

实验 16 批处理操作接口 5: case 判断与 for 循环

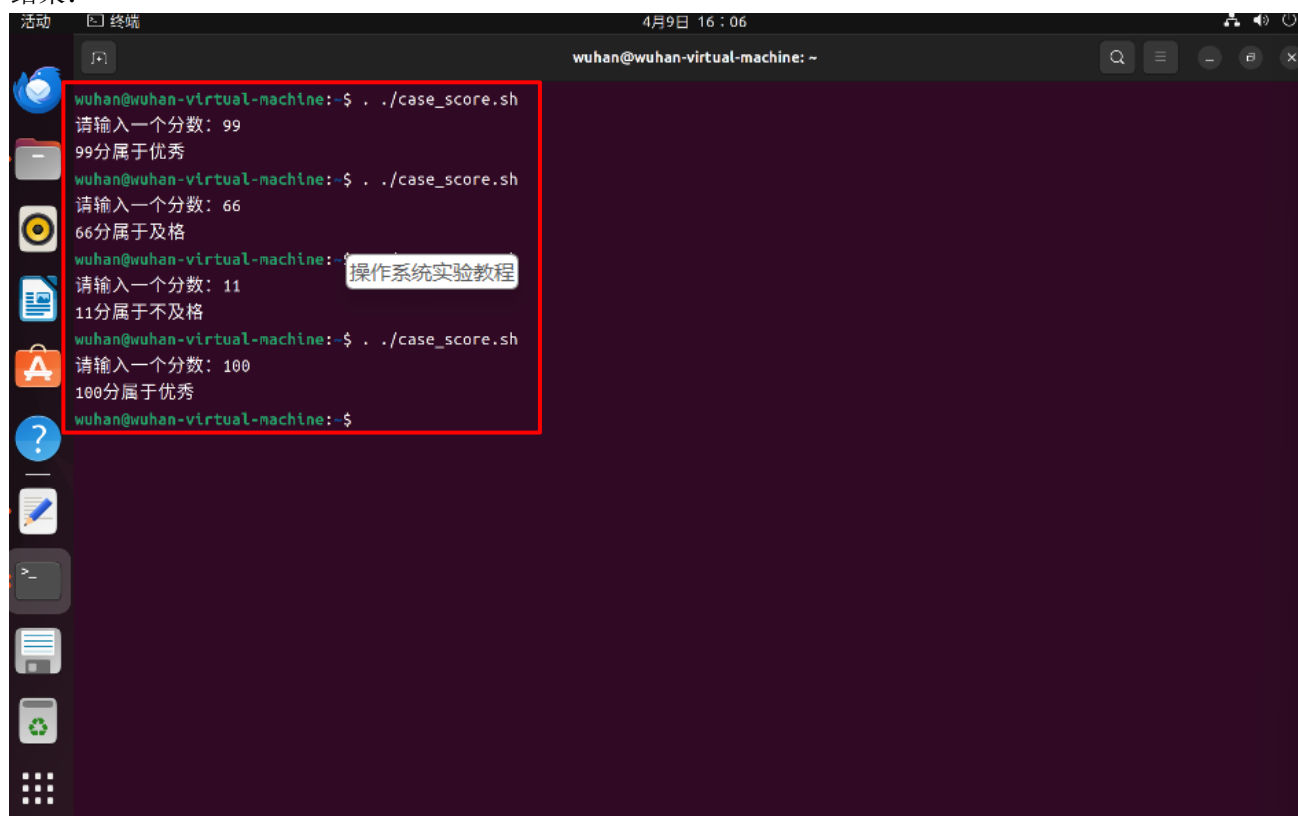
1、建立文件 case_score.sh，使用 case 对成绩等级进行判断

脚本：

```
#!/bin/bash
echo -n "请输入一个分数: "
read score
lev=$(echo $score/10|bc)
if [ "$lev" -lt 6 ];then
lev=5
fi
if [ "$lev" -eq 10 ];then
lev=9
fi
case "$lev" in
5) echo "$score 分属于不及格";;
6) echo "$score 分属于及格";;
7) echo "$score 分属于中等";;
8) echo "$score 分属于良好";;
9) echo "$score 分属于优秀";;
*) echo "分值不合法";;
esac
```

命令：../case_score.sh

结果：



The screenshot shows a terminal window titled 'wuhan@wuhan-virtual-machine: ~' with a timestamp of '4月9日 16:06'. The terminal displays the execution of the script 'case_score.sh' with the following inputs and outputs:

- Input: 99, Output: 99分属于优秀
- Input: 66, Output: 66分属于及格
- Input: 11, Output: 11分属于不及格
- Input: 100, Output: 100分属于优秀

The terminal output is highlighted with a red box. A watermark '操作系统实验教程' is visible in the center of the terminal window.

