backend-plus-01

Task.02 熟悉Linux

1.了解 Linux 目录结构

Linux 的目录结构是树状的，根目录是 `/`。

常见目录说明：

目录	用途
`/bin`	常用命令（如 ls, cp, mv）
`/etc`	配置文件（如 nginx.conf、docker-compose.yml）
`/home`	用户家目录（如 `/home/user`）
`/var`	可变数据（日志、缓存等）
`/tmp`	临时文件
`/usr`	用户程序和库
`/opt`	第三方软件安装目录

2.熟悉常用 Linux 命令
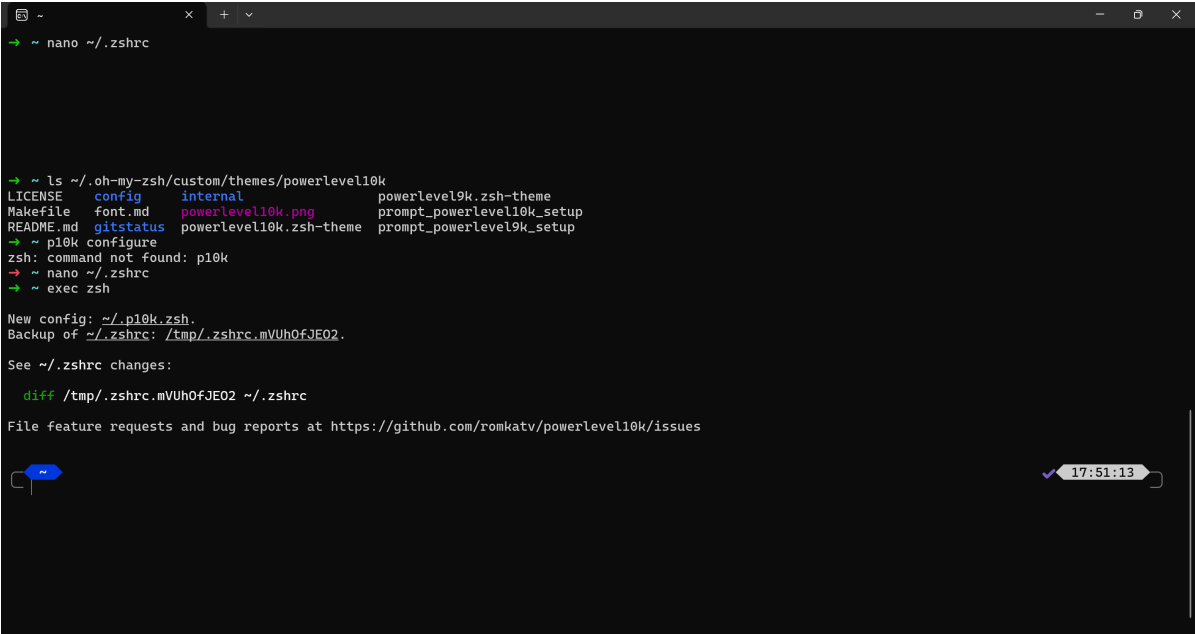
命令	作用
`ls`	列出文件
`ls -l`	详细列表
`ls -la`	包括隐藏文件
`cd`	切换目录
`cd ..`	回到上级目录
`cd ~`	回到家目录
`pwd`	显示当前路径
`mkdir dir_name`	创建目录
`rm file.txt`	删除文件
`rm -rf dir_name`	强制删除目录（谨慎！）
`cp file1 file2`	复制文件
`mv file1 file2`	移动/重命名文件
`touch file.txt`	创建空文件
`cat file.txt`	查看文件内容

命令	作用
`grep "keyword" file.txt`	搜索关键字
`man command`	查看命令帮助

3.**掌握包管理器的使用**

发行版	包管理器	示例
Ubuntu/Debian	`apt`	`sudo apt update && sudo apt install curl`
CentOS/RHEL	`yum` 或 `dnf`	`sudo yum install vim`
Fedora	`dnf`	`sudo dnf install git`
Arch Linux	`pacman`	`sudo pacman -S firefox`

4.**配置自己喜欢的 Shell（如 zsh)**

Task.03 SSH远程开发

1. SSH连接

什么是 SSH 密钥?

