CS304 Homework 3

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After running both the files, I got the following output.

```
ayushgupta@ayushs-MacBook-Air hw3 % gcc-11 with_mutex.c
ayushgupta@ayushs-MacBook-Air hw3 % ./a.out
Glory, employees contents was always consistent
ayushgupta@ayushs-MacBook-Air hw3 % ./a.out
Glory, employees contents was always consistent
ayushgupta@ayushs-MacBook-Air hw3 % ./a.out
Glory, employees contents was always consistent
ayushgupta@ayushs-MacBook-Air hw3 % gcc-11 without_mutex.c
ayushgupta@ayushs-MacBook-Air hw3 % ./a.out
mismatching 'last_name' , levyn != cohen (loop '94')
ayushgupta@ayushs-MacBook-Air hw3 % ./a.out
mismatching 'first_name' , danny != moshe (loop '328')
ayushgupta@ayushs-MacBook-Air hw3 % ./a.out
mismatching 'first_name' , danny != moshe (loop '311')
ayushgupta@ayushs-MacBook-Air hw3 % ./a.out
mismatching 'last_name' , levy != cohen (loop '305')
ayushgupta@ayushs-MacBook-Air hw3 % ./a.out
mismatching 'last_name' , cohe != cohen (loop '446')
ayushgupta@ayushs-MacBook-Air hw3 % ./a.out
mismatching 'first_name' , danhe != danny (loop '104')
ayushgupta@ayushs-MacBook-Air hw3 % ./a.out
mismatching 'last_name' , cohen != levy (loop '259')
ayushgupta@ayushs-MacBook-Air hw3 % █
```

In the file, *employee_with_mutex.c* the output was always, "Glory, employees contents was always consistent"

This happens because the function *copy_employees()* in the *employees_with_mutex.c* uses *pthread_mutex_lock()* before writing

contents in it. After that, it is unlocked using *pthread_mutex_unlock()*. With this, only one thread is able to write contents in the data members of the structure *employee* at a time.

However, in the file, *employee_without_mutex.c* the output always has some mismatching causing the program to terminate. For instance, in the above output shown, I have mismatching 'first-name' or mismatching 'last-name' This happens because the *copy_employees()* did not used the mutex which can allows multiple threads to change the data members of the *employee*