CS307 HW1 by Baran Çimen

In the program, we have 3 global variables; one of them is the turn variable which is used by Agency Threads to determine who will enter the critical region, another one is the remaining seats count which is used to keep track of the seats and the last global variable is our 2-dimensional array.

We have 2 functions which are thread functions, they do the same things but have different printf statements. While there are seats left in the plane:

First, it creates a random seat number between 0-99, finds which index it is in our 2-dimensional array by calculating the row and column. Then, it goes into a loop until the global turn variable is the thread's id, basically the thread waits until the other thread exits the critical region. When the other thread finishes it's task in the critical region, the thread enters the critical region and checks if there are any seats left in the plane and if the seat number is occupied. If it isn't, it fills the seat and decrease the remaining seats count by one. Last but not least, when leaving the critical region it changes the turn variable so that the other thread can enter the critical region.

In the main thread, firstly we create a seed for our random number generator function. Then we fill our matrix with 0's to show that the seats are empty. Then, we create new processes and work with the new threads. Meanwhile the threads complete their functions, the main thread goes into a loop until there are no seats left in the flight. When it finishes, the other two threads join to the main thread. The main thread prints the 2-dimensional array and terminates the program with the code 0.