

Algorithm to fill plane seats

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First I'd like to keep it to as simple an algorithm as possible. And with the advent of customers picking their own seats, I think this sort of algorithm should be disappearing. Should is the operative word.

First, for one family, find the number of seats they want to buy.

Second, search the airplane for that number of contiguous seats in a row.

Third, if not all can be found, a few options can occur to split up the seats.

3a - split up seats in approximately half if number is 4 or higher. Find the next highest contiguous seats. then second search searches the rows in front and behind for the remaining available seats. If not found, go to the next row.

3b. Split up seats minus one. So if a group of 3 is not found in a row, search for a group of 2, then check to see a seat in front or behind is free.

3c. Otherwise, worst case resort to next available seat.

3c would be easiest to implement but would break up groups.

3b would be next easiest to implement. You do a full search. then if you can't find, then minus one and do the search over again. and keep going until exhausted. If exhausted, do algo in 3c.

3a would be a good compromise with 3b as it'll place groups in proximity of one another and still bunched up. However, it is slightly more complex and you can run into no solution more often than option 3b.

These general algos doesn't take into account for monetary or maximizing profit motives. Windows or aisle seats are preferred. Should someone who books tickets as a group pay more for a single ticket holder? Should single ticket holders be given more choices? If you allow a group to take a window seat which is highly sought after, does that lower the profit of the airline who could potentially charge more for the customers willing to pay more for window or aisle seats?

The algos above are first come first served and do not pay heed to preferred seating choices. There may be issues where people who are able to buy tickets first to get first dibs is too preferential and not everyone may be able to do that.