- 一对密钥: 公钥 (public key) 和 私钥 (private key)

- 公钥放在服务器上, 私钥留在本地

- 登录时用私钥"证明身份", 实现免密登录

生成了 SSH 密钥

```
C:\Windows\System32>ssh-keygen -t ed25519 -C "3221487391@qq.com"
Generating public/private ed25519 key pair.
Enter file in which to save the key (C:\Users\Admin/.ssh/id_ed25519):
Created directory 'C:\\Users\\Admin/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in C:\Users\Admin/.ssh/id_ed25519
Your public key has been saved in C:\Users\Admin/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:iCZI52uWlJZjSfabQhCrMfHosUNq01N/BvNpzqvdoyk 3221487391@qq.com
The key's randomart image is:
+--[ED25519 256]--+
|..               |
| +o              |
|+*.+. o          |
|*=0.=o = .        |
|==+@o.o S        |
|o *++ o*         |
|   * o o         |
|  o . E. +.      |
|     .o=...      |
+----[SHA256]-----+
```
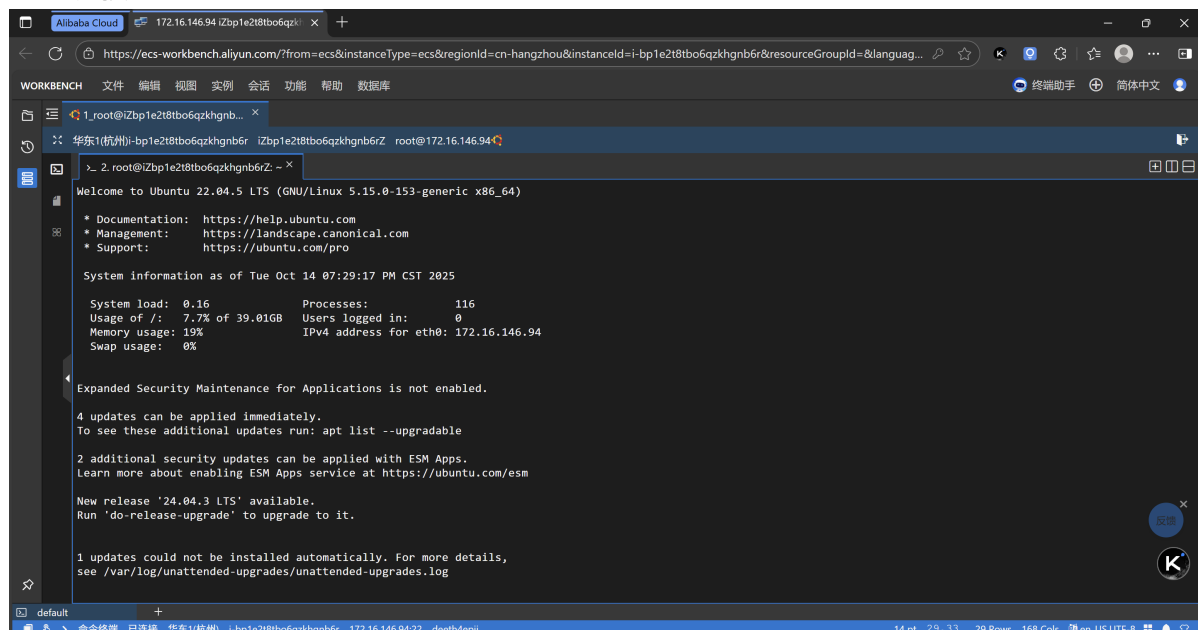
将公钥添加到了 GitHub 账户，克隆了仓库

```
C:\Windows\System32>git clone git@github.com:zhaohaozhen/zhz-eternity-01-repo.git
Cloning into 'zhz-eternity-01-repo'...
remote: Enumerating objects: 40, done.
remote: Counting objects: 100% (40/40), done.
remote: Compressing objects: 100% (39/39), done.
remote: Total 40 (delta 9), reused 28 (delta 1), pack-reused 0 (from 0)
Receiving objects: 100% (40/40), 30.40 MiB | 1.11 MiB/s, done.
Resolving deltas: 100% (9/9), done.

C:\Windows\System32>ssh -T git@github.com
Hi zhaohaozhen! You've successfully authenticated, but GitHub does not provide shell access.

C:\Windows\System32>cd zhz-eternity-01-repo

C:\Windows\System32\zhz-eternity-01-repo>dir
 驱动器 C 中的卷没有标签。
 卷的序列号是 7E21-53FA
```

