

南京邮电大学

实验报告

(2024/ 2025 学年 第 一 学期)

课程名称	Linux 编程
实验名称	Shell 编程
实验时间	2024 年 11 月 15 日
指导单位	计算机学院网络空间安全系
指导教师	王磊

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学院(系)	计软网安学院	专 业	信息安全

实 验 报 告

实验名称	Shell 编程			指导教师	王磊
实验类型	上机	实验学时	2	实验时间	2024.11.15

一、 实验目的和要求

1.使用编辑器完成以下 shell 脚本，并在 Linux 系统中运行它们

二、实验环境(实验设备)

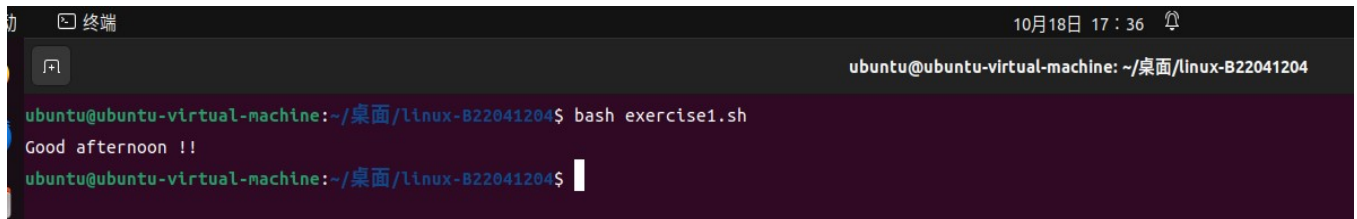
虚拟机 Ubuntu 系统

三、实验内容

实验 1:

1. 获取系统时间，并检查其是否在上午、下午或晚上。

```
#!/bin/bash
hour = `date +%H`
case $hour in
  0[1-9] | 1[01] )
    echo "Good morining !!"
    ;;
  1[234567] )
    echo "Good afternoon !!"
    ;;
  * )
    echo "Good evening !! "
    ;;
Esac
```



A terminal window titled "终端" (Terminal) showing the execution of a script. The prompt is `ubuntu@ubuntu-virtual-machine: ~/桌面/linux-B22041204`. The user enters `bash exercise1.sh`, and the script outputs `Good afternoon !!`. The prompt returns to `ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$`.

```
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ bash exercise1.sh
Good afternoon !!
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$
```



A screenshot of a text editor window titled "exercise1.sh" showing the script's content. The script uses a `case` statement to print "Good morning !!", "Good afternoon !!", or "Good evening !!".

```
1 #!/bin/bash
2 # exercise1.sh
3 hour=`date +%H`
4 case $hour in
5     0[1-9] | 1[01] )
6         echo "Good morning !!"
7     ;;
8     1[234567] )
9     echo "Good afternoon !!"
10 ;;
11 * )
12     echo "Good evening !!"
13 ;;
14 esac
15
16
```

