HW2 Program

Team組員

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Environment

- 使用Ubuntu20.04.1
- 需有以下兩個套件

```
sudo apt-get install make
sudo apt-get install flex
```

- Github地址

110-2-OS-Homework/hw2 at main · DandinPower/110-2-OS-Homework

Contribute to DandinPower/110-2-OS-Homework development by creating an account on GitHub.

https://github.com/DandinPower/110-2-OS-Homework/tree/main/hw2

Problem

4.17

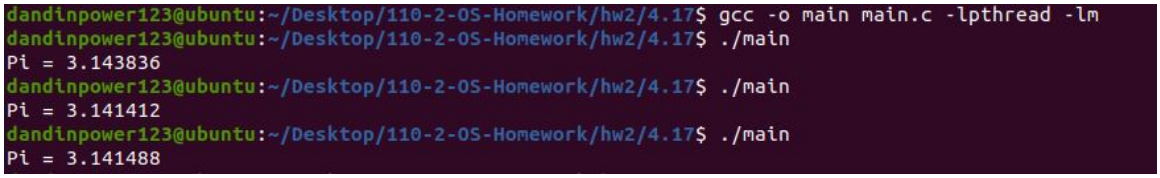
- 編譯程式碼

```
gcc -o main main.c -lpthread -lm
```

- 執行程式

```
./main
```

- 輸出結果



4.21

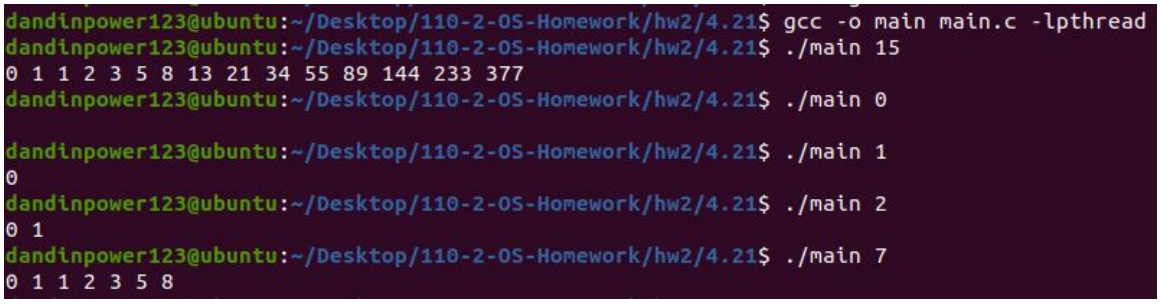
- 編譯程式碼

```
gcc -o main main.c -lpthread
```

- 執行程式

```
./main <輸出長度>
```

- 輸出結果



6.33

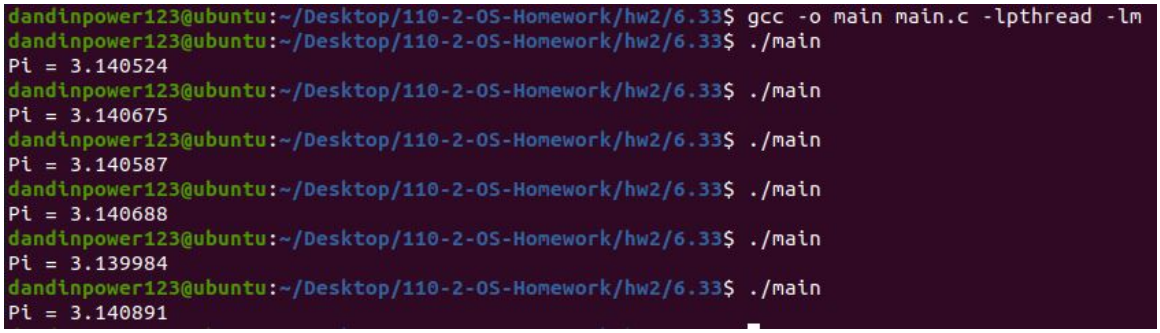
- 編譯程式碼

```
gcc -o main main.c -lpthread -lm
```

