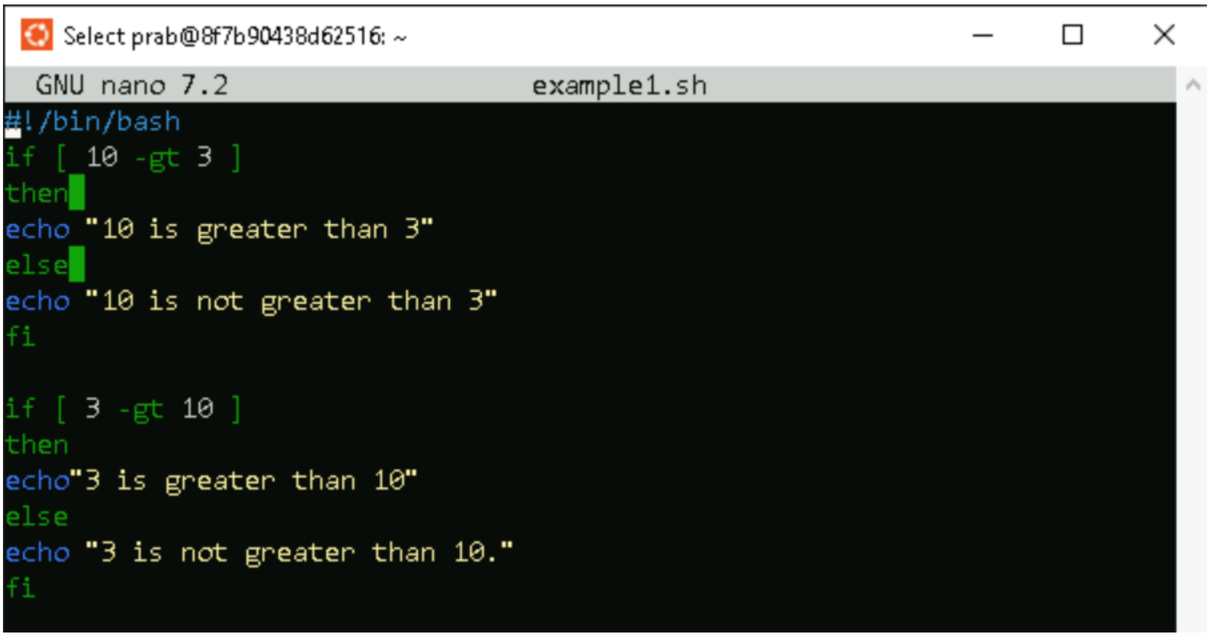


prab@8f7b90438d62516: ~

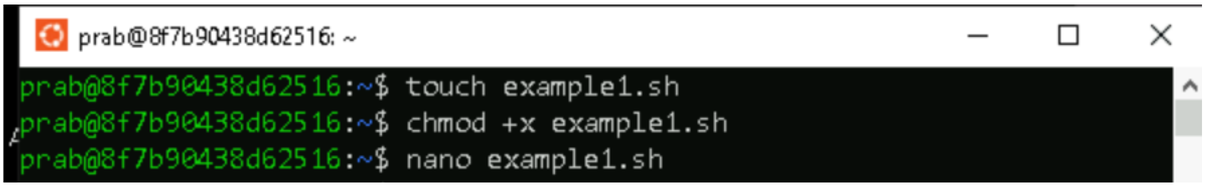
```
prab@8f7b90438d62516:~$ touch script6.sh
prab@8f7b90438d62516:~$ chmod +x script6.sh
prab@8f7b90438d62516:~$ nano script6.sh
prab@8f7b90438d62516:~$ ./script6.sh
Condition is true.
```