ssh已连接

2.用密钥实现免密码登录

```
zhz@iZbp1e2t8tbo6qzkhgnb6rZ: ~
Admin@DESKTOP-I8QPENN MINGW64 ~ (master)
$ ls ~/.ssh/
authorized_keys   id_ed25519   id_ed25519.pub   known_hosts   known_hosts.old

Admin@DESKTOP-I8QPENN MINGW64 ~ (master)
$ cat ~/.ssh/id_ed25519.pub
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIBm56SO6mQRWYR5B8Or4mYfjpJ6DNjd1DyAeo+uc5Uah
 3221487391@qq.com

Admin@DESKTOP-I8QPENN MINGW64 ~ (master)
$ ssh zhz@47.118.20.224
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 5.15.0-153-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

 System information as of Tue Oct 14 07:39:06 PM CST 2025

  System load:  0.0                Processes:             119
  Usage of /:   7.7% of 39.01GB    Users logged in:       1
  Memory usage: 21%                IPv4 address for eth0: 172.16.146.94
  Swap usage:   0%


Expanded Security Maintenance for Applications is not enabled.

4 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

2 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

New release '24.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


1 updates could not be installed automatically. For more details,
see /var/log/unattended-upgrades/unattended-upgrades.log

*** System restart required ***

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.


Welcome to Alibaba Cloud Elastic Compute Service !

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

zhz@iZbp1e2t8tbo6qzkhgnb6rZ:~$
```

```
Welcome to Alibaba Cloud Elastic Compute Service !

Last login: Tue Oct 14 19:29:19 2025 from 100.104.86.19
root@iZbp1e2t8tbo6qzkhgnb6rZ:~# adduser zhz
Adding user `zhz' ...
Adding new group `zhz' (1002) ...
Adding new user `zhz' (1001) with group `zhz' ...
Creating home directory `/home/zhz' ...
Copying files from `/etc/skel' ...
```

```
root@iZbp1e2t8tbo6qzkhgnb6rZ:~# usermod -aG sudo zhz
root@iZbp1e2t8tbo6qzkhgnb6rZ:~# mkdir -p /home/zhz/.ssh
chmod 700 /home/zhz/.ssh
root@iZbp1e2t8tbo6qzkhgnb6rZ:~# echo "ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIBm56SO6mQRWYR5B8Or4mYfjpJ6DNjd1DyAeo+uc5Uah 3221487391@qq.com">> /home/zhz/.ssh/authorized_ke
ys
chmod 600 /home/zhz/.ssh/authorized_keys
chown -R zhz:zhz /home/zhz/.ssh
root@iZbp1e2t8tbo6qzkhgnb6rZ:~# []  可以通过 Ctrl+Shift+Y 或右键菜单 唤出AI命令助手
```

