

# 作业2-1

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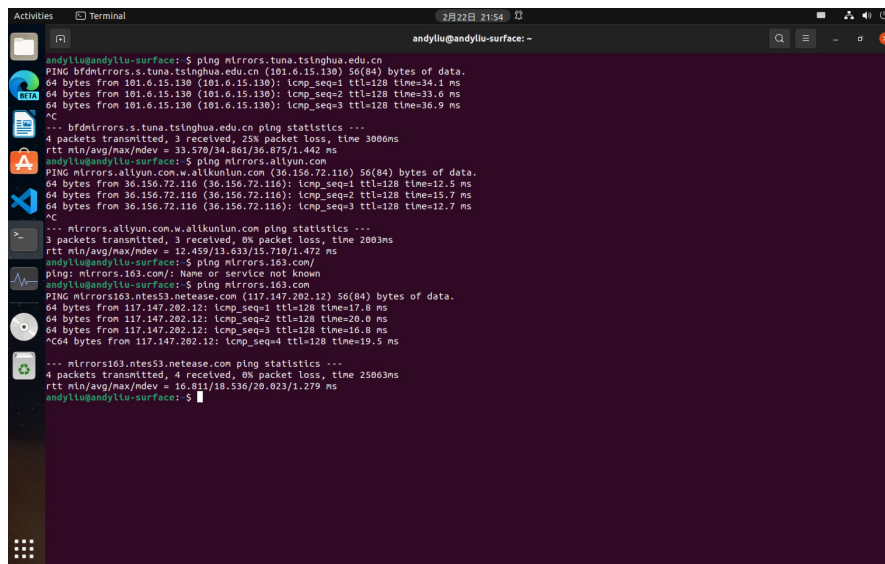
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## 1 验证镜像源速度

通过ping命令，验证三个镜像源的速度。



```
andyliu@andyliu-surface: ~$ ping mirrors.tuna.tsinghua.edu.cn
PING bfdmirrors.s.tuna.tsinghua.edu.cn (101.6.15.130) 56(84) bytes of data:
64 bytes from 101.6.15.130 (101.6.15.130): icmp_seq=1 ttl=128 time=34.1 ms
64 bytes from 101.6.15.130 (101.6.15.130): icmp_seq=2 ttl=128 time=33.6 ms
64 bytes from 101.6.15.130 (101.6.15.130): icmp_seq=3 ttl=128 time=36.9 ms
^C
--- bfdmirrors.s.tuna.tsinghua.edu.cn ping statistics ---
4 packets transmitted, 3 received, 25% packet loss, time 3086ms
rtt min/avg/max/mdev = 33.570/34.861/36.875/1.442 ms
andyliu@andyliu-surface: ~$ ping mirrors.aliyun.com
PING mirrors.aliyun.com.w.alikunlun.com (36.156.72.116) 56(84) bytes of data:
64 bytes from 36.156.72.116 (36.156.72.116): icmp_seq=1 ttl=128 time=12.5 ms
64 bytes from 36.156.72.116 (36.156.72.116): icmp_seq=2 ttl=128 time=15.7 ms
64 bytes from 36.156.72.116 (36.156.72.116): icmp_seq=3 ttl=128 time=12.7 ms
^C
--- mirrors.aliyun.com.w.alikunlun.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 12.459/13.633/15.718/1.442 ms
andyliu@andyliu-surface: ~$ ping mirrors.163.com/
ping: mirrors.163.com/: Name or service not known
andyliu@andyliu-surface: ~$ ping mirrors163.netease.com
PING mirrors163.netease.com (117.147.202.12) 56(84) bytes of data:
64 bytes from 117.147.202.12: icmp_seq=1 ttl=128 time=17.8 ms
64 bytes from 117.147.202.12: icmp_seq=2 ttl=128 time=26.0 ms
64 bytes from 117.147.202.12: icmp_seq=3 ttl=128 time=16.8 ms
64 bytes from 117.147.202.12: icmp_seq=4 ttl=128 time=19.5 ms
^C
--- mirrors163.netease.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 25063ms
rtt min/avg/max/mdev = 16.811/18.536/26.023/1.279 ms
andyliu@andyliu-surface: ~$
```