BASH IF ELSE

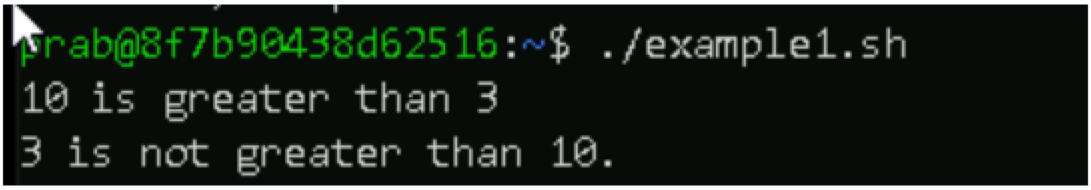
1) if-else statement



```
#!/bin/bash
if [ 10 -gt 3 ]
then
echo "10 is greater than 3"
else
echo "10 is not greater than 3"
fi

if [ 3 -gt 10 ]
then
echo"3 is greater than 10"
else
echo "3 is not greater than 10."
fi
```

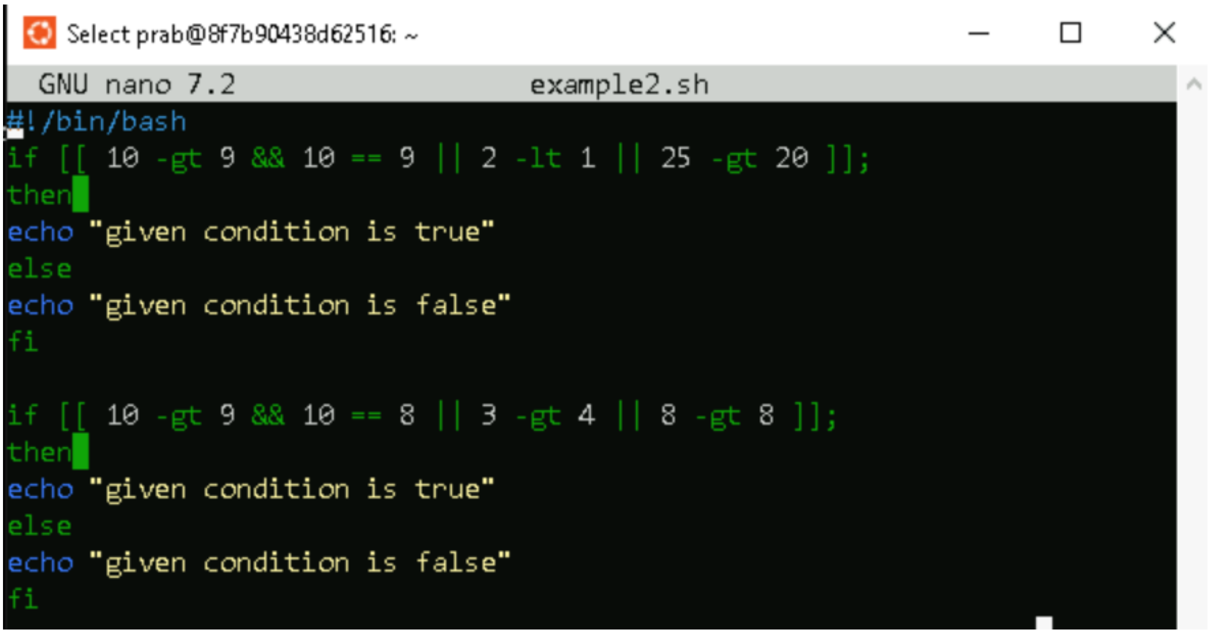


```
prab@8f7b90438d62516:~$ touch example1.sh
prab@8f7b90438d62516:~$ chmod +x example1.sh
prab@8f7b90438d62516:~$ nano example1.sh
```

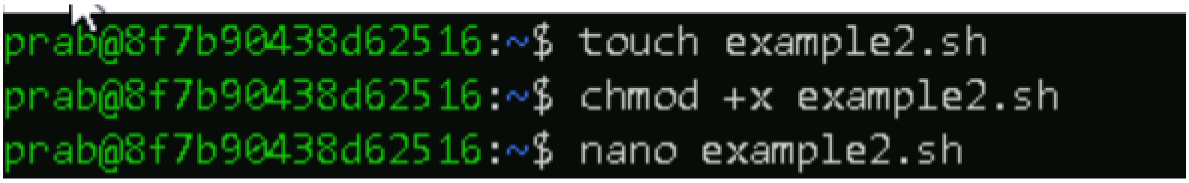


```
prab@8f7b90438d62516:~$ ./example1.sh
10 is greater than 3
3 is not greater than 10.
```

