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	实验二
实验时间	2024 年 11 月 15 日
指导单位	计算机学院、软件学院、网络空间安全学院
指导教师	王磊

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学院(系)	计算机学院	专　　业	信息安全

实 验 报 告

实验名称	实验二			指导教师	王磊
实验类型	上机	实验学时	4	实验时间	2024.11.15

一、 实验目的和要求

通过实验熟悉 Linux 操作系统环境，掌握基本的 Linux 命令使用

二、实验环境(实验设备)

Win11+Vmware Workstation Pro+Ubuntu

三、实验原理及内容

学会使用编辑器完成 shell 脚本

掌握 Linux 系统中 shell 脚本的运行。

实 验 报 告

（1）Obtain the system time, and check whether it is in the morning, afternoon, or evening.

实验源码:

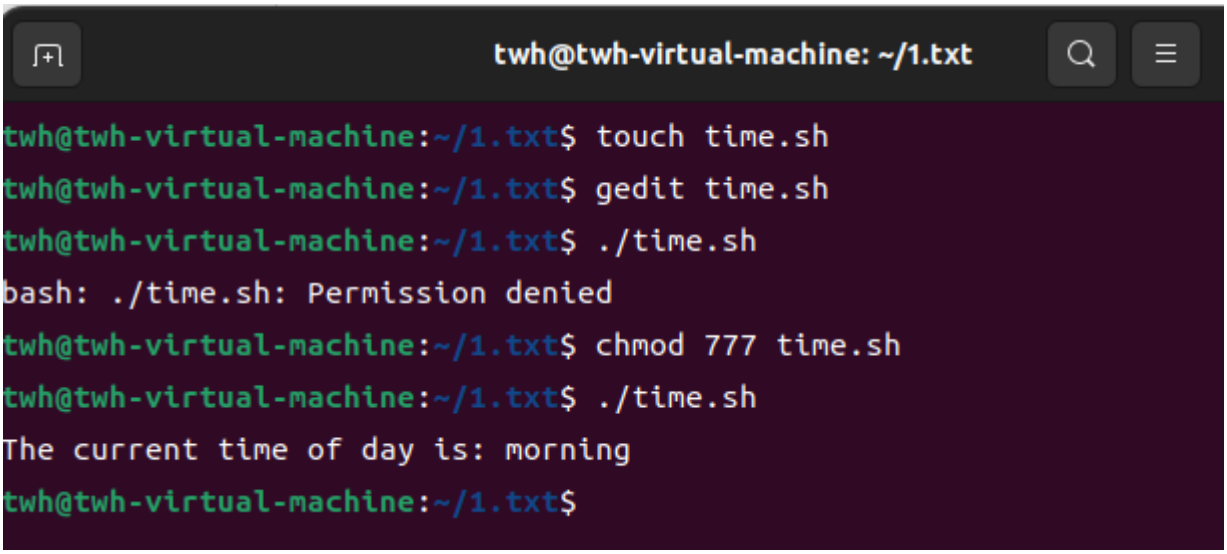
```
#!/bin/bash

# 获取当前小时
current_hour=$(date +"%H")

# 判断当前时间段
if [ "$current_hour" -ge 6 ] && [ "$current_hour" -lt 12 ]; then
        time_of_day="morning"
elif [ "$current_hour" -ge 12 ] && [ "$current_hour" -lt 18 ]; then
        time_of_day="afternoon"
else
        time_of_day="evening"
fi

# 输出当前时间段
echo "The current time of day is: $time_of_day"
```

运行结果:



(2) Input two number, check which one is greater, and output the result.

