

## Issues with original seating algorithm

1. There is no account for safety. For example, a child might end up seated in the emergency exit.
2. No priority for Passengers with disability to purchase their tickets
3. No priority for family to be seated together...especially families traveling with small children or family members with special needs
4. This system is totally about profit without any considerations to human being circumstances

## Suggested Equitable Algorithm

- All passengers should have the option to select seating based on availability at the time they book
- Exit rows should be blocked unless age requirement met
- Option to block out an entire row (extra cost)
- Extra space seating (extra cost)
- Economy seating based on time of booking (closer to travel date more \$\$)
- Extra space seating reserved for passengers with disabilities based on question prompts (no additional cost...must show verification at check in)

## Plane Seating Discussion 10/27/2022

5. There is no account for safety. For example a child might end up seated at emergency exit
6. No priority for Passengers with disability to purchase their tickets later
7. No priority for family to be seated together. one family member might need an assistance and it is important to be get assistance
8. This system is totally about profit without any considerations to human being circumstances

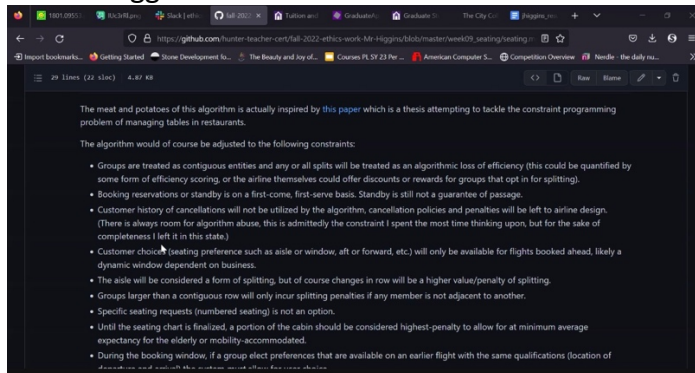
## Notes:

- Creates a plane (a list of lists, each representing a row)
- Allows economy plus customers to choose a seat
- Allows customers to purchase economy seats (unassigned) as long as seats are available
- When there is <1 seat left it stops selling tickets and assigns remaining seats to economy customers randomly
- includes a "to string" type function that makes a print-friendly representation of the plane

- The program is looping through to see which seats are taken and which seats are still available for purchased.
- Allow people who purchased the economy plus ticket to see what seats they can choose.

## Room Discussions 11/03/2022:

### Joshua Higgins

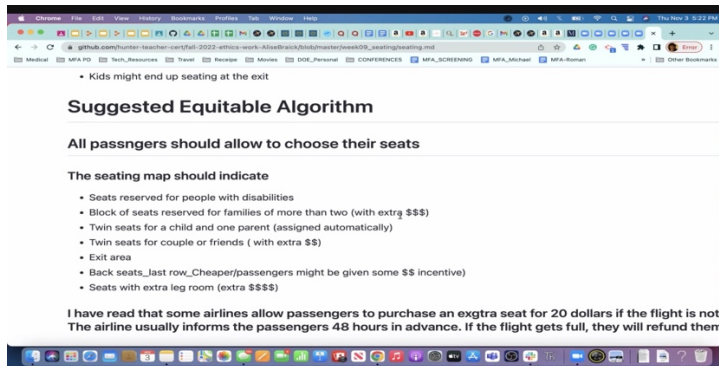


The meat and potatoes of this algorithm is actually inspired by [this paper](#) which is a thesis attempting to tackle the constraint programming problem of managing tables in restaurants.

The algorithm would of course be adjusted to the following constraints:

- Groups are treated as contiguous entities and any or all splits will be treated as an algorithmic loss of efficiency (this could be quantified by some form of efficiency scoring, or the airline themselves could offer discounts or rewards for groups that opt in for splitting).
- Booking reservations or standby is on a first-come, first-serve basis. Standby is still not a guarantee of passage.
- Customer history of cancellations will not be utilized by the algorithm, cancellation policies and penalties will be left to airline design. (There is always room for algorithm abuse, this is admittedly the constraint I spent the most time thinking upon, but for the sake of completeness I left it in this state.)
- Customer choice (seating preference such as aisle or window, aft or forward, etc.) will only be available for flights booked ahead, likely a dynamic window dependent on business.
- The aisle will be considered a form of splitting, but of course changes in row will be a higher value/penalty of splitting.
- Groups larger than a contiguous row will only incur splitting penalties if any member is not adjacent to another.
- Specific seating requests (numbered seating) is not an option.
- Until the seating chart is finalized, a portion of the cabin should be considered highest-penalty to allow for at minimum average expectancy for the elderly or mobility-accommodated.
- During the booking window, if a group elect preferences that are available on an earlier flight with the same qualifications (location of departure and arrival, the same seat class, business class).

### Alise Braick



- Kids might end up seating at the exit

## Suggested Equitable Algorithm

### All passengers should allow to choose their seats

#### The seating map should indicate

- Seats reserved for people with disabilities
- Block of seats reserved for families of more than two (with extra \$\$\$)
- Twin seats for a child and one parent (assigned automatically)
- Twin seats for couple or friends ( with extra \$\$)
- Exit area
- Back seats\_last row\_Cheaper/passengers might be given some \$\$ incentive)
- Seats with extra leg room (extra \$\$\$\$)

I have read that some airlines allow passengers to purchase an exvtra seat for 20 dollars if the flight is not full. The airline usually informs the passengers 48 hours in advance. If the flight gets full, they will refund them