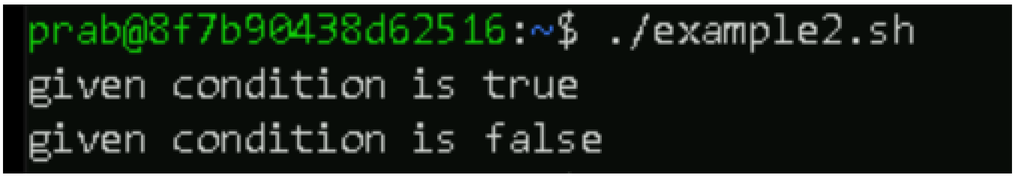
2) Multiple conditions with if-else statement



```
#!/bin/bash
if [[ 10 -gt 9 && 10 == 9 || 2 -lt 1 || 25 -gt 20 ]];
then
echo "given condition is true"
else
echo "given condition is false"
fi

if [[ 10 -gt 9 && 10 == 8 || 3 -gt 4 || 8 -gt 8 ]];
then
echo "given condition is true"
else
echo "given condition is false"
fi
```

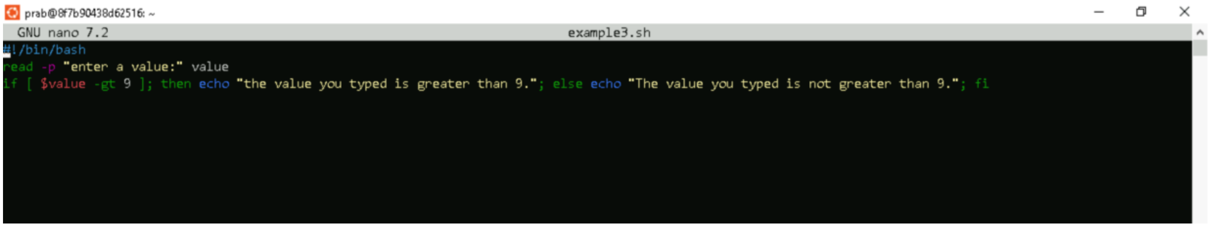


```
prab@8f7b90438d62516:~$ touch example2.sh
prab@8f7b90438d62516:~$ chmod +x example2.sh
prab@8f7b90438d62516:~$ nano example2.sh
```

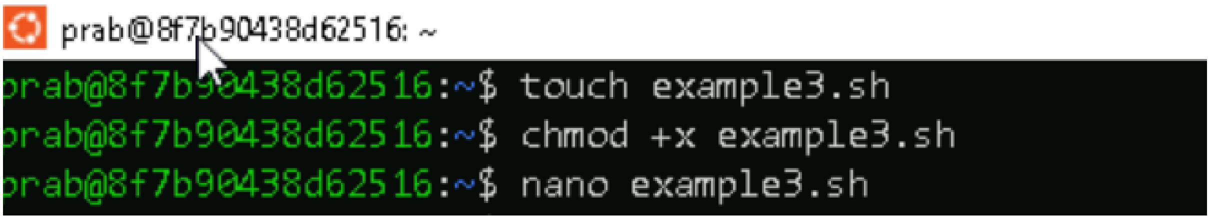


```
prab@8f7b90438d62516:~$ ./example2.sh
given condition is true
given condition is false
```

