groupre Functional Spec

Concept

The groupre project represents a software product that will automatically place students into both individual seats and small class groups based on the classroom environment, student-oriented preferences, and instructor specifications.

The primary purpose of groupre – from a functional perspective – is to sort students into chairs. Since chairs are inherently part of a team, sorting students into chairs implicitly sorts them into teams as well.

Data

All data will be of the following types:

- Student Name – The student's first and last name.
- Student PID – The student's PID.
- Chair ID – The label that represents a unique chair, typically in row/column format.
- Team ID – The team that a given chair belongs to.
- Student-To-Chair Preference – Some generic preference that matches an available chair attribute.
- Student-To-Chair Range Preference – Some generic preference that matches an available range of chair attributes that belong to the same overarching chair attribute (ie: the front 6 rows of seats).
- Student-To-Student Preference – Some generic preference that matches students to other students based on team structures as the sorting algorithms are processing data.
- Chair Attribute – Some generic attribute that is available for students to choose when determining their desired seating preferences (ie: front, back, aisle, left-handed).

Rules and Priorities

Sorting will be accomplished in accordance with the following rules, which have accompanying priorities. Priorities are values assigned to student preferences that assist in giving Students who want rarer seat options a slight priority over other students not looking for such seats. Chairs are assigned based on which one provides the maximum “satisfaction” rating for a given Student.

- Students who are given the VIP attribute by an instructor will be given the highest priority among all other students.
- Students who have any preferences at all are next in line, with those that have preferences of higher value being sorted such that they will be serviced first.
- Students who have no preferences at all will be randomly assigned to Chairs as the last section of data that is processed by the groupre module.

User Stories

As a professor of a large 1XX-level course with over 400+ students, seating assignments can be an extremely tedious and time consuming process. Add to this the fact that my curriculum is designed to benefit from maximum class participation and team-based projects, a tool for this process would be extremely beneficial. Enter groupre, an application designed to take all the relevant student data that I provide alongside a room template that I design, which will then assign Students to Teams based on the criteria I specified alongside an element of randomness. I will then receive seating assignments for all 400+ students within mere seconds as opposed to several hours.

Personas

Left-Handed Student

This is simply a left-handed student who requires a left-handed desk for any writing, reading, or setting up of a laptop for class-related activities.

Front-Of-Class Student

This student wishes to sit at or neat the front of the class. Reasons include, but are not limited to, difficulty seeing/hearing the instructor or material presented, a desire to be more focused and/or engaged with the course, or physical considerations such as legroom.

Back-Of-Class Student

This student wishes to be seated at or neat the rear of the class. Reasons include, but are not limited to, a wish to be non-intrusive, a requirement to be able to depart the classroom swiftly after class ends, and social concerns.

Special Requirements Student

This student wishes or requires special considerations when being placed in the classroom. These considerations include any requirement covered by the Americans with Disabilities Act (ADA).

The Lazy Instructor

This is the professor or TA/LA who wants to group his or her students one time at the outset of the semester, get all groups and seating as “perfect” as possible, and wants to leave them in those groups for the remainder of the term.

The Communication-Intensive Instructor

This instructor wants to change groups or seating according to class-specific requirements or specifications. The reasons for these regular changes are myriad, but include changing group composition based on exam results, separating problem students or groups, and encouraging diversity and communication between groups and students.

Use Cases

Student

Optimally, students will check Sakai for seating assignments. Students may also be able to check Sakai for group assignments as well, depending on instructor specified parameters.

Instructor (One-Time Grouping)

In this case, the instructor obtains and develops the seating and grouping roster from both the initial survey and Sakai information, in the form of a csv. That csv will then be taken as input by our product, which will output a different csv with all of the student-seat pairings sorted by Team ID. The original can, of course, be re-run if necessary, and the final product will be modifiable before finalizing the seating plan and publishing it to Sakai.

Instructor (Multiple Group Creation)

This case is initially the same as the One-Time Grouping, but since the program's parameters will be easily modifiable, the instructor will be able – mid-semester – to account for and adjust the seating assignments based on changes in the class roster, student participation and/or grades, and varying other group dynamics.