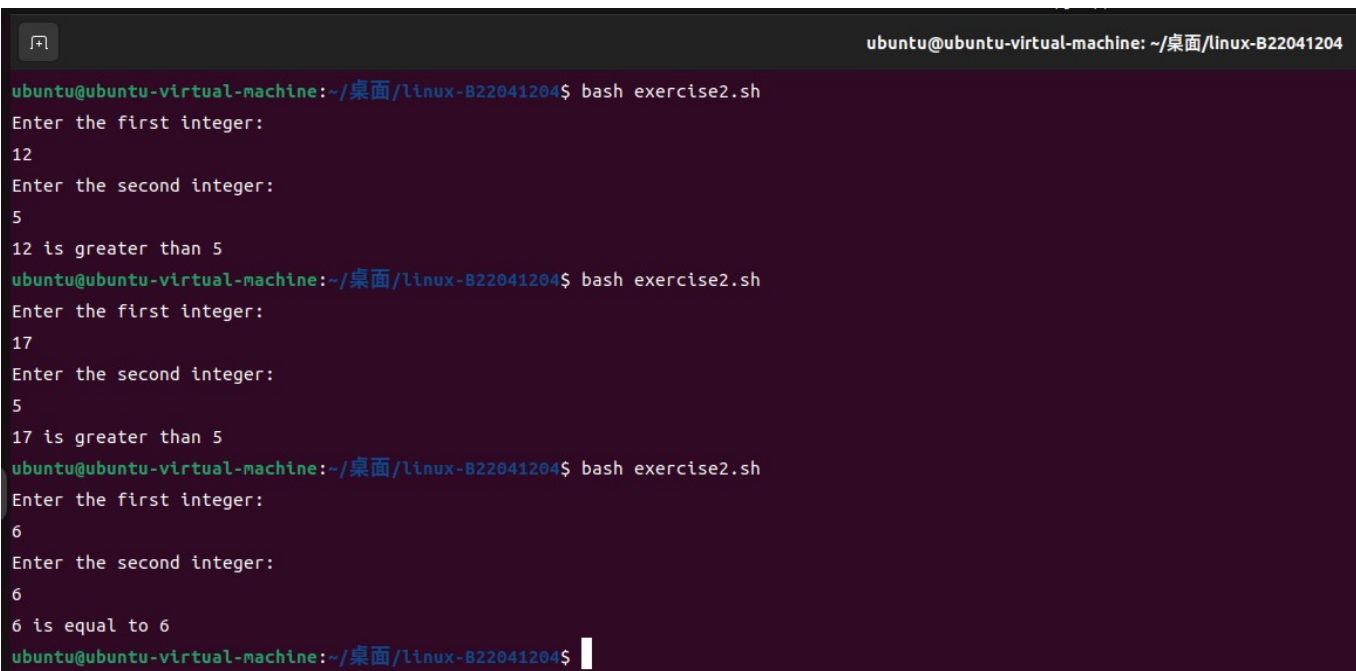
①赋值等号“=”两边没有空格

②case 与 esac 是匹配的，大小写要注意

实验 2:

2. 输入两个数字，检查哪个更大，然后输出结果。

```
#!/bin/sh
echo "Enter the first integer:"
read first
echo "Enter the second integer:"
read second
if [ "$first" -gt "$second" ]
then
echo "$first is greater than $second"
elif [ "$first" -lt "$second" ]
then
echo "$FIRST is less than $second"
else
echo "$FIRST is equal to $second"
fi
```



```
ubuntu@ubuntu-virtual-machine: ~/桌面/linux-B22041204
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ bash exercise2.sh
Enter the first integer:
12
Enter the second integer:
5
12 is greater than 5
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ bash exercise2.sh
Enter the first integer:
17
Enter the second integer:
5
17 is greater than 5
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ bash exercise2.sh
Enter the first integer:
6
Enter the second integer:
6
6 is equal to 6
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$
```

```
exercise2.sh
~/桌面/linux-B22041204
保存(S)

1 #!/bin/sh
2 # exercise2.sh
3 echo "Enter the first integer: "
4 read first
5 echo "Enter the second integer:"
6 read second
7 if [ $first -gt $second ]
8 then
9 echo "$first is greater than $second "
10 elif [ $first -lt $second ]
11 then
12 echo "$first is less than $second "
13 else
14 echo "$first is equal to $second "
15 fi
16
```

1. if 和 fi 相匹配
2. [] 中的表达式要与两边方括号空格

实验 3:

3. 在给定列表中查找最小值

```
#!/bin/bash
smallest=10000
```

```
for i in 8 2 18 0 -3 87
do
if test $i -lt $smallest
then
    smallest=$i
fi
done
echo $smallest
```

```
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ touch exercise3.sh
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ bash exercise3.sh
-3
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$
```

```
exercise3.sh
~/桌面/linux-B22041204
保存(S)

1 #!/bin/sh
2 # exercise3.sh
3 smallest=10000
4 for i in 8 2 18 0 -3 87
5 do
6 if [ $i -lt $smallest ]
7 then
8 smallest=$i
9 fi
10 done
11 echo $smallest
```

实验 4:

4. 计算当前目录中执行文件的数量。

```
#!/bin/bash
count=0
for i in *
do
if test -x $i
then
count=`expr $count + 1`
fi
done
echo Total of $count files executable
```

```
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ bash exercise4.sh
Total of 3 files executable
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ chmod u+x exercise5.sh
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ bash exercise4.sh
Total of 4 files executable
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$
```

```
exercise4.sh
1 #!/bin/sh
2 # exercise4.sh
3 count=0
4 for i in *
5 do
6 if [ -x $i ]
7 then
8 count=`expr $count + 1`
9 fi
10 done
11 echo "Total of $count files executable"
12
```