从ping执行结果可以看出，阿里云的往返时间（RTT）均小于16毫秒，为几个镜像源中最快的。

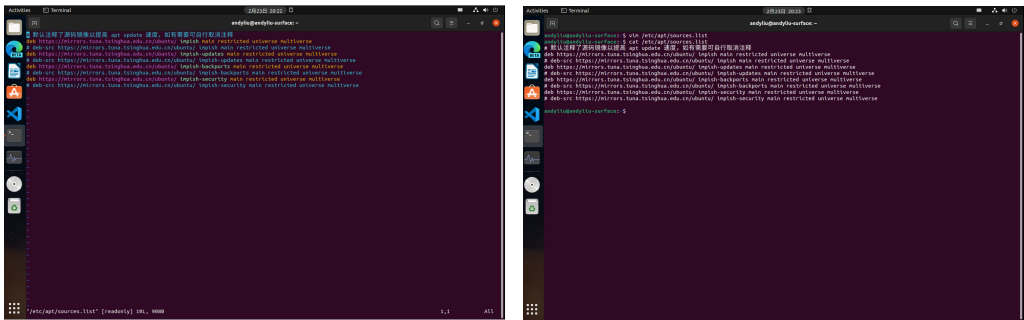
## 2 更换镜像源

但是由于阿里云没有给出个人使用的ubuntu版本的换源方法，故使用清华镜像源进行换源。参照清华镜像源中给出的换源方法如图1所示。



图 1: 清华TUNA镜像源中给出的换源说明

使用vim命令调用vim编辑器修改/etc/apt/sources.list文件中的内容，修改后保存，使用cat命令确认保存成功，如图2所示。

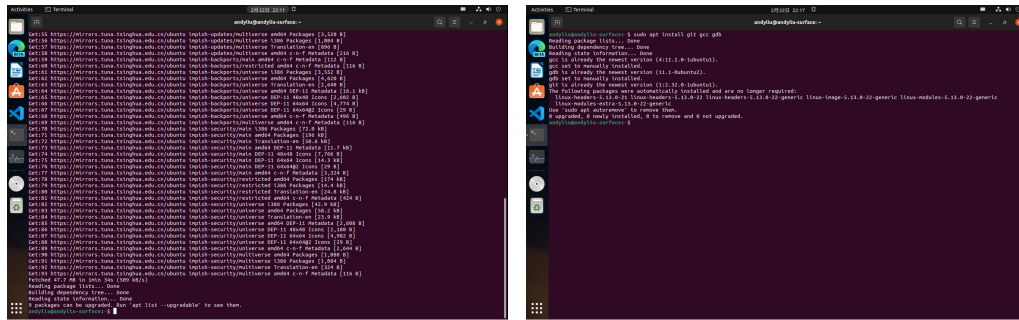


(a) vim编辑器

(b) bash命令

图 2: 修改apt库源

更新包索引并安装相关程序，如图3所示。



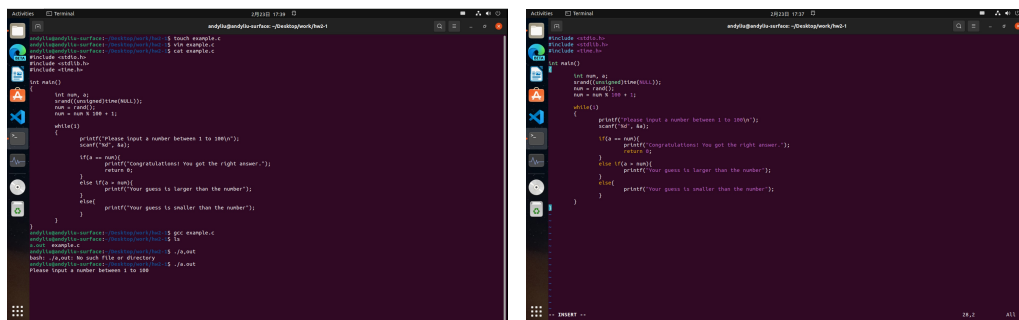
(a) 更新索引

(b) 安装程序

图 3: 更新索引、安装程序

### 3 编写程序并运行

使用touch命令新建文件、vim编辑器编辑c源文件，使用cat确认保存成功，使用gcc编译c代码，然后运行程序。相应命令行操作过程以及vim编辑器编辑界面如图4所示。



(a) bash

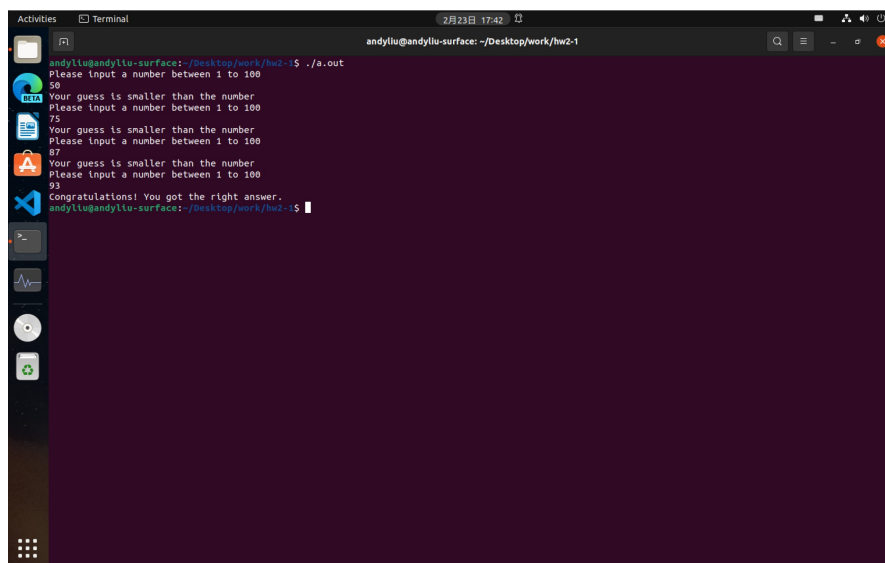
(b) vim

图 4: 编写、编译并运行程序

期间，用到vim的命令及操作方法有：

1. 进入vim界面后，按i进入insert模式编辑源代码
2. 按住ctrl键以及上下左右键以词为单位快速移动光标
3. 在命令模式下，输入dd删除整行
4. 编辑完成后，使用:wq命令进行保存后退出的动作。

一次完成的程序运行过程如下图所示：



A terminal window titled "Terminal" with a dark purple background. The window shows the execution of a program named `hw2-1`. The program prompts the user to input a number between 1 and 100. The user enters 50, 75, 87, and 93, each time receiving the feedback "Your guess is smaller than the number". After entering 93, the program outputs "Congratulations! You got the right answer." and returns the prompt to the user. The terminal window is part of a desktop environment with a sidebar on the left containing icons for applications, files, and system utilities. The top of the window shows the date and time as "2月23日 17:42".

```
andyliu@andyliu-surface: ~/Desktop/work/hw2-1$ ./a.out
Please input a number between 1 to 100
50
Your guess is smaller than the number
Please input a number between 1 to 100
75
Your guess is smaller than the number
Please input a number between 1 to 100
87
Your guess is smaller than the number
Please input a number between 1 to 100
93
Congratulations! You got the right answer.
andyliu@andyliu-surface: ~/Desktop/work/hw2-1$
```