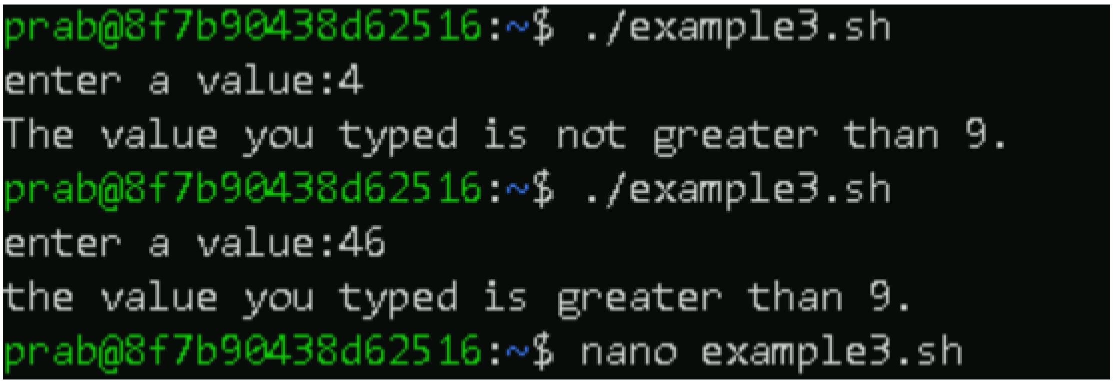
3)if-else statement in single line



```
#!/bin/bash
read -p "enter a value:" value
if [ $value -gt 9 ]; then echo "the value you typed is greater than 9."; else echo "The value you typed is not greater than 9."; fi
```

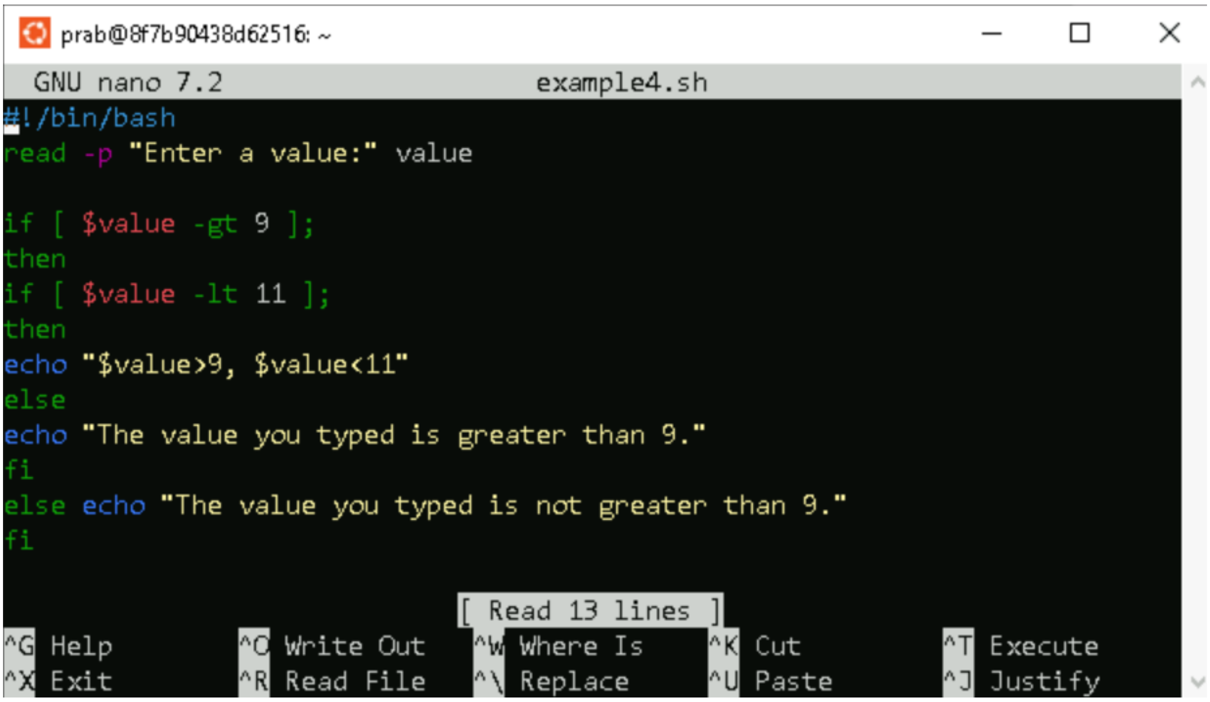


```
prab@8f7b90438d62516:~$ touch example3.sh
prab@8f7b90438d62516:~$ chmod +x example3.sh
prab@8f7b90438d62516:~$ nano example3.sh
```

