实验报告

一、实验目的

1.认识操作系统实验环境

2.掌握操作系统实验所需的基本工具

二、实验步骤

1.克隆实验的代码库

进入控制台用ls查看有哪些文件，使用`cat .cgconfig`查看git服务器地址，使用`git clone git@192.168.130.193:$CGUSERID-lab`命令克隆实验的代码库

2.查看克隆下来的文件

用ls查看，发现克隆后多出来的文件`ouc21020007131-lab`，进入该文件，直接ls发现里面没有东西，使用命令`git checkout lab0`

检查分支，然后找到实验的文件，进入src文件，开始实验

```
jovyan@70234fb21137:~$ ls
appendix.pdf  contents.pdf  guide-book.pdf  ouc21020007131-lab  preface.pdf  work
jovyan@70234fb21137:~$ cd ouc21020007131-lab
jovyan@70234fb21137:~/ouc21020007131-lab$ ls
jovyan@70234fb21137:~/ouc21020007131-lab$ git checkout lab0
Branch 'lab0' set up to track remote branch 'lab0' from 'origin'.
Switched to a new branch 'lab0'
jovyan@70234fb21137:~/ouc21020007131-lab$ ls
dst  src
jovyan@70234fb21137:~/ouc21020007131-lab$ cd src
jovyan@70234fb21137:~/ouc21020007131-lab/src$ ls
fibo  fibo.c  Makefile  sh_test
jovyan@70234fb21137:~/ouc21020007131-lab/src$
```

3.编写fibo.c程序

使用vi编译，进入文件后，切换为insert模式，编写程序，如下，然后按Esc键，切换为控制台模式，输入`:wq`，保存文件并退出

jovyan@70234fb21137: ~/o

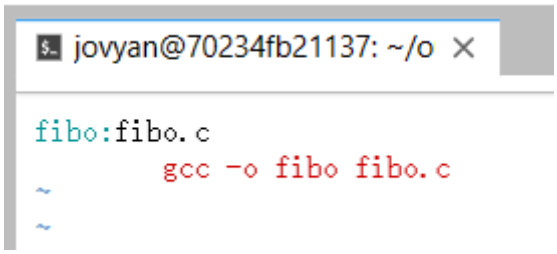
```c
#include<stdio.h>

int fibo(int n){
  int i,f,f1=0,f2=1;
  for(i=1;i<n;i++)
  {
        printf("%d ",f2);
        f=f1;
        f1=f2;
        f2=f+f1;
  }
  return f2;
}

int main(){
    int var;
    scanf("%d", &var);
    printf("%d",fibo(var));
    return 0;
}
```

4.编写Makefile脚本文件并运行

同样使用vi编译，在文件里写指令`gcc -o fibo fibo.c`，使用gcc将程序fibo.c编译为可执行文件fibo



运行`make`命令时，它会查找当前目录下的名为`Makefile`或`makefile`的文件，并根据其中定义的规则和依赖关系来执行相应的操作，运行完后，发现生成的可执行文件fibo，使用命令`./fibo`运行该程序，输入8，输出 1 1 2 3 5 8 13 21，斐波那契数列正确

```
jovyan@70234fb21137:~/ouc21020007131-lab$ ls
dst  src
jovyan@70234fb21137:~/ouc21020007131-lab$ cd src
jovyan@70234fb21137:~/ouc21020007131-lab/src$ ls
fibo  fibo.c  Makefile  sh_test
jovyan@70234fb21137:~/ouc21020007131-lab/src$ vi fibo.c
jovyan@70234fb21137:~/ouc21020007131-lab/src$ vi Makefile
jovyan@70234fb21137:~/ouc21020007131-lab/src$ make
gcc -o fibo fibo.c
jovyan@70234fb21137:~/ouc21020007131-lab/src$ ls
fibo  fibo.c  Makefile  sh_test
jovyan@70234fb21137:~/ouc21020007131-lab/src$ ./fibo
8
1 1 2 3 5 8 13 21jovyan@70234fb21137:~/ouc21020007131-lab/src$
```

发现忘记输出回车了，加上

```
jovyan@70234fb21137:~/ouc21020007131-lab/src$ ./fibo
8
1 1 2 3 5 8 13 21jovyan@70234fb21137:~/ouc21020007131-lab/src$ vi fibo.c
jovyan@70234fb21137:~/ouc21020007131-lab/src$ make
gcc -o fibo fibo.c
jovyan@70234fb21137:~/ouc21020007131-lab/src$ ./fibo
6
1 1 2 3 5 8
jovyan@70234fb21137:~/ouc21020007131-lab/src$
```

```
jovyan@70234fb21137:~/ouc21020007131-lab/src$ cat fibo.c
#include<stdio.h>

int fibo(int n){
  int i,f,f1=0,f2=1;
  for(i=1;i<n;i++)
  {
        printf("%d ",f2);
        f=f1;
        f1=f2;
        f2=f+f1;
  }
  return f2;
}

int main(){
    int var;
    scanf("%d", &var);
    printf("%d",fibo(var));
    printf("\n");
    return 0;
}
```

5.编写hello_os.sh

进入sh_test文件夹

```
jovyan@70234fb21137:~/ouc21020007131-lab/src/sh_test$ vi hello_os.sh
jovyan@70234fb21137:~/ouc21020007131-lab/src/sh_test$
```

```
jovyan@70234fb21137: ~/o
#!/bin/bash

sed -n 8p $1 > $2
sed -n 32p $1 >> $2
sed -n 128p $1 >> $2
sed -n 512p $1 >> $2
sed -n 1024p $1 >> $2
~
```

