在Linux环境的命令行下编辑并编译示例代码

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一、在命令行下编辑并编译代码的做法

1.在想要创建c文件的文件夹中打开终端

2.输入如下代码

```
#创建c文件
vim name.c
#编译c文件并指定输出对应的可运行文件
gcc 源文件 -o 输出文件名称
#运行c文件
.\输出文件名称
```

二、示例实践操作

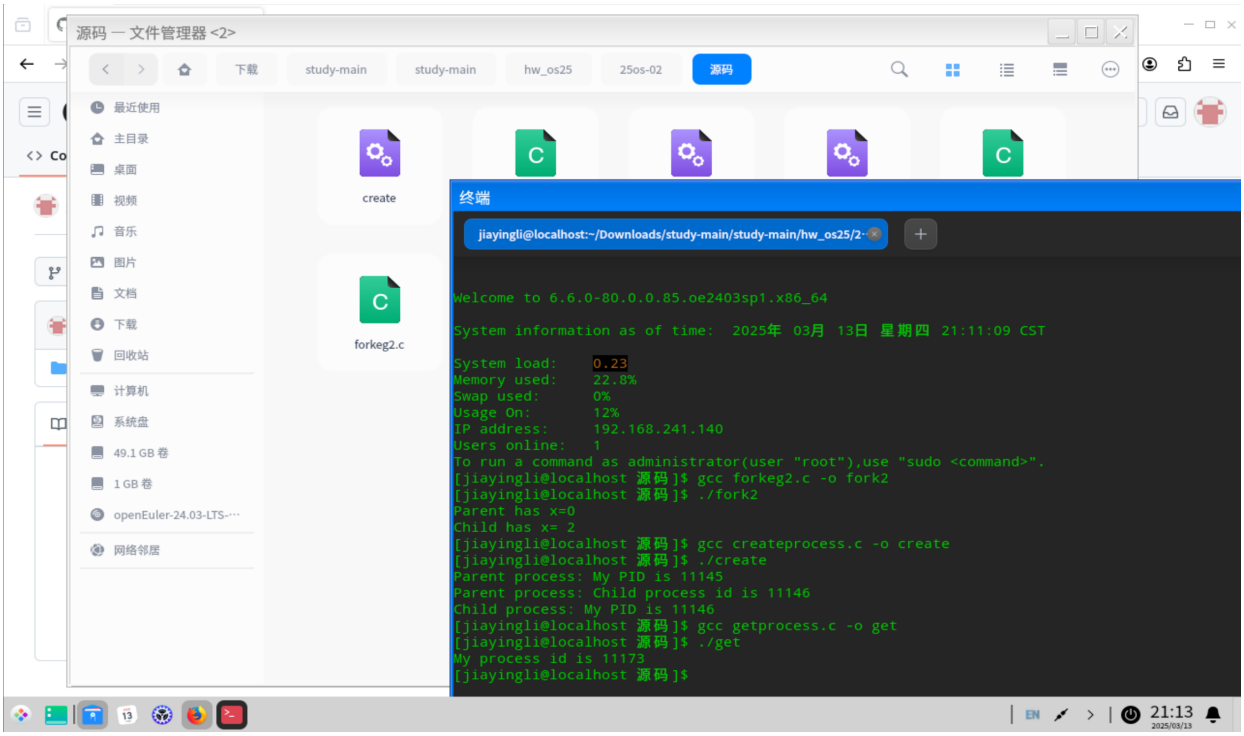
为方便源代码的编辑，我直接选择了直接在vscode中进行编辑

1.获取进程的pid

(1)示例代码

```
#include<stdio.h>
#include<sys/types.h>
#include<unistd.h>
int main(){
    pid_t my_pid;
    my_pid=getpid();
    printf("My process id is %d\n",my_pid);
    return 0;
}
```