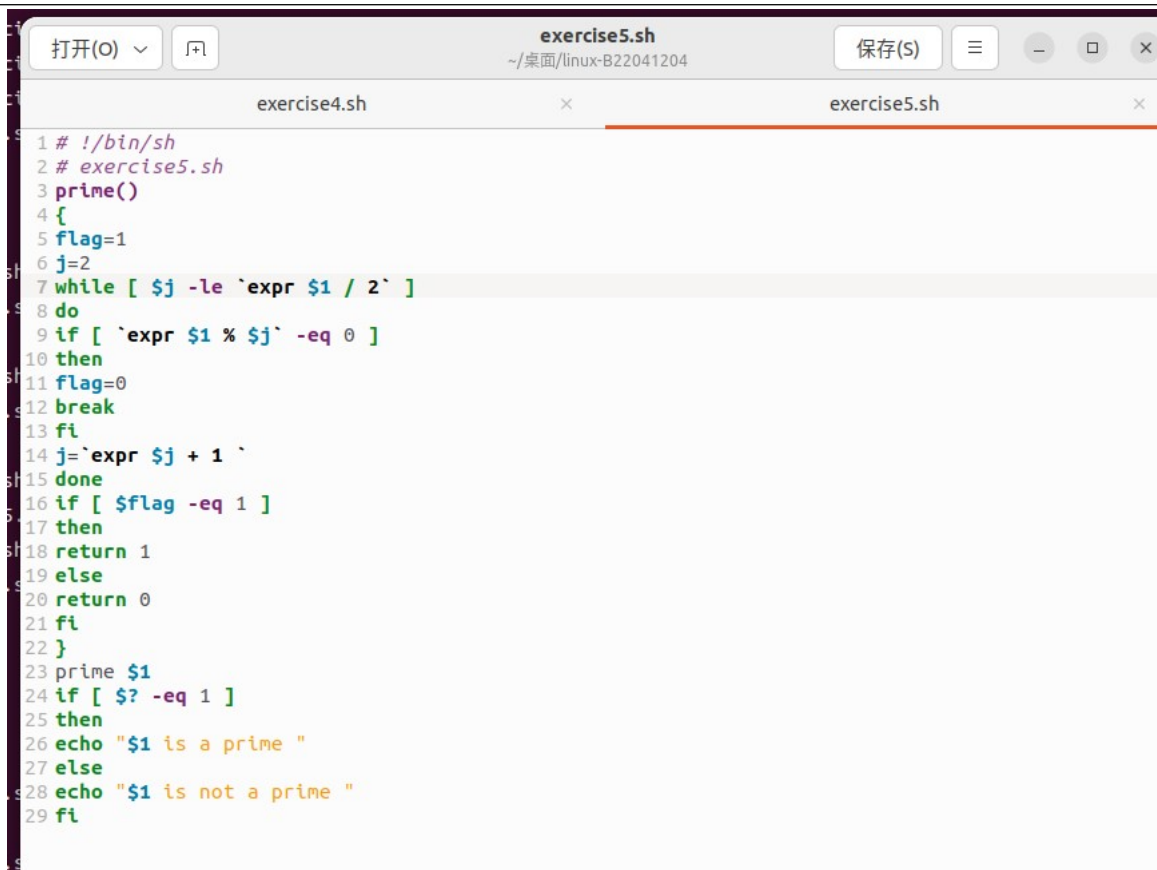
1. 算术表达式 +、-、*、/ 两边要空格

实验 5:

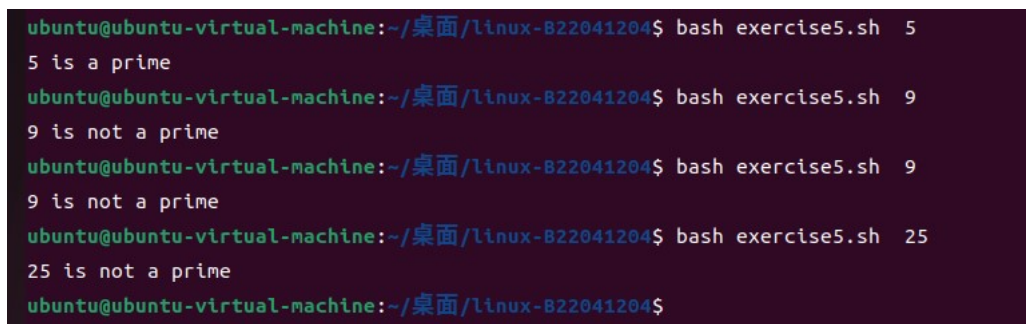
5 检查给定的数字是否是素数，你必须编写一个函数，并调用该函数。

```
prime( )
{
    flag=1
    j=2
    while [ $j -le `expr $1 / 2` ]
    do
        if [ `expr $1 % $j` -eq 0 ]
        then
            flag=0
            break
        fi
        j=`expr $j + 1`
    done
    if [ $flag -eq 1 ]
    then
        return 1
    else
        return 0
    fi
}
prime $1
```

```
if [ $? -eq 1 ]
then
    echo "$1 is a prime!"
else
    echo "$1 is not a prime!"
fi
```

```
1 #!/bin/sh
2 # exercise5.sh
3 prime()
4 {
5     flag=1
6     j=2
7     while [ $j -le `expr $1 / 2` ]
8     do
9         if [ `expr $1 % $j` -eq 0 ]
10        then
11            flag=0
12            break
13        fi
14        j=`expr $j + 1 `
15    done
16    if [ $flag -eq 1 ]
17    then
18        return 1
19    else
20        return 0
21    fi
22 }
23 prime $1
24 if [ $? -eq 1 ]
25 then
26     echo "$1 is a prime "
27 else
28     echo "$1 is not a prime "
29 fi
```



```
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ bash exercise5.sh 5
5 is a prime
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ bash exercise5.sh 9
9 is not a prime
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ bash exercise5.sh 9
9 is not a prime
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$ bash exercise5.sh 25
25 is not a prime
ubuntu@ubuntu-virtual-machine:~/桌面/linux-B22041204$
```

1. 这个脚本调用要带参数

四、实验小结（包括问题和解决方法、心得体会、意见与建议等）

五、指导教师评语

成 绩		批阅人		日 期	
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