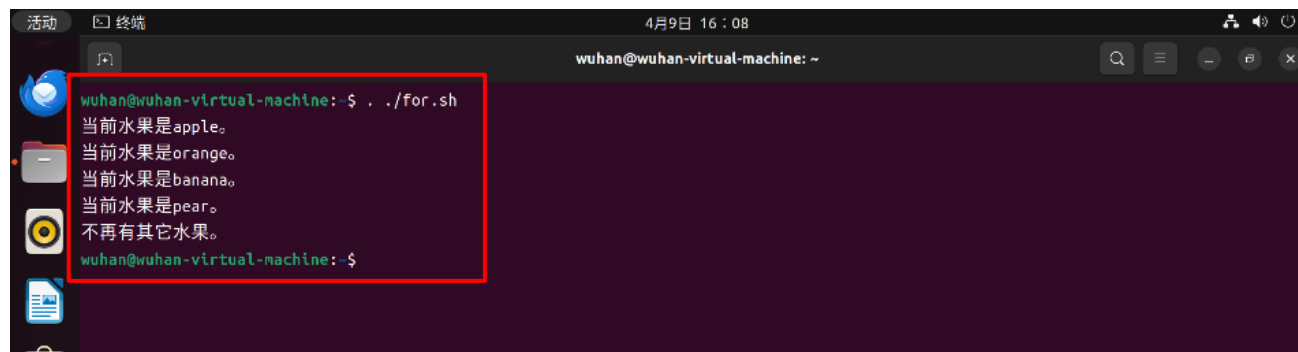
2、建立文件 for.sh，使用 for 循环对水果类型进行判断

脚本：

```
#!/bin/bash
for FRUIT in apple orange banana pear
do
    echo "当前水果是$FRUIT。"
done
echo "不再有其它水果。"
```

命令：../for.sh

结果：

A terminal window titled 'wuhan@wuhan-virtual-machine: ~' with a timestamp of '4月9日 16:08'. The terminal shows the command 'wuhan@wuhan-virtual-machine:~\$./for.sh' and its output: '当前水果是apple。', '当前水果是orange。', '当前水果是banana。', '当前水果是pear。', and '不再有其它水果。'. The prompt returns to 'wuhan@wuhan-virtual-machine:~\$'. The output lines are highlighted with a red box.

```
wuhan@wuhan-virtual-machine:~$ ./for.sh
当前水果是apple。
当前水果是orange。
当前水果是banana。
当前水果是pear。
不再有其它水果。
wuhan@wuhan-virtual-machine:~$
```

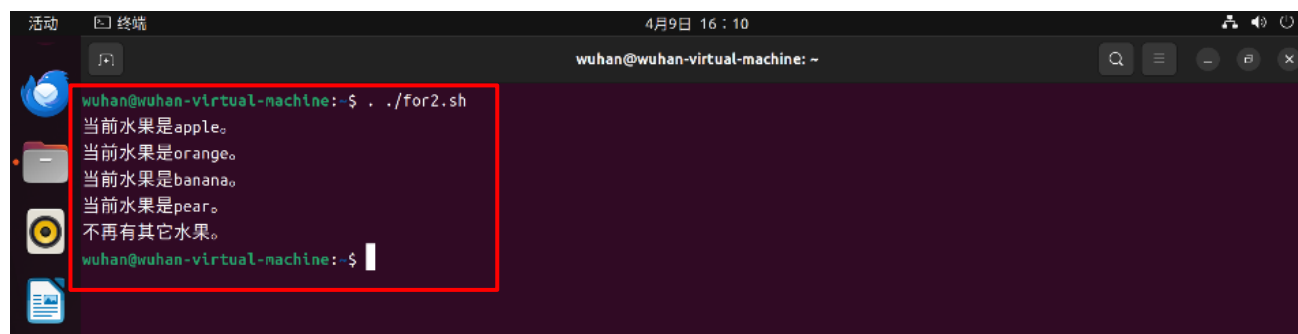
3、改写 for.sh 为文件 for2.sh，在 in 后使用新的循环列表形式\${变量}