(2)实践照片

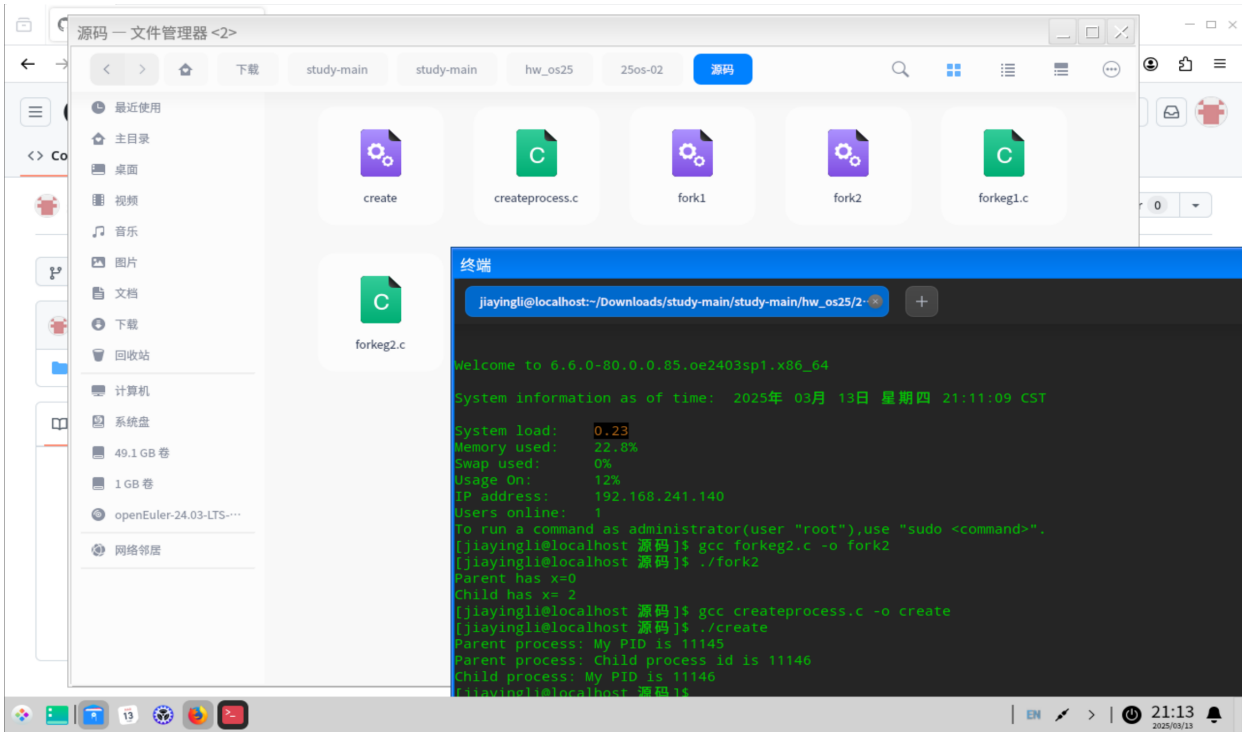


2.使用`fork()`创建进程

(1)示例代码

```
#include<stdio.h>
#include<sys/types.h>
#include<unistd.h>
int main(){
    pid_t child_pid;
    child_pid = fork();
    if(child_pid < 0){
        //Fork filed
        perror("Fork failed");
        return 1;
    }else if(child_pid == 0){
        printf("Child process: My PID is %d\n", getpid());
    }
    else{
        printf("Parent process: My PID is %d\n", getpid());
        printf("Parent process: Child process id is %d\n", child_pid);
    }
    return 0;
}
```

(2)实践照片



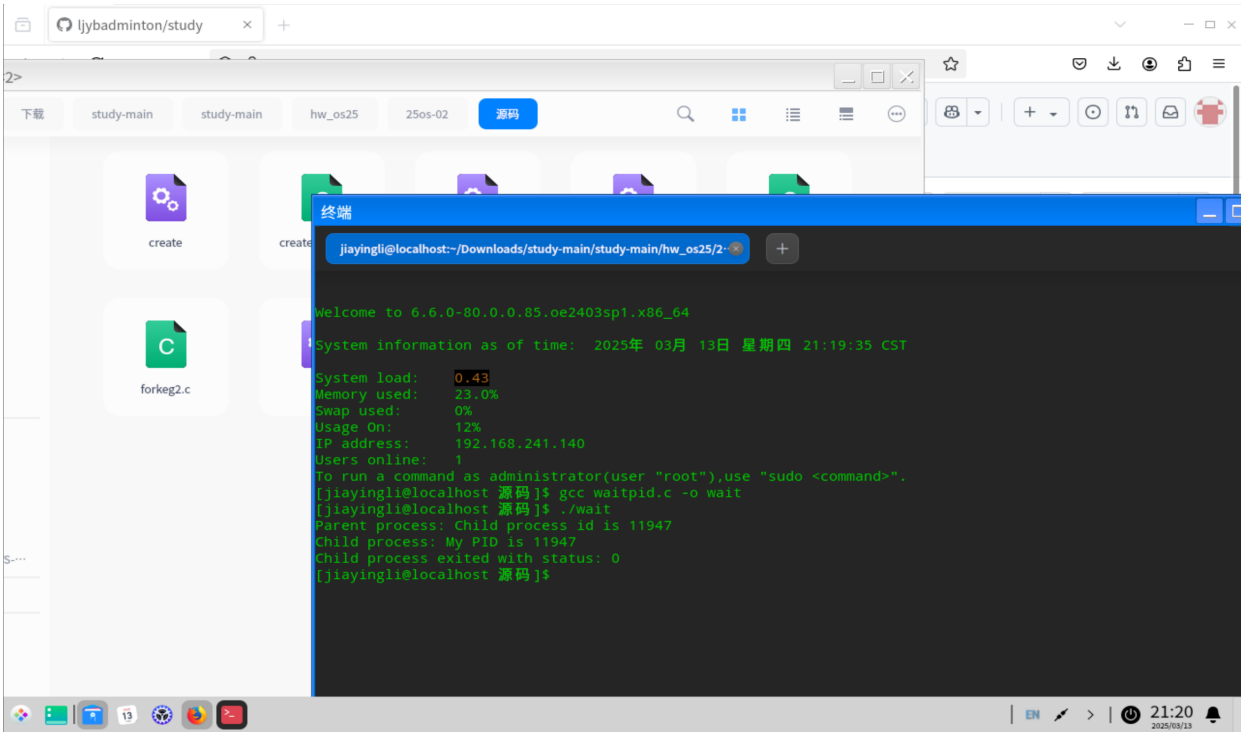
3.使用`fork()`创建子进程，并在父进程中等待子进程结束并获取子进程的退出状态