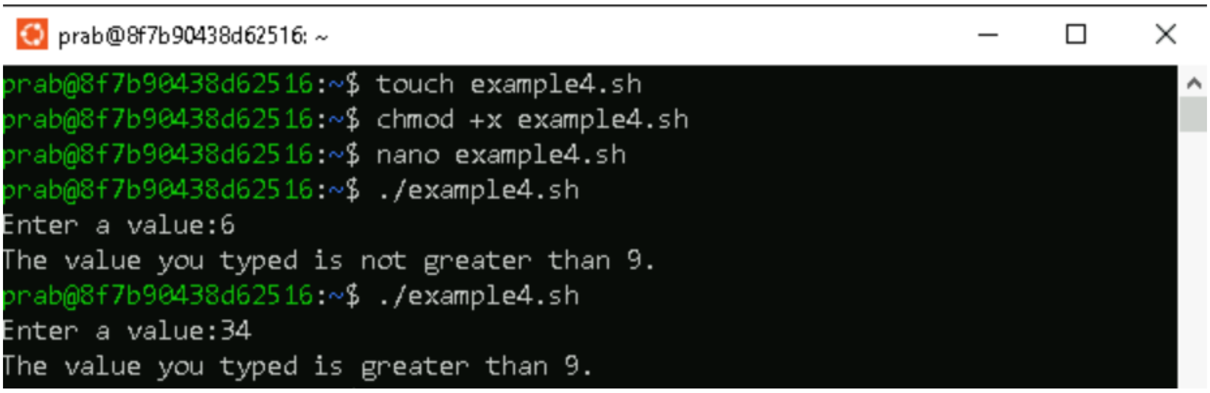


```
prab@8f7b90438d62516:~$ ./example3.sh
enter a value:4
The value you typed is not greater than 9.
prab@8f7b90438d62516:~$ ./example3.sh
enter a value:46
the value you typed is greater than 9.
prab@8f7b90438d62516:~$ nano example3.sh
```