脚本：

```
#!/bin/bash
fruits="apple orange banana pear"
for FRUIT in ${fruits}
do
    echo "当前水果是$FRUIT。"
done
echo "不再有其它水果。"
```

命令：../for2.sh

结果：

A terminal window titled 'wuhan@wuhan-virtual-machine: ~' with a timestamp of '4月9日 16:10'. The terminal shows the command 'wuhan@wuhan-virtual-machine:~\$./for2.sh' and its output: '当前水果是apple。', '当前水果是orange。', '当前水果是banana。', '当前水果是pear。', and '不再有其它水果。'. The prompt returns to 'wuhan@wuhan-virtual-machine:~\$'. The output lines are highlighted with a red box.

```
wuhan@wuhan-virtual-machine:~$ ./for2.sh
当前水果是apple。
当前水果是orange。
当前水果是banana。
当前水果是pear。
不再有其它水果。
wuhan@wuhan-virtual-machine:~$
```

4、建立文件 for3.sh，使用枚举的、简略的循环列表形式输出当前循环变量值
脚本：

```
#!/bin/bash
i="1 2 3 4 5"
for vi in ${i}
do
    echo "当前循环变量值=$vi。"
done
for vi in 1 2 3 4 5
do
    echo "当前循环变量值=$vi。"
done
for vi in {1..5}
do
    echo "当前循环变量值=$vi。"
done
```

命令：../for3.sh

结果：



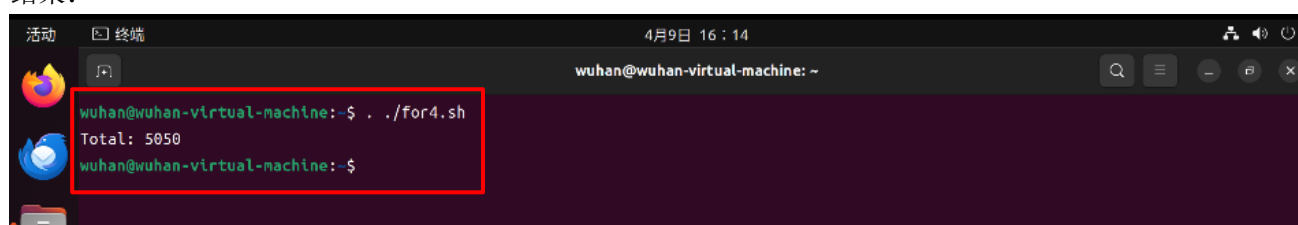
```
wuhan@wuhan-virtual-machine:~$ ./for3.sh
当前循环变量值=1。
当前循环变量值=2。
当前循环变量值=3。
当前循环变量值=4。
当前循环变量值=5。
当前循环变量值=1。
当前循环变量值=2。
当前循环变量值=3。
当前循环变量值=4。
当前循环变量值=5。
当前循环变量值=1。
当前循环变量值=2。
当前循环变量值=3。
当前循环变量值=4。
当前循环变量值=5。
wuhan@wuhan-virtual-machine:~$
```

5、建立文件 for4.sh 循环累加 1 到 100 的自然数序列之和，使用命令替换作为循环列表
脚本：

```
#!/bin/bash
sum=0
for VAR in `seq 1 100` #求 1 到 100 的自然数序列之和
do
    let "sum+=VAR"
done
echo "Total: $sum"
```