6.复制src到dst

使用`cd ..`命令退回到上一级文件夹，找到dst文件，使用命令`cp -rf src/* dst`将src文件夹里的所有文件复制到dst文件

```
jovyan@70234fb21137:~/ouc21020007131-lab/src/sh_test$ cd ..
jovyan@70234fb21137:~/ouc21020007131-lab/src$ cd ..
jovyan@70234fb21137:~/ouc21020007131-lab$ ls
dst  src
jovyan@70234fb21137:~/ouc21020007131-lab$ cp -rf src/* dst
jovyan@70234fb21137:~/ouc21020007131-lab$ ls dst
fibo  fibo.c  Makefile  sh_test
jovyan@70234fb21137:~/ouc21020007131-lab$
```

7.上传远程lab0分支

使用命令`git config --global user.email "zym8004@stu.ouc.edu.cn"`和`git config --global user.name "munume"`将Git身份信息设置为"munume"和"zym8004@stu.ouc.edu.cn"，并将其与你的提交关联起来。然后用`git commit -m`提交

```
jovyan@70234fb21137:~/ouc21020007131-lab$ git add .
jovyan@70234fb21137:~/ouc21020007131-lab$ git config --global user.email "zym8004@stu.ouc.edu.cn"
jovyan@70234fb21137:~/ouc21020007131-lab$ git config --global user.name "munume"
jovyan@70234fb21137:~/ouc21020007131-lab$ git config --list
user.emaile=zym8004@stu.ouc.edu.cn
user.name=munume
user.email=zym8004@stu.ouc.edu.cn
core.repositoryformatversion=0
core.filemode=true
core.bare=false
core.logallrefupdates=true
remote.origin.url=git@192.168.130.193:ouc21020007131-lab
remote.origin.fetch=+refs/heads/*:refs/remotes/origin/*
branch.lab0.remote=origin
branch.lab0.merge=refs/heads/lab0
jovyan@70234fb21137:~/ouc21020007131-lab$ git commit -m "lab0"
[lab0 6d79749] lab0
 4 files changed, 2 insertions(+)
 rewrite dst/fibo (75%)
 rewrite src/fibo (75%)
jovyan@70234fb21137:~/ouc21020007131-lab$
```

使用命令`git push`命令，上传分支，完成实验

```
jovyan@70234fb21137:~/ouc21020007131-lab$ git push
Counting objects: 6, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (6/6), done.
Writing objects: 100% (6/6), 1.75 KiB | 1.75 MiB/s, done.
Total 6 (delta 2), reused 0 (delta 0)
remote: ************************************************************
remote:
remote:                     BUAA OSLAB AUTOTEST SYSTEM
remote:                    Copyright (c) BUAA 2015-2019
remote:
remote: ************************************************************
remote:
remote: [ You are changing the branch: refs/heads/lab0. ]
remote:
remote: Autotest: Begin at Tue Dec 26 20:24:52 CST 2023
remote:
remote: warning: remote HEAD refers to nonexistent ref, unable to checkout.
remote:
remote: Switched to a new branch 'lab0'
remote: Branch lab0 set up to track remote branch lab0 from origin.
remote: lab variable value is lab0
remote: [ You have passed bash testcase 1/2 ]
remote: [ You have passed bash testcase 2/2 ]
remote: [ Makefile found. ]
remote: gcc -o fibo fibo.c
remote: [ fibo found. make passed. ]
remote: [ You have passed fibo testcase 1/3 ]
remote: [ You have passed fibo testcase 2/3 ]
remote: [ You have passed fibo testcase 3/3 ]
remote: [ You got 100 (of 100) this time. Tue Dec 26 20:24:57 CST 2023 ]
remote:
remote:
remote: >>>>>> Collecting autotest results >>>>>>
remote: Switched to a new branch 'lab0-result'
remote: Branch lab0-result set up to track remote branch lab0-result from origin.
remote: Already up-to-date.
remote: [lab0-result 19ef3cb] Judgement for lab0 at 2023-12-26T20:24:57+0800
remote:  1 file changed, 10 insertions(+)
```

发现lab1出现，后面进行lab1实验

```
remote: Branch lab1 set up to track remote branch lab1 from origin.
remote: [ lab1 already exists. ]
To 192.168.130.193:ouc21020007131-lab
   bfc55db..6d79749  lab0 -> lab0
jovyan@70234fb21137:~/ouc21020007131-lab$ git pull
remote: Counting objects: 8, done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 4 (delta 0), reused 0 (delta 0)
Unpacking objects: 100% (4/4), done.
From 192.168.130.193:ouc21020007131-lab
   5ff11a3..19ef3cb  lab0-result -> origin/lab0-result
Already up to date.
jovyan@70234fb21137:~/ouc21020007131-lab$ git branch -a
* lab0
  remotes/origin/lab0
  remotes/origin/lab0-result
  remotes/origin/lab1
jovyan@70234fb21137:~/ouc21020007131-lab$ ls
dst  src
jovyan@70234fb21137:~/ouc21020007131-lab$ git checkout lab1
Branch 'lab1' set up to track remote branch 'lab1' from 'origin'.
Switched to a new branch 'lab1'
jovyan@70234fb21137:~/ouc21020007131-lab$ ls
boot  drivers  gxemul  include  include.mk  init  lib  Makefile  readelf  tools
jovyan@70234fb21137:~/ouc21020007131-lab$
```

三、实验总结

初步认识了北航操作系统实验，对实验的整体流程有了一定的了解，学会了使用vim编写程序，学会了用gcc编译，学会了怎么上传实验到git

大概用了两三小时