实验报告3

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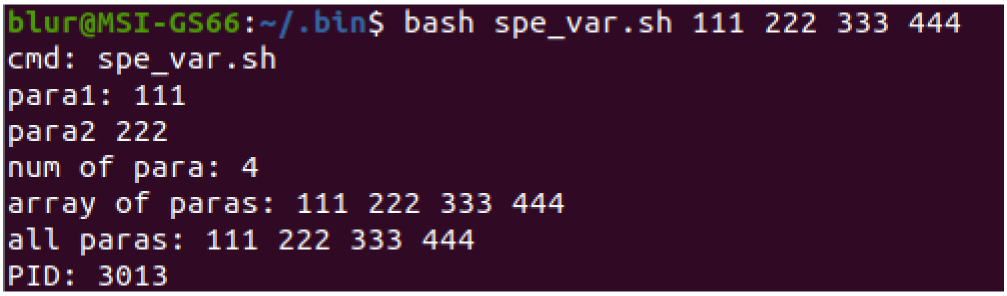
Shell脚本

```
#!/bin/bash
echo 'cmd:' $0              #输出文件名
echo 'para1:' $1            #输出第一个参数或选项
echo 'para2' $2             #输出第二个参数或选项
echo 'num of para:' $#      #输出参数的个数
echo 'array of paras:' $@  #输出参数组成的数组
echo 'all paras:' $*        #输出所有的变量
echo 'PID:' $$              #显示当前进程的PID
```

运行结果:

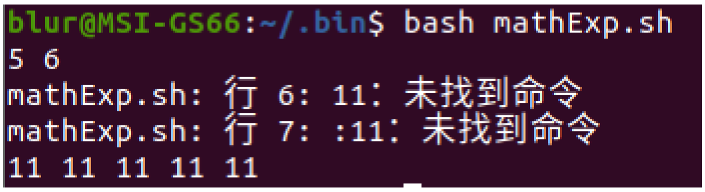


```
blur@MSI-GS66:~/.bin$ bash spe_var.sh 111 222 333 444
cmd: spe_var.sh
para1: 111
para2 222
num of para: 4
array of paras: 111 222 333 444
all paras: 111 222 333 444
PID: 3013
```

```
#!/bin/bash
a=5
b=6
echo $a $b
c=$((a+b))
$((d=a+b))    #报错，因为表达式的值是11，11不是个命令
: $((e=a+b))  #空命令，对表达式进行计算
let f=a+b
```

```
g=`expr $a + $b`
echo $c $d $e $f $g
```

运行结果:



```
blur@MSI-GS66:~/.bin$ bash mathExp.sh
5 6
mathExp.sh: 行 6: 11：未找到命令
mathExp.sh: 行 7: :11：未找到命令
11 11 11 11 11
```

bash不支持简单的数学运算，但是可以通过其他命令来实现，例如 `awk` 和 `expr`。 `expr` 是一款表达式计算工具，使用它能完成表达式的求值操作。

注意:

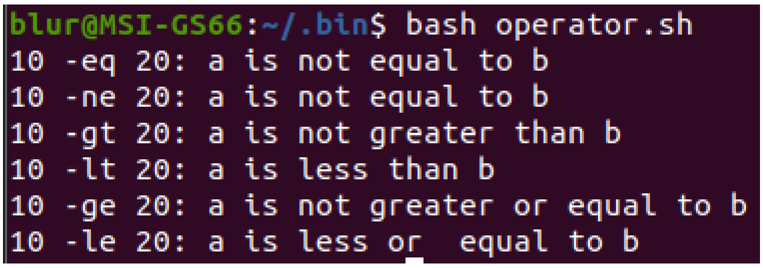
- 表达式和运算符之间要有空格，例如 2+2 是不对的，必须写成 2 + 2，这与我们熟悉的大多数编程语言不一样。
- 完整的表达式要被反引号 ``` `` ``` 包含

关系运算符

```
#!/bin/sh

a=10
b=20
if [ $a -eq $b ]
then
   echo "$a -eq $b : a is equal to b"
else
   echo "$a -eq $b: a is not equal to b"
fi

if [ $a -ne $b ]
then
   echo "$a -ne $b: a is not equal to b"
else
   echo "$a -ne $b : a is equal to b"
fi

if [ $a -gt $b ]
then
   echo "$a -gt $b: a is greater than b"
else
   echo "$a -gt $b: a is not greater than b"
fi

if [ $a -lt $b ]
then
```

```
   echo "$a -lt $b: a is less than b"
else
   echo "$a -lt $b: a is not less than b"
fi

if [ $a -ge $b ]
then
   echo "$a -ge $b: a is greater or  equal to b"
else
   echo "$a -ge $b: a is not greater or equal to b"
fi

if [ $a -le $b ]
then
   echo "$a -le $b: a is less or  equal to b"
else
   echo "$a -le $b: a is not less or equal to b"
fi
```

运行结果:



```
blur@MSI-GS66:~/.bin$ bash operator.sh
10 -eq 20: a is not equal to b
10 -ne 20: a is not equal to b
10 -gt 20: a is not greater than b
10 -lt 20: a is less than b
10 -ge 20: a is not greater or equal to b
10 -le 20: a is less or  equal to b
```

注意：if语句的条件表达式要放在方括号之间，并且要有空格，例如 `[$a==$b]` 是错误的，必须写成 `[ $a == $b ]`

布尔运算符

```
-a    #与
-o    #或
!     #非
```

字符串运算符

`=` 比较两个字符串是否相等

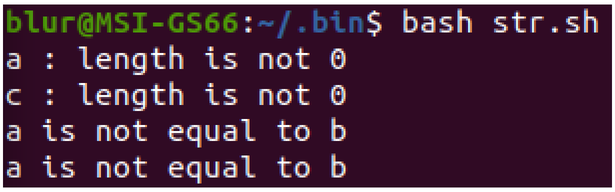
`!=` 比较两个字符串是否不相等

`-z` 字符串为null则返回true

`-n` 字符串为null则返回false

```
!/bin/bash

a="abc"
b="def"
c=""

[ -z $a ] && echo "a : length is 0" || echo "a : length is not 0"
[ -n $c ] && echo "c : length is not 0" || echo "c : length is 0"
[ $a = $b ] && echo "a is euqal to b" || echo "a is not equal to b"
[ $a != $b ] && echo "a is not equal to b" || echo "a is equal to b"
```

运行结果:



```
blur@MSI-GS66:~/.bin$ bash str.sh
a : length is not 0
c : length is not 0
a is not equal to b
a is not equal to b
```

批量创建文件

```
for i in {1..100}
do
  touch music_${i}.mp3
done
```

随机数

```
#/bin/bash

rand=$RANDOM

while true
do
        read input
        if [ $input -eq $rand ]
        then
                echo 'Bingle'
                break
        elif [ $input -gt $rand ]
        then
                echo 'too big'
        else
                echo 'too small'
        fi
done
```