命令：../for4.sh

结果：



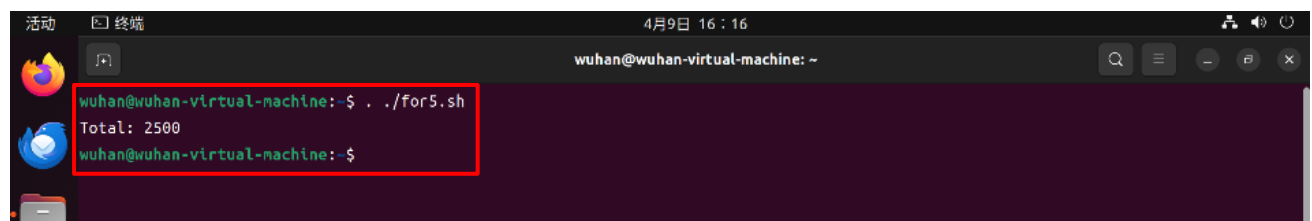
```
wuhan@wuhan-virtual-machine:~$ ./for4.sh
Total: 5050
wuhan@wuhan-virtual-machine:~$
```

6、建立文件 for5.sh 循环计算 1 到 100 间隔为 2 的自然数序列之和
脚本:

```
#!/bin/bash
sum=0
for VAR in $(seq 1 2 100)      #求 1 到 100 间隔为 2 的自然数序列之和
do
    let "sum+=VAR"
done
echo "Total: $sum"
```

命令: `../for5.sh`

结果:

A terminal window titled 'wuhan@wuhan-virtual-machine: ~' with a timestamp of '4月9日 16:16'. The terminal shows the command `../for5.sh` being executed, followed by the output `Total: 2500`. The command prompt returns to `wuhan@wuhan-virtual-machine:~$`. The text is highlighted with a red box.

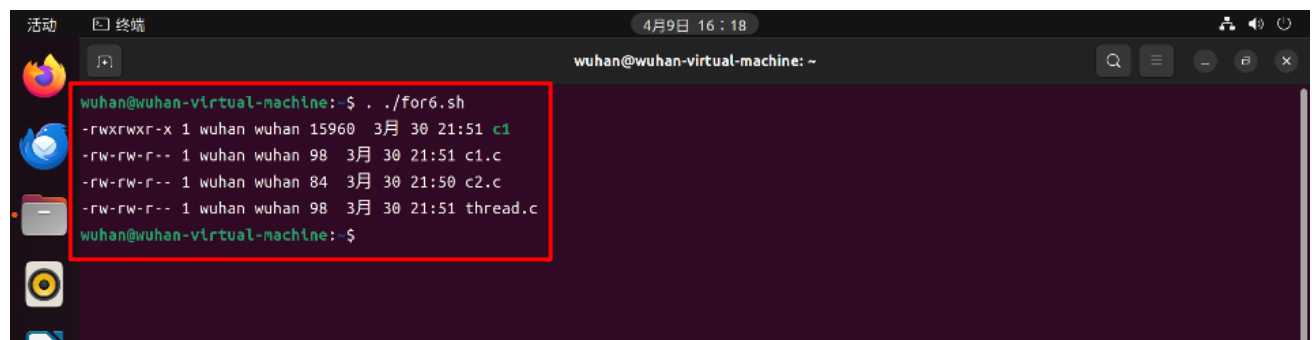
```
wuhan@wuhan-virtual-machine:~$ ../for5.sh
Total: 2500
wuhan@wuhan-virtual-machine:~$
```

7、建立文件 for6.sh, 逐个查看目录中每个文件的属性
脚本:

```
#!/bin/bash
cd c
for VAR in $(ls)
do
    ls -l $VAR
done
cd
```

命令: `../for6.sh`

结果:

A terminal window titled 'wuhan@wuhan-virtual-machine: ~' with a timestamp of '4月9日 16:18'. The terminal shows the command `../for6.sh` being executed, followed by the output of `ls -l` for each file in directory 'c': `-rwxrwxr-x 1 wuhan wuhan 15960 3月 30 21:51 c1`, `-rw-rw-r-- 1 wuhan wuhan 98 3月 30 21:51 c1.c`, `-rw-rw-r-- 1 wuhan wuhan 84 3月 30 21:50 c2.c`, and `-rw-rw-r-- 1 wuhan wuhan 98 3月 30 21:51 thread.c`. The command prompt returns to `wuhan@wuhan-virtual-machine:~$`. The text is highlighted with a red box.

```
wuhan@wuhan-virtual-machine:~$ ../for6.sh
-rwxrwxr-x 1 wuhan wuhan 15960 3月 30 21:51 c1
-rw-rw-r-- 1 wuhan wuhan 98 3月 30 21:51 c1.c
-rw-rw-r-- 1 wuhan wuhan 84 3月 30 21:50 c2.c
-rw-rw-r-- 1 wuhan wuhan 98 3月 30 21:51 thread.c
wuhan@wuhan-virtual-machine:~$
```

