Fall 2022 Final Project <

{HS Matching Algorithms}

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Today's 'Presentation' {
    now      Overview
    next     Code Component
    after    Ethical Issues & Solutions
    last     Discussion
             or Q/A
}
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Overview

The NYC HS Admissions process is complicated and unethical. One huge part of the admission process is the matching algorithm. Specialized High schools do not participate in the matching algorithm process.

Code Component

Our Code component is a simplified matching algorithm program, similar to to the Gale-Shapley algorithm.

It takes 9 students and matches them with 3 schools based on a) preference, b) zone c) priorities (set-asides), and d) lottery number.

Code Component - Schools

```
School Name: 🔴Red
Zoned: True
Available Seats: 3
Priority Seats: 0
Student Matches: [None yet]

School Name: 🔵Blue
Zoned: False
Available Seats: 3
Priority Seats: 2
Student Matches: [None yet]

School Name: 🟡Yellow
Zoned: False
Available Seats: 3
Priority Seats: 1
Student Matches: [None yet]
```

Code Component - Sample Student

```
Student Name: Dan
Lottery Number: 2
Rankings: 1: 🔵Blue 2: 🔴Red 3: 🟡Yellow
Priority: True
Zoned: 🔴Red: False 🟡Yellow: False 🔵Blue: False
Next Top Preference: 🔵Blue
Current Match: None
```

Code Component - Post Matching

```
**********Matching Algorithm Complete!**********

*******STUDENTS after Matching*******
Ali matched at 🔴Red, which was their #1 choice
Bee matched at 🔵Blue, which was their #2 choice
Cal matched at 🔴Red, which was their #2 choice
Dan matched at 🔵Blue, which was their #1 choice
Eva matched at 🟡Yellow, which was their #2 choice
Flo matched at 🔵Blue, which was their #1 choice
Gus matched at 🔴Red, which was their #2 choice
Hal matched at 🟡Yellow, which was their #3 choice
Isa matched at 🟡Yellow, which was their #2 choice
```

Pseudo Code Component

```
currStudent = unmatchedStudents[0]
currSchool = currStudent.topPick
while len(unmatchedStudents) > 0:
    if currSchool has space, match currStudnt and currSchool, remove currStudent from
unmatchedStudents, then grab next student as currStudent & their top school
    if currSchool if full:
          if currSchool is zoned:
                if currStudent zoned for school:
                      if there are unzoned students matched, unseat unzoned with lowest
                      (worst) lottery number, match currStudent, then look at unseated
                      student's next school
                      If all seats are zoned students, student with lowest lottery number
                      will not match/need to be unseated - if currStudent has lowest, look
                      at their next school.  If currStudent doesn't have lowest, unseat
                      student with lowest number,  match currStudent, then look at unseated
                      student's next school
                else:
    ...
```

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Replit Code Link

Ethical Issues & Solutions

One ethical issue is the NYC DOE does not provide transparency about this admission process. They do not report (even when requested) the historical cutoff information. (Marian, 2021) Students/ families/ researchers don't have a transparent understanding and have to engage in a timely and resource consuming process.

One solution to the first Ethical Issue of non-transparency is to publish the algorithm used. Why is this not public information? Who benefits from keeping this really important matching algorithm hidden?

Discussion

Q/A

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Thanks; {

‘Do you have any questions?’

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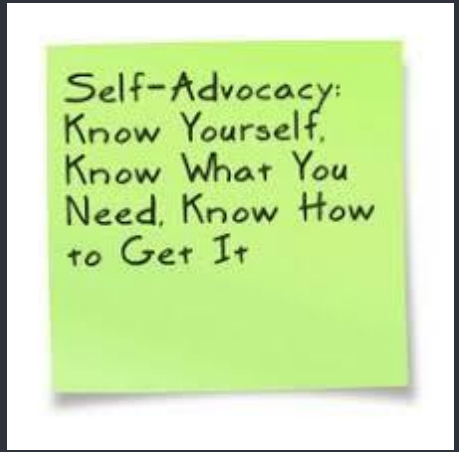

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