4) nested if-else



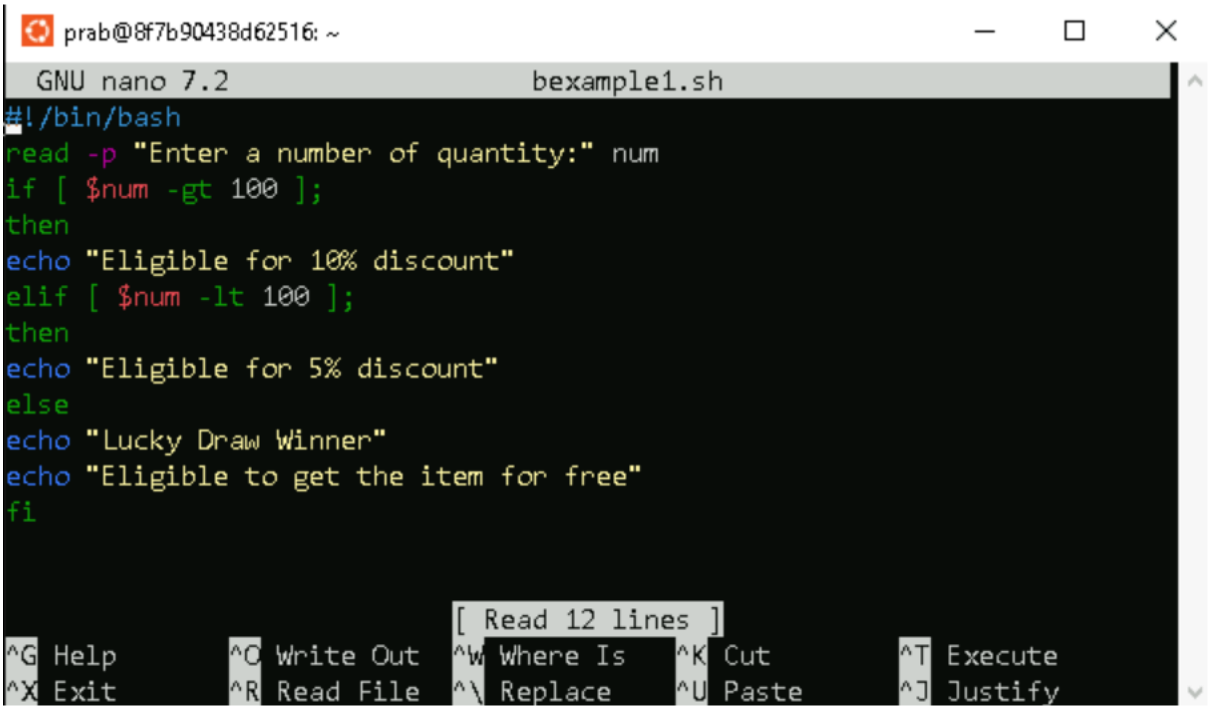
```
#!/bin/bash
read -p "Enter a value:" value

if [ $value -gt 9 ];
then
if [ $value -lt 11 ];
then
echo "$value>9, $value<11"
else
echo "The value you typed is greater than 9."
fi
else echo "The value you typed is not greater than 9."
fi
```



```
prab@8f7b90438d62516:~$ touch example4.sh
prab@8f7b90438d62516:~$ chmod +x example4.sh
prab@8f7b90438d62516:~$ nano example4.sh
prab@8f7b90438d62516:~$ ./example4.sh
Enter a value:6
The value you typed is not greater than 9.
prab@8f7b90438d62516:~$ ./example4.sh
Enter a value:34
The value you typed is greater than 9.
```