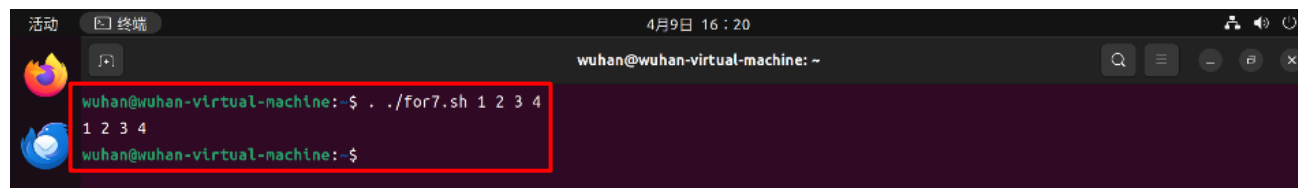
8、建立文件 for7.sh，输出命令行上的参数值

脚本：

```
#!/bin/bash
for VAR
do
    echo -n "$VAR "
done
echo
```

命令：../for7.sh 1 2 3 4

结果：

A terminal window titled '终端' (Terminal) with the date '4月9日 16:20' and the user 'wuhan@wuhan-virtual-machine: ~'. The terminal shows the command 'wuhan@wuhan-virtual-machine:~\$./for7.sh 1 2 3 4' being executed. The output is '1 2 3 4' on the next line. The prompt 'wuhan@wuhan-virtual-machine:~\$' is visible on the third line. The command and its output are highlighted with a red box.

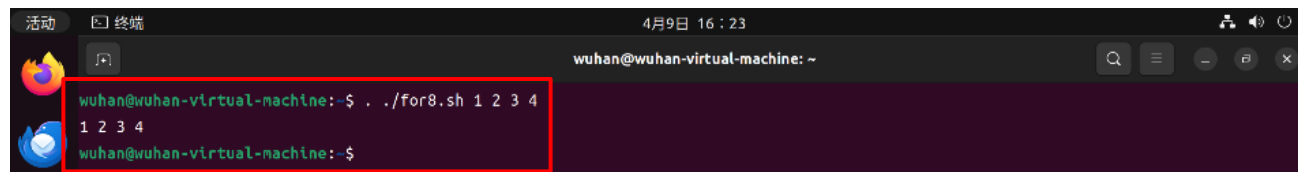
9、建立文件 for8.sh，输出命令行上的参数值

脚本：

```
#!/bin/bash
for VAR in $@
do
    echo -n "$VAR "
done
echo
```

命令：../for8.sh 1 2 3 4

结果：

A terminal window titled '终端' (Terminal) with the date '4月9日 16:23' and the user 'wuhan@wuhan-virtual-machine: ~'. The terminal shows the command 'wuhan@wuhan-virtual-machine:~\$./for8.sh 1 2 3 4' being executed. The output is '1 2 3 4' on the next line. The prompt 'wuhan@wuhan-virtual-machine:~\$' is visible on the third line. The command and its output are highlighted with a red box.

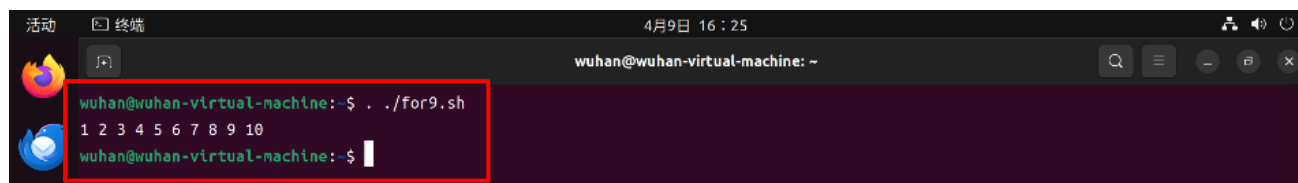
10、使用 c 语言格式的 for 循环，输出循环变量值

脚本：

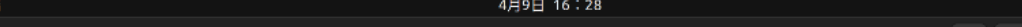
```
#!/bin/bash
for ((i=1;i<=10;i++))
do
    echo -n "$i "
done
echo
```

