

Plane Seating Algorithm Improvement

For this program, I worked with Michelle Best, Peter Tsun and Daiana Munoz. In the description of the algorithm from the previous week, I suggested splitting families into groups of two and three so that at least some children would be able to sit with their parents. This was the basis for the changes we made to the code.

The majority of the changes we made were to the “fill_plane function.” (Though we also prevented the plane from overbooking). We started by setting aside the people who purchased Economy Plus seats that were not originally assigned window seats (middle seats). Then we made a tuple to show the different family groups and sizes. Next we looped through the rows to assign seats to groups of three and then to groups of two. The single passengers who purchased regular economy were added to the group of Economy Plus passengers who were not assigned window seats. After all the groups of two and three passengers were assigned seats, we filled in the empty seats with the single passengers. Before we did this, we had to override the original seating assignments for the Economy Plus passengers who had not been assigned window seats.

This algorithm allows for small family groups to sit together. A person who purchases Economy Plus has a 70% chance of getting a window seat when they board the plane. No one will know at the time of purchasing the tickets where they will be seated. Passengers won't find out their seats until all the seats are purchased, at the time of boarding or by some other date the airline decides.

In my opinion, I still don't think this is a very ethical solution. Not everyone who purchases Economy Plus would be able to sit in a seat they choose. If I had more time, I would work out how to only sell only as many Economy Plus seats as there are windows. In an ideal world, people would be able to choose their seats, regardless of paying more money. At least the updates to the current algorithm allow for people traveling in groups of two or three to sit together.