实验源码：

```
#!/bin/bash
# 提示用户输入两个数字
echo "Enter the first number: "
read num1
echo "Enter the second number: "
read num2
# 比较两个数字
if [ "$num1" -gt "$num2" ]; then
        echo "$num1 is greater than $num2"
elif [ "$num1" -lt "$num2" ]; then
        echo "$num2 is greater than $num1"
else
        echo "$num1 and $num2 are equal"
fi
```

```
twh@twh-virtual-machine:~/1.txt$ touch bdx.sh
twh@twh-virtual-machine:~/1.txt$ gedit bdx.sh
twh@twh-virtual-machine:~/1.txt$ chmod 777 bdx.sh
twh@twh-virtual-machine:~/1.txt$ ./bdx.sh
Enter the first number:
5
Enter the second number:
6
6 is greater than 5
twh@twh-virtual-machine:~/1.txt$ ./bdx.sh
Enter the first number:
5
Enter the second number:
1
5 is greater than 1
twh@twh-virtual-machine:~/1.txt$ ./bdx.sh
Enter the first number:
1
Enter the second number:
1
1 and 1 are equal
twh@twh-virtual-machine:~/1.txt$
```

(3)UFind the minimal value in a given list.

源代码：

```
#!/bin/bash

# 提示用户输入一个数字列表，数字之间用空格隔开
echo "Enter a list of numbers (space-separated): "
read -a numbers

# 使用内置的最小值查找方法
min_value=${numbers[0]}  # 假设第一个数为最小值

# 遍历数组，找到最小值
for num in "${numbers[@]}"; do
    if [ "$num" -lt "$min_value" ]; then
        min_value=$num
    fi
done

# 输出最小值
echo "The minimal value in the list is: $min_value"
```

运行结果：

```
twh@twh-virtual-machine:~/1.txt$ touch min.sh
twh@twh-virtual-machine:~/1.txt$ gedit min.sh
twh@twh-virtual-machine:~/1.txt$ chmod 777 min.sh
twh@twh-virtual-machine:~/1.txt$ ./min.sh
Enter a list of numbers (space-separated):
1 2 3 4 -1 55 15
The minimal value in the list is: -1
twh@twh-virtual-machine:~/1.txt$
```

(4) Calculate the number of executive file in the current directory.

```
#!/bin/bash

# 计算当前目录中所有可执行文件的数量
count=$(find . -maxdepth 1 -type f -executable | wc -l)

# 输出结果
echo "There are $count executable files in the current directory."
```

```
twh@twh-virtual-machine:~/1.txt$ touch cnt.sh
twh@twh-virtual-machine:~/1.txt$ gedit cnt.sh
twh@twh-virtual-machine:~/1.txt$ chmod 777 cnt.sh
twh@twh-virtual-machine:~/1.txt$ ./cnt.sh
There are 4 executable files in the current directory.
twh@twh-virtual-machine:~/1.txt$
```

(5) Check whether a given number is a prime, you have to write a function, and call the function.

```
#!/bin/bash
# 函数：检查是否是质数
is_prime() {
    local num=$1
    if [ "$num" -le 1 ]; then
        echo "$num is not a prime number."
        return
    fi
    for (( i=2; i<=num/2; i++ )); do
        if (( num % i == 0 )); then
            echo "$num is not a prime number."
            return
        fi
    done
    echo "$num is a prime number."
}
# 提示用户输入一个数字
echo "Enter a number to check if it's prime: "
read number
```

调用函数来检查是否是质数

is_prime $number

```
twh@twh-virtual-machine:~/1.txt$ touch pri.sh
twh@twh-virtual-machine:~/1.txt$ gedit  pri.sh
twh@twh-virtual-machine:~/1.txt$ chmod 777 pri.sh
twh@twh-virtual-machine:~/1.txt$ ./pri.sh
Enter a number to check if it's prime:
13
13 is a prime number.
twh@twh-virtual-machine:~/1.txt$
```

四、实验小结（包括总结上机调试过程中所遇到的问题和解决方法、感想与建议等）

通过本次实验加强了 linux 环境下 shell 脚本的编写与运行，加深了对于 linux 系统操作的理解

五、指导教师评语

成　绩		**批阅人**		**日　期**	