(1)示例代码

```
#include <stdio.h>
#include <sys/types.h>
#include <unistd.h>
#include <sys/wait.h>
int main()
{
    pid_t child_pid;
    child_pid = fork();
    if (child_pid < 0)
    {
        // Fork filed
        perror("Fork failed");
        return 1;
    }
    else if (child_pid == 0)
    {
        printf("Child process: My PID is %d\n", getpid());
    }
    else
    {
        // Code executed by parent process
        printf("Parent process: Child process id is %d\n", child_pid);
        // Wait for child process to complete
        int status;
        waitpid(child_pid, &status, 0);
        if (WIFEXITED(status))
```

```
        {
            printf("Child process exited with status: %d\n", WEXITSTATUS(status));
        }
    }
    return 0;
}
```

(2)实践照片



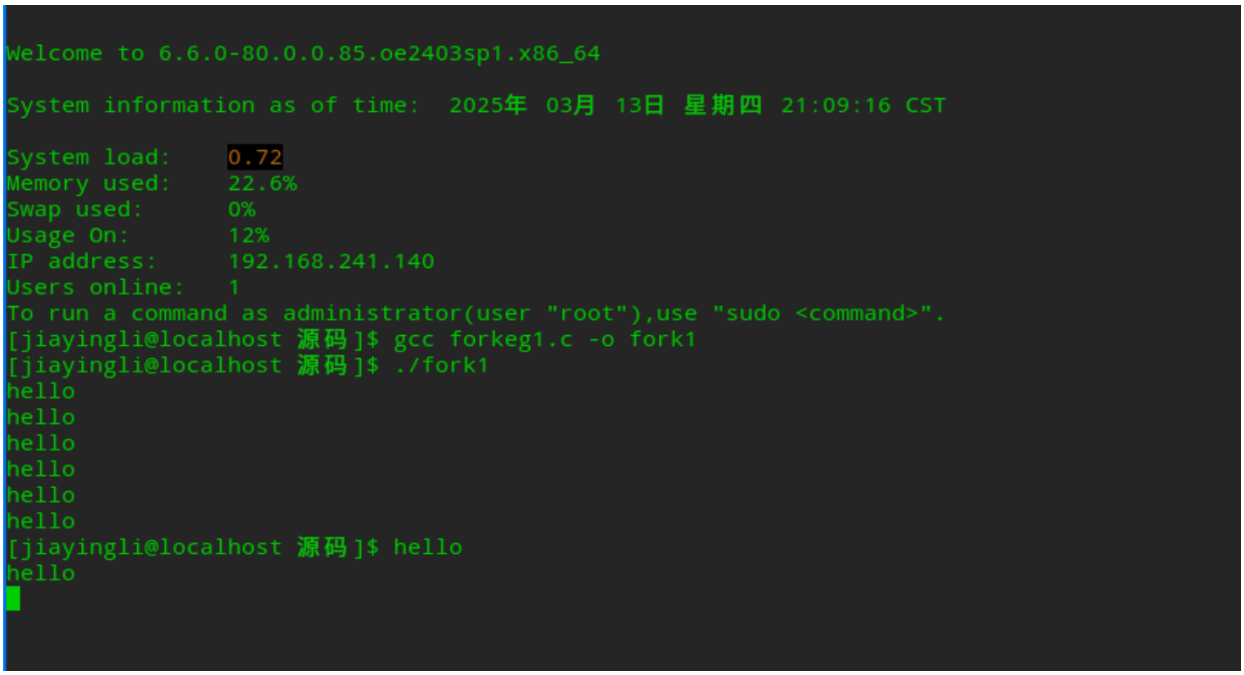
4.多次调用`fork()`创建进程

(1)示例代码

```
#include<stdio.h>
#include<sys/types.h>
#include<unistd.h>

int main(){
    fork();
    fork();
    fork();
    printf("hello\n");
    return 0;
}
```