命令：../for9.sh

结果：

A terminal window titled '终端' (Terminal) with the date '4月9日 16:25' and the user 'wuhan@wuhan-virtual-machine: ~'. The terminal shows the command 'wuhan@wuhan-virtual-machine:~\$./for9.sh' being executed. The output is '1 2 3 4 5 6 7 8 9 10' on the next line. The prompt 'wuhan@wuhan-virtual-machine:~\$' is visible on the third line. The command and its output are highlighted with a red box.

```
#!/bin/bash
sumi=0
sumj=0
for ((i=1,j=1;i<=100;i++,j+=2))
do
    let "sumi+=i"
    if [ $j -lt 100 ];then
        let "sumj+=j"
    fi
done
echo "sumi=$sumi"
echo "sumj=$sumj"
```



The screenshot shows a terminal window titled "终端" (Terminal) with the prompt "wuhan@wuhan-virtual-machine: ~". The terminal output is as follows:

```
wuhan@wuhan-virtual-machine:~$ ./for11.sh  
sumi=5050  
sumj=2500  
wuhan@wuhan-virtual-machine:~$
```

The terminal window has a dark background and a red border around the command input area. The prompt "wuhan@wuhan-virtual-machine:~" is visible at the top of the terminal window.

```
#!/bin/bash
for ((;1;))
do
    echo "无限循环"
done
```



The screenshot shows a terminal window titled "wuhan@wuhan-virtual-machine: ~". The prompt is "wuhan@wuhan-virtual-machine:~\$". The user has entered the command `./for13.sh`. The output of the script is a continuous loop of the text "无限循环" (Infinite Loop) printed on multiple lines. The terminal window has a dark background and a sidebar on the left with various application icons.

实验 17 批处理操作接口 6: while 循环

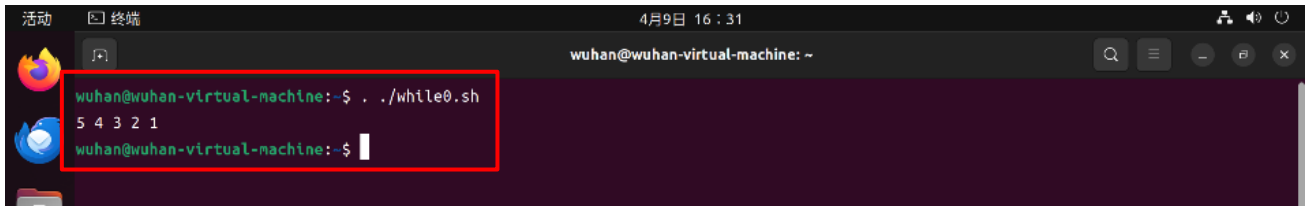
1、建立文件 while0.sh, 输出循环变量值

脚本:

```
#!/bin/bash
COUNTER=5
while [[ $COUNTER -gt 0 ]]
do
    echo -n "$COUNTER "
    let "COUNTER-=1"
done
echo
```

命令: `../while0.sh`

结果:

A terminal window titled '终端' (Terminal) with a timestamp of '4月9日 16:31'. The prompt is 'wuhan@wuhan-virtual-machine: ~'. The user enters the command 'wuhan@wuhan-virtual-machine:~\$./while0.sh'. The output is '5 4 3 2 1' followed by a new line. The prompt returns to 'wuhan@wuhan-virtual-machine:~\$'.

```
wuhan@wuhan-virtual-machine:~$ ./while0.sh
5 4 3 2 1
wuhan@wuhan-virtual-machine:~$
```