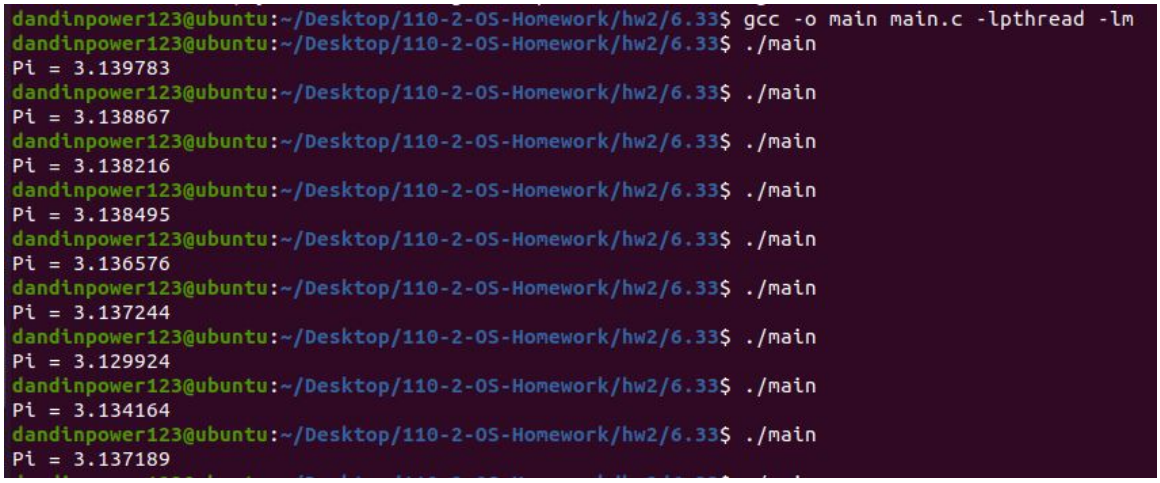
- 執行程式

```
./main
```

- 正確輸出結果



- 如果沒加上mutex lock 就可能會發生沒有正確加到導致結果變低



Project

Chap4

- 這邊選擇做Project2 Multithreaded sorting application
- 編譯程式碼

```
gcc -o main main.c -lpthread
```

- 執行程式

```
./main
```

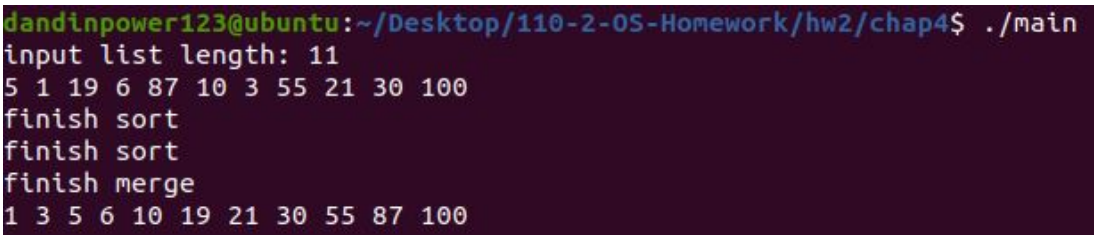
- 使用方法
  - 先輸入待排序的list長度

```
input list length:<長度>
```

  - 接下來輸入list

```
5 1 19 6 87 10 3 55 21 30 100
```

- 兩個thread在各自排序完各自sublist後為確認有先完成才跑第3個thread因此會delay 1秒鐘
- 輸出結果



Chap6

- 這邊選擇做Project1 The Sleeping Teaching Assistant
- 編譯程式碼

```
gcc -o main main.c -lpthread
```