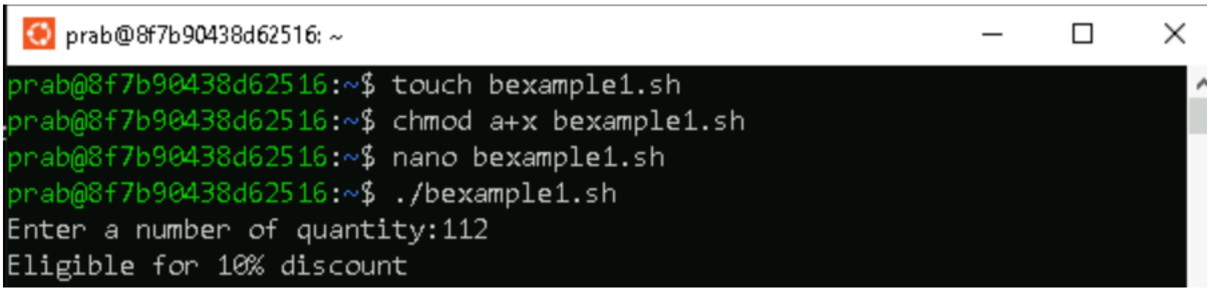
BASH else if

1)else-if statement



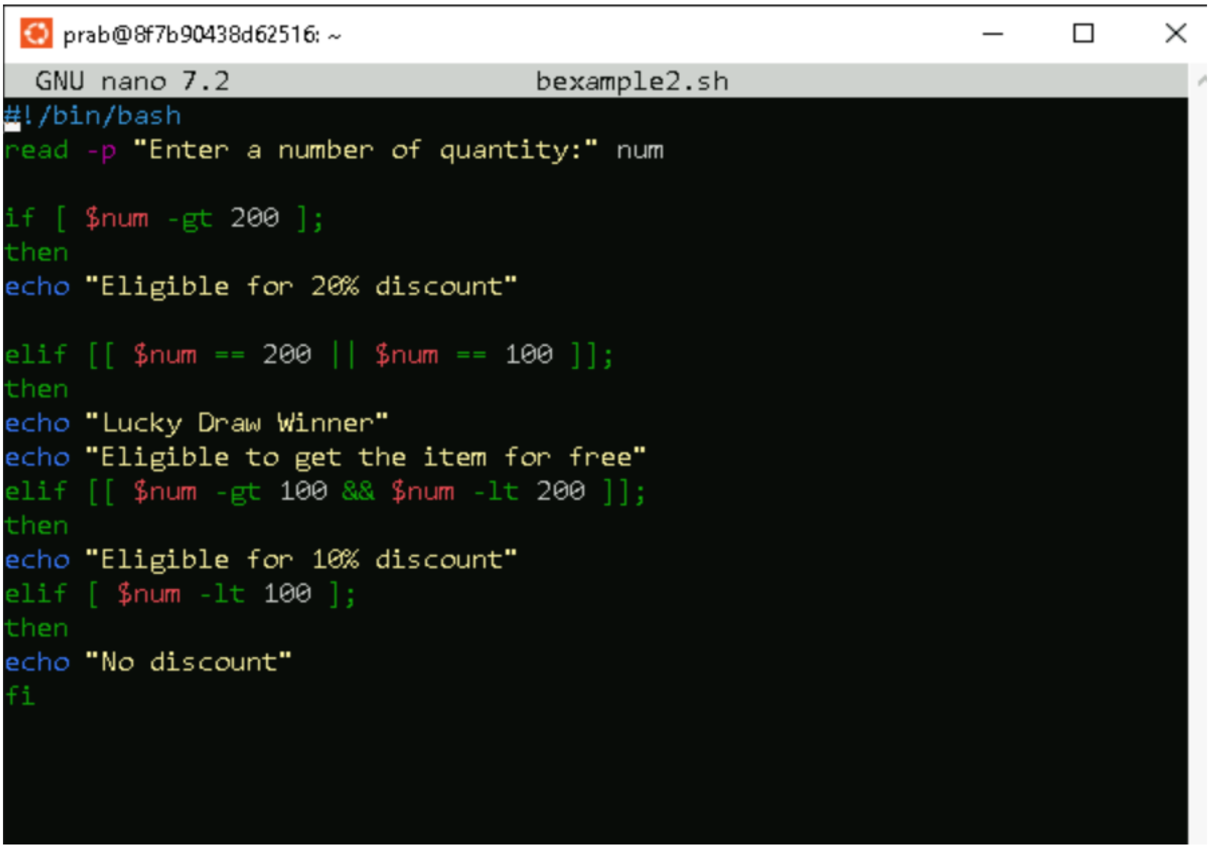
```
#!/bin/bash
read -p "Enter a number of quantity:" num
if [ $num -gt 100 ];
then
echo "Eligible for 10% discount"
elif [ $num -lt 100 ];
then
echo "Eligible for 5% discount"
else
echo "Lucky Draw Winner"
echo "Eligible to get the item for free"
fi
```

```
[ Read 12 lines ]
```