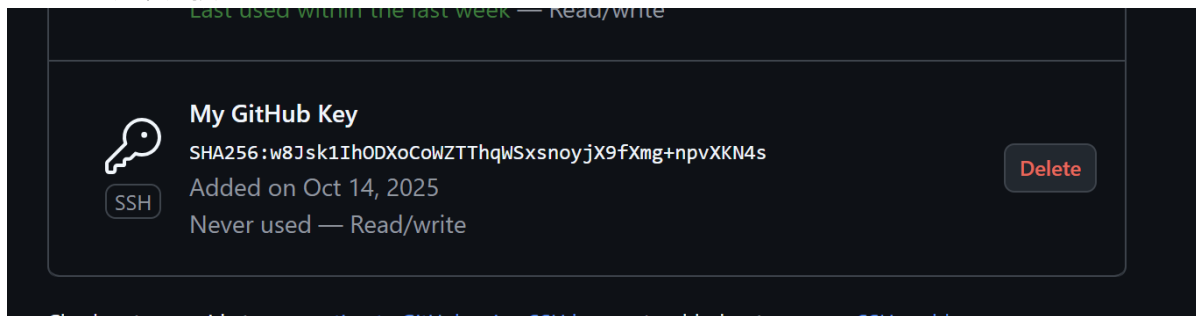**3.进阶挑战**

生成一对新的 SSH 密钥（专门用于 GitHub）

```
Admin@DESKTOP-I8QPENN MINGW64 ~ (master)
$ ssh-keygen -t ed25519 -C "3221487391@qq.com" -f ~/.ssh/id_rsa_github
Generating public/private ed25519 key pair.
Enter passphrase for "/c/Users/Admin/.ssh/id_rsa_github" (empty for no passphras
e):
Enter same passphrase again:
Your identification has been saved in /c/Users/Admin/.ssh/id_rsa_github
Your public key has been saved in /c/Users/Admin/.ssh/id_rsa_github.pub
The key fingerprint is:
SHA256:w8Jsk1IhODXoCoWZTThqWSxsnoyjX9fXmg+npvXKN4s 3221487391@qq.com
The key's randomart image is:
+--[ED25519 256]--+
|.Bo++ .          |
|*+*o o .         |
|*+=.  .          |
|=*.  + o         |
|+o  . B.S .      |
|o   .o.o... .    |
| . . .    .oo.   |
| .       o+*o    |
|        .oE++o   |
+----[SHA256]-----+
```

将公钥添加到 GitHub 账号

SSH 已经成功连接 GitHub

My GitHub Key

SHA256:w8Jsk1IhODXoCoWZTThqWSxsnoyjX9fXmg+npvXKN4s

Added on Oct 14, 2025

Never used — Read/write

Delete

```
Admin@DESKTOP-I8QPENN MINGW64 ~ (master)
$ ssh -T git@github.com
Hi zhaohaozhen! You've successfully authenticated, but GitHub does not provide s
hell access.

Admin@DESKTOP-I8QPENN MINGW64 ~ (master)
$ |
```

使用 `git clone git@github.com:xxx/xxx.git` 方式操作仓库

克隆了仓库

```
Admin@DESKTOP-I8QPENN MINGW64 ~ (master)
$ git config --global --unset url.https://hub.fastgit.org/.insteadOf

Admin@DESKTOP-I8QPENN MINGW64 ~ (master)
$ git clone https://github.com/zhaohaozhen/zhz-eternity-01-repo.git
Cloning into 'zhz-eternity-01-repo'...
remote: Enumerating objects: 40, done.
remote: Counting objects: 100% (40/40), done.
remote: Compressing objects: 100% (39/39), done.
remote: Total 40 (delta 9), reused 28 (delta 1), pack-reused 0 (from 0)
Receiving objects: 100% (40/40), 30.40 MiB | 5.08 MiB/s, done.
Resolving deltas: 100% (9/9), done.
```