(2)实践照片



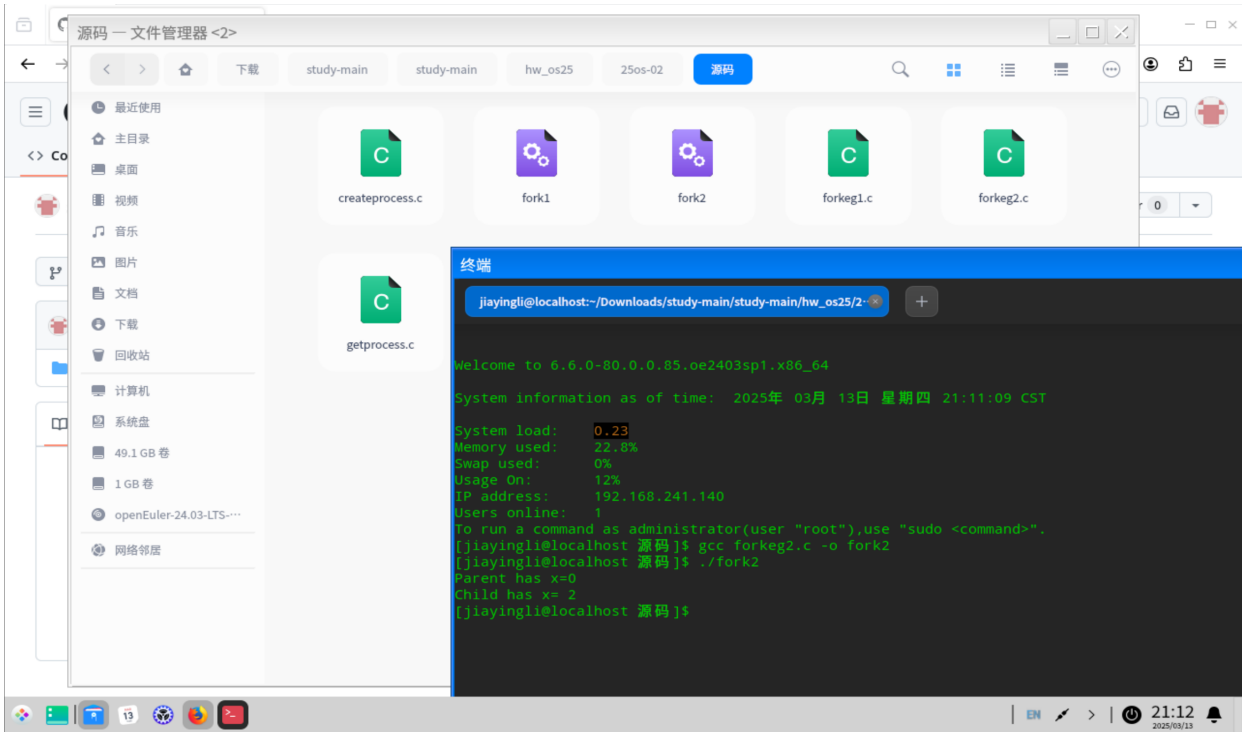
5. `fork()` 创建进程并使父进程和子进程共享代码

(1)示例代码

```
#include<stdio.h>
#include<sys/types.h>
#include<unistd.h>
#include<stdlib.h>

int main(){
    int x=1;
    pid_t p=fork();
    if(p<0){
        perror("fork fail");
        exit(1);
    }else if(p==0)
        printf("Child has x= %d\n",++x);
    else
        printf("Parent has x=%d\n",--x);
    return 0;
}
```

(2)实践照片


源码 — 文件管理器 <2>
下载
study-main
study-main
hw_os25
25os-02
源码
最近使用
主目录
桌面
视频
音乐
图片
文档
下载
回收站
计算机
系统盘
49.1 GB 卷
1 GB 卷
openEuler-24.03-LTS-···
网络邻居
createprocess.c
fork1
fork2
forkeg1.c
forkeg2.c
getprocess.c
终端
jiayingli@localhost:~/Downloads/study-main/study-main/hw_os25/2·
Welcome to 6.6.0-80.0.0.85.oe2403sp1.x86_64
System information as of time: 2025年 03月 13日 星期四 21:11:09 CST
System load: 0.23
Memory used: 22.8%
Swap used: 0%
Usage On: 12%
IP address: 192.168.241.140
Users online: 1
To run a command as administrator(user "root"),use "sudo <command>".
[jiayingli@localhost 源码]$ gcc forkeg2.c -o fork2
[jiayingli@localhost 源码]$ ./fork2
Parent has x=0
Child has x= 2
[jiayingli@localhost 源码]$
EN
21:12
2025/03/13