

CS307 HW1 Explanation

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For this homework assignment, we are to implement an airline reservation system. The key point of the reservation system is that it uses “strict” turning, where the two different agencies take turns. I did this by using a global variable “turn”, where it will switch from zero and one.

Another global variable was the number of seats, which was used to check whether the airline reservations were complete. In the main function, the 2d pointer array of type int was made and initialized to zero. This was specifically because threads can only access dynamic memory in heap, as threads have their own stack. So, to be able to share the seats, the matrix has to be accessible by both agencies/threads. The threads were created, and sent to the functions with the necessary parameters. The matrix was typecasted to a void pointer when it was sent to the function.

The matrix that was received by the function was later typecasted back into the 2d integer pointer. Once this was complete, we enter the algorithm showed in the figure of the pdf file. We enter the critical region only when it is our turn. It is initialized to zero, so one agency will always get first pick. The first while loop continues under the condition that reservations are able to be made. Inside the second while loop, we will continue to create random seats, and check if reservations are possible. If they are empty, then it will reserve the seats, leave the critical region, and also change the “turn” variable. The same implementation goes for both agency functions.