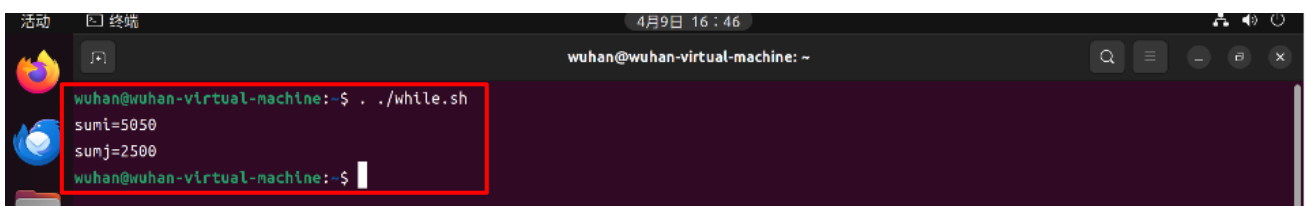
2、建立文件 while.sh, 使用 while 循环实现累加和

脚本:

```
#!/bin/bash
sumi=0
sumj=0
i=0
j=0
while [[ "$i" -le "100" ]]
do
    let "sumi+=i"
    let "j=i%2"
    if [ $j -ne 0 ];then
        let "sumj+=i"
    fi
    let "i+=1"
done
echo "sumi=$sumi"
echo "sumj=$sumj"
```

命令: `../while.sh`

结果:

A terminal window titled '终端' (Terminal) with a timestamp of '4月9日 16:46'. The prompt is 'wuhan@wuhan-virtual-machine: ~'. The user enters the command 'wuhan@wuhan-virtual-machine:~\$./while.sh'. The output is 'sumi=5050' and 'sumj=2500' on two separate lines. The prompt returns to 'wuhan@wuhan-virtual-machine:~\$'.

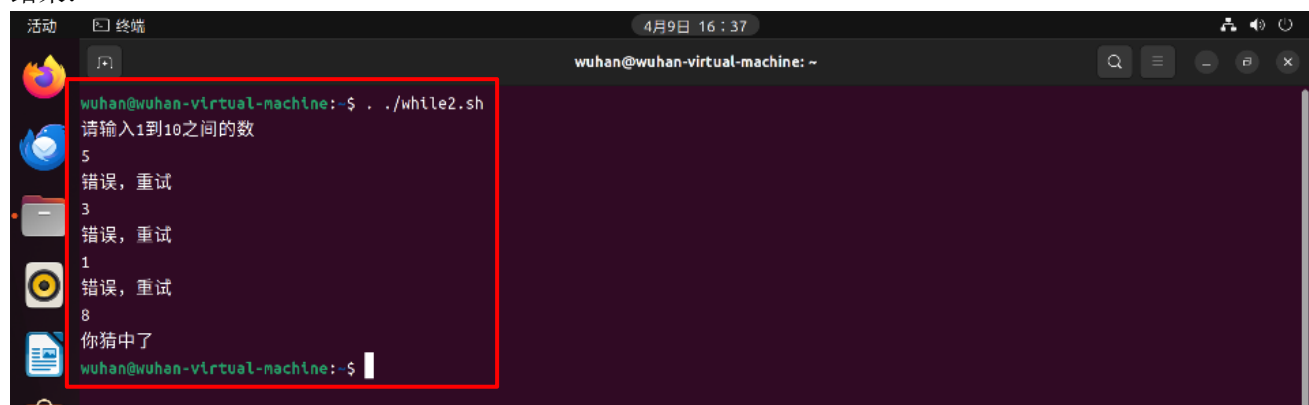
```
wuhan@wuhan-virtual-machine:~$ ./while.sh
sumi=5050
sumj=2500
wuhan@wuhan-virtual-machine:~$
```

3、建立文件 while2.sh，使用 while 循环实现输入和判断脚本：

```
#!/bin/bash
gNUM=8
echo "请输入 1 到 10 之间的数"
while read GUESS
do
    if [[ $GUESS -eq $gNUM ]];then
        echo "你猜中了"
        break
    else
        echo "错误，重试"
    fi
done
```