远程地址

```
Admin@DESKTOP-I8QPENN MINGW64 ~ (master)
$ ssh -T git@github.com
Hi zhaohaozhen! You've successfully authenticated, but GitHub does not provide s
hell access.

Admin@DESKTOP-I8QPENN MINGW64 ~ (master)
$ git remote -v

Admin@DESKTOP-I8QPENN MINGW64 ~ (master)
$ pwd
/c/Users/Admin

Admin@DESKTOP-I8QPENN MINGW64 ~ (master)
$ cd zhz-eternity-01-repo

Admin@DESKTOP-I8QPENN MINGW64 ~/zhz-eternity-01-repo (main)
$ git remote -v
origin  https://github.com/zhaohaozhen/zhz-eternity-01-repo.git (fetch)
origin  https://github.com/zhaohaozhen/zhz-eternity-01-repo.git (push)

Admin@DESKTOP-I8QPENN MINGW64 ~/zhz-eternity-01-repo (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean
```
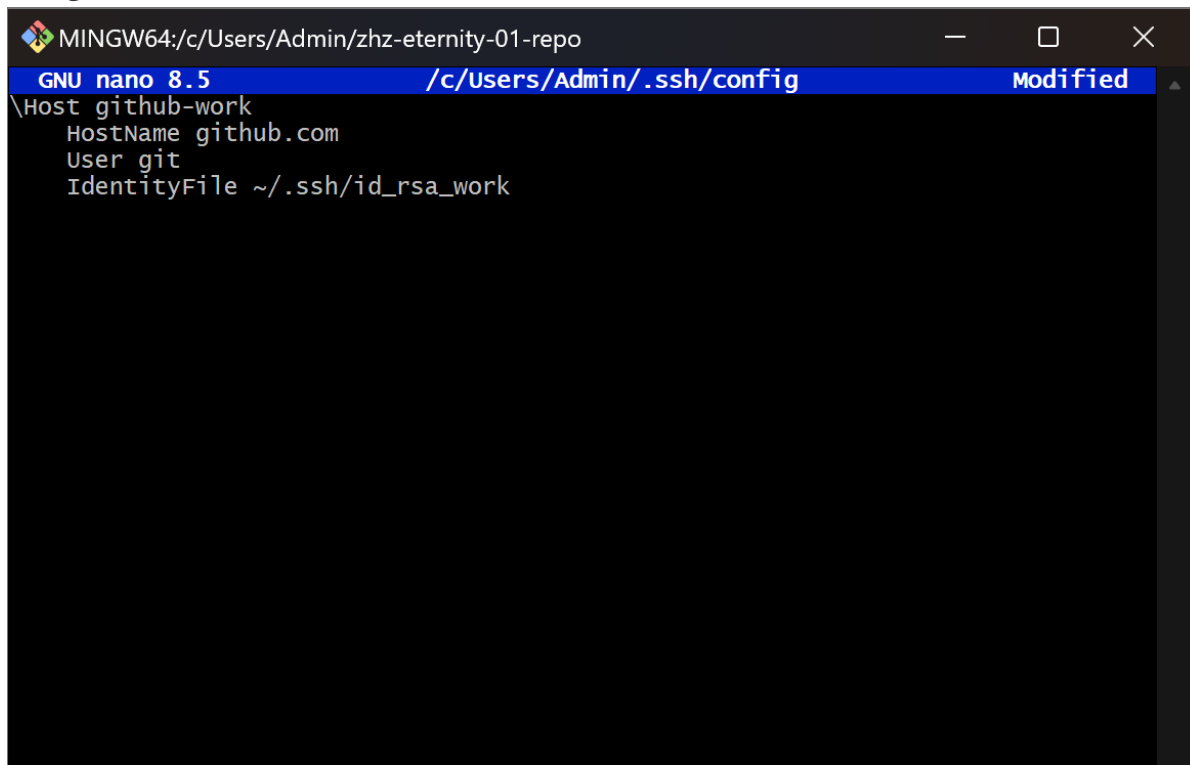
远程地址从 HTTPS 改为 SSH

```
Admin@DESKTOP-I8QPENN MINGW64 ~/zhz-eternity-01-repo (main)
$ git remote set-url origin git@github.com:zhaohaozhen/zhz-eternity-01-repo.git

Admin@DESKTOP-I8QPENN MINGW64 ~/zhz-eternity-01-repo (main)
$ git remote -v
origin  git@github.com:zhaohaozhen/zhz-eternity-01-repo.git (fetch)
origin  git@github.com:zhaohaozhen/zhz-eternity-01-repo.git (push)
```

config文件内容

```
MINGW64:/c/Users/Admin/zhz-eternity-01-repo                    —    □    ✕
  GNU nano 8.5          /c/Users/Admin/.ssh/config          Modified
\Host github-work
    HostName github.com
    User git
    IdentityFile ~/.ssh/id_rsa_work
```