- 執行程式碼

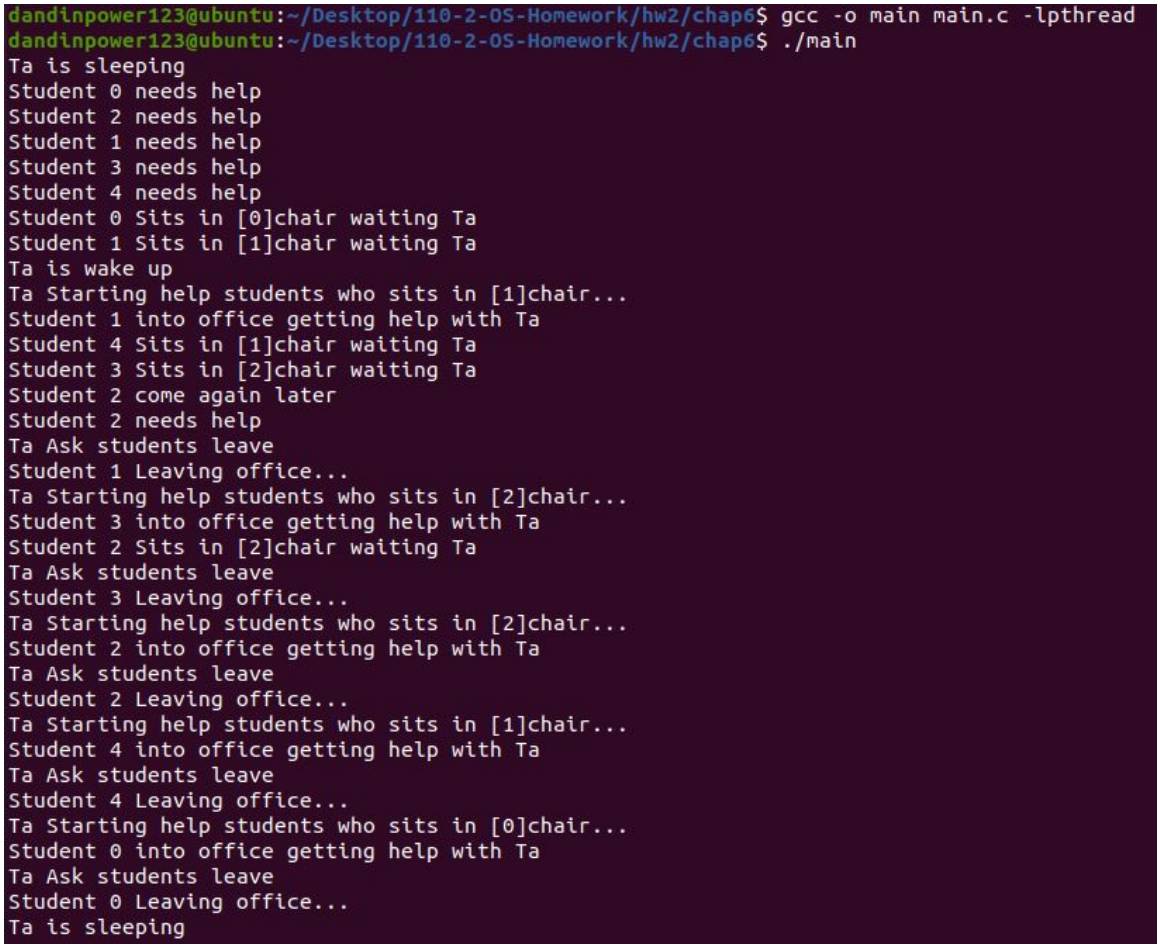
```
./main
```

- 輸出說明

```
Ta is sleeping  //當Ta在睡覺時
Ta is wake up  //有student叫醒Ta時
Ta Starting help students who sits in [編號]chair...  //Ta開始教學剛剛坐在[編號]上的人
Ta Ask students leave //Ta教學完畢叫學生離開
```

```
Student [編號] needs help  //學生需要幫忙
Student [編號] Sits in [椅子編號]chair waiting Ta //學生坐在[椅子編號]等Ta
Student [編號] into office getting help with Ta  //學生開始被Ta教學
Student [編號] Leaving office... //教學完畢學生離開
Student [編號] come again later //學生因為椅子滿了因此先離開了
```

- 輸出結果


dandinpower123@ubuntu:~/Desktop/110-2-OS-Homework/hw2/chap6$ gcc -o main main.c -lpthread
dandinpower123@ubuntu:~/Desktop/110-2-OS-Homework/hw2/chap6$ ./main
Ta is sleeping
Student 0 needs help
Student 2 needs help
Student 1 needs help
Student 3 needs help
Student 4 needs help
Student 0 Sits in [0]chair waiting Ta
Student 1 Sits in [1]chair waiting Ta
Ta is wake up
Ta Starting help students who sits in [1]chair...
Student 1 into office getting help with Ta
Student 4 Sits in [1]chair waiting Ta
Student 3 Sits in [2]chair waiting Ta
Student 2 come again later
Student 2 needs help
Ta Ask students leave
Student 1 Leaving office...
Ta Starting help students who sits in [2]chair...
Student 3 into office getting help with Ta
Student 2 Sits in [2]chair waiting Ta
Ta Ask students leave
Student 3 Leaving office...
Ta Starting help students who sits in [2]chair...
Student 2 into office getting help with Ta
Ta Ask students leave
Student 2 Leaving office...
Ta Starting help students who sits in [1]chair...
Student 4 into office getting help with Ta
Ta Ask students leave
Student 4 Leaving office...
Ta Starting help students who sits in [0]chair...
Student 0 into office getting help with Ta
Ta Ask students leave
Student 0 Leaving office...
Ta is sleeping