命令：../while2.sh

结果：



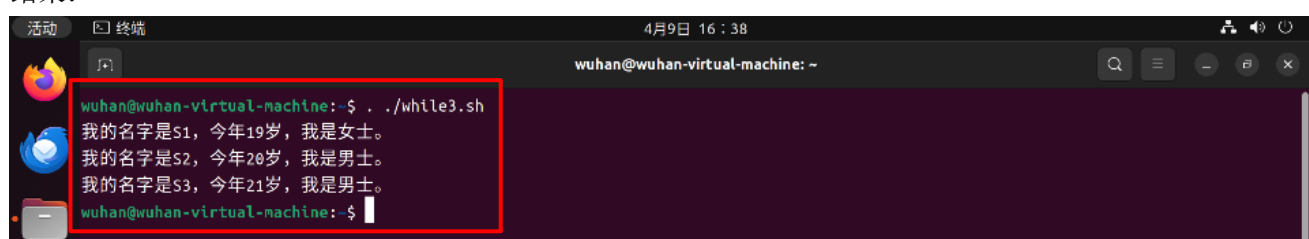
```
wuhan@wuhan-virtual-machine:~$ ./while2.sh
请输入1到10之间的数
5
错误，重试
3
错误，重试
1
错误，重试
8
你猜中了
wuhan@wuhan-virtual-machine:~$
```

4、建立文件 while3.sh，使用 while 循环读取文件内容并处理脚本：

```
#!/bin/bash
while read LINE
do
    NAME=`echo $LINE | awk '{print $1}'`
    AGE=`echo $LINE | awk '{print $2}'`
    SEX=`echo $LINE | awk '{print $3}'`
    echo "我的名字是$NAME，今年$AGE 岁，我是$SEX 士。"
done < student.txt
```

命令：../while3.sh

结果：



```
wuhan@wuhan-virtual-machine:~$ ./while3.sh
我的名字是s1，今年19岁，我是女士。
我的名字是s2，今年20岁，我是男士。
我的名字是s3，今年21岁，我是男士。
wuhan@wuhan-virtual-machine:~$
```

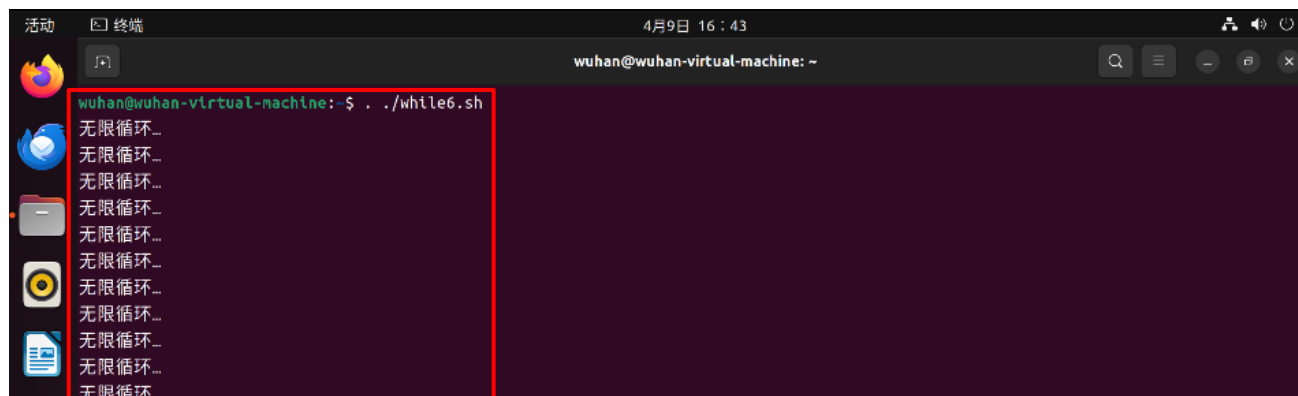

7、无限循环

脚本：

```
#!/bin/bash
while true
do
    echo "无限循环..."
done
```

命令： `../while6.sh`

结果：



A terminal window titled '终端' (Terminal) showing the execution of the script `../while6.sh`. The prompt is `wuhan@wuhan-virtual-machine:~$`. The output consists of multiple lines of the text '无限循环...' (Infinite loop...). The terminal window has a dark background and a sidebar with application icons on the left.

8、无限循环

脚本：

```
#!/bin/bash
while :
do
    echo "无限循环..."
done
```

命令： `../while7.sh`

结果：



A terminal window titled '终端' (Terminal) showing the execution of the script `../while7.sh`. The prompt is `wuhan@wuhan-virtual-machine:~$`. The output consists of multiple lines of the text '无限循环...' (Infinite loop...). The terminal window has a dark background and a sidebar with application icons on the left.