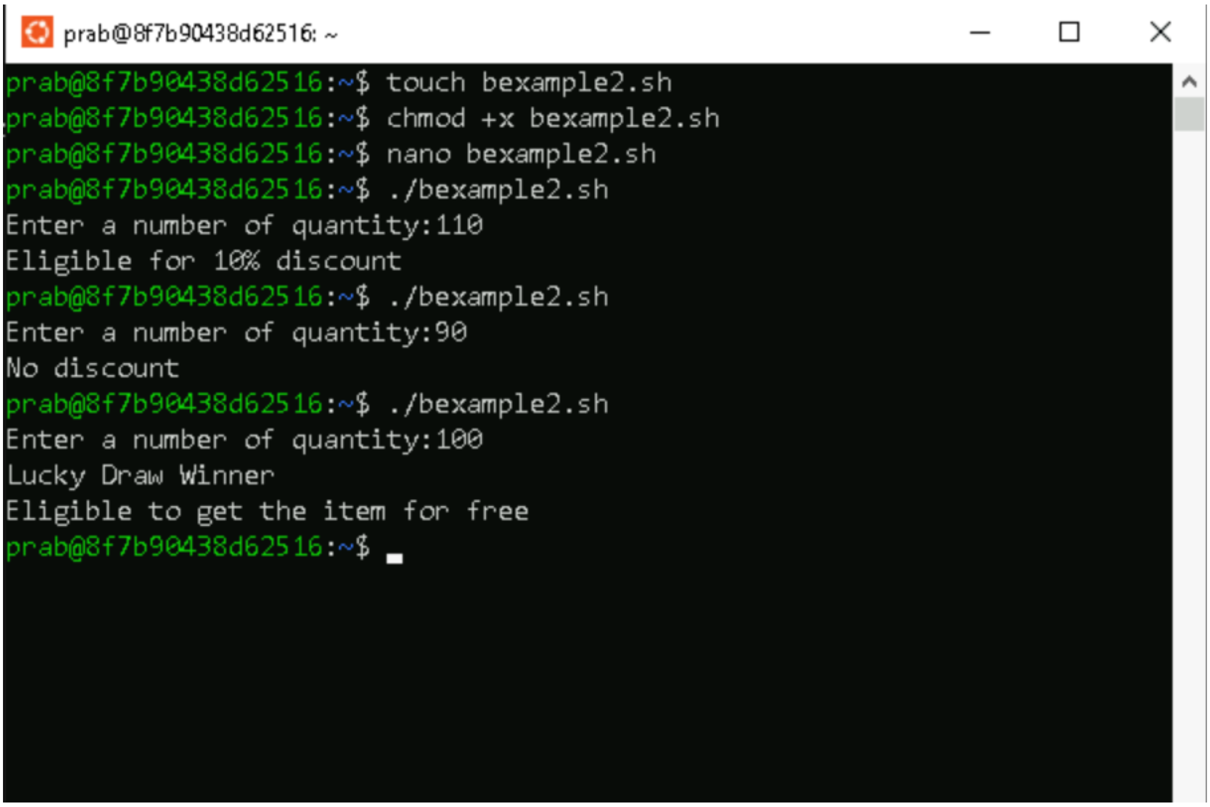


```
prab@8f7b90438d62516:~$ touch bexample1.sh
prab@8f7b90438d62516:~$ chmod a+x bexample1.sh
prab@8f7b90438d62516:~$ nano bexample1.sh
prab@8f7b90438d62516:~$ ./bexample1.sh
Enter a number of quantity:112
Eligible for 10% discount
```

2) Multiple conditions with else-if statements



```
  GNU nano 7.2                        bexample2.sh
#!/bin/bash
read -p "Enter a number of quantity:" num

if [ $num -gt 200 ];
then
echo "Eligible for 20% discount"

elif [[ $num == 200 || $num == 100 ]];
then
echo "Lucky Draw Winner"
echo "Eligible to get the item for free"
elif [[ $num -gt 100 && $num -lt 200 ]];
then
echo "Eligible for 10% discount"
elif [ $num -lt 100 ];
then
echo "No discount"
fi
```



```
prab@8f7b90438d62516:~$ touch bexample2.sh
prab@8f7b90438d62516:~$ chmod +x bexample2.sh
prab@8f7b90438d62516:~$ nano bexample2.sh
prab@8f7b90438d62516:~$ ./bexample2.sh
Enter a number of quantity:110
Eligible for 10% discount
prab@8f7b90438d62516:~$ ./bexample2.sh
Enter a number of quantity:90
No discount
prab@8f7b90438d62516:~$ ./bexample2.sh
Enter a number of quantity:100
Lucky Draw Winner
Eligible to get the item for free
prab@8f7b90438d62516:~$
```