CS307 FALL 20'-21'
Homework 1 Report

This program simulates an Airline Reservation System with 2 agencies which are reserving seats from a plane. In my program agencies are represented by threads.

In the program I created 2 threads with pthread_create function representing TravelAgency1 and TravelAgency2 and a plane with 100 seats as a matrix with size 2x50. I defined 4 global variables which are like below:

- bool firstOneLeft = false; // keep track if first thread had left working because plane is full
- bool planeChecker = false; // cheks if plane is full
- int rnd = 0; // makes sure that threads are waiting for each other
- int count = 100; // count of available seats

After creation of 2 threads they randomly create seat numbers in order to find seats that are available on the plane. It tries matrix positions. If the seat number generated is full thread keeps on trying for finding another empty seat. Else it reserves it and marks the seat with its agency number.

In the program I did these tasks by checking if the plane is full and then make threads wait for each other on each loop. After when a thread is free to go (when other one completed the loop) it starts by outputting that it entered critical region and it prevents other thread to start by setting a variable named out true. Then it creates the seat number that I've mentioned earlier and check if its empty or not. If its empty it reserves it by giving agency number to that position in the plane matrix and then it decreases number of available seats by one. Also it outputs that it reserved the seat and informs that its exiting the critical region and then other thread starts the loop. If the seat is not empty, it tries until finding an empty one. When one of the threads encounters a situation where it can't find any empty seat, it stops working and outputs that there are no more empty seats. After that I've used pthread_join() function for each thread and this function suspended execution of the calling thread. Finally I printed the plane matrix in order to visualize the plane.

Celal Canol Taşgın
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