An online system for examination timeslot allocation

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Abstract

This report briefly states the importance of an examination timeslot allocation system for higher educational institutes, outlines previous efforts in implementing such a system and its shortcomings, describes the steps taken to improve the project, and covers the shortcomings within the project and future mitigation steps.

The final project has partially completed the outcomes and objectives stated during the project proposal phase, improving the project's development sustainability. However, due to the choice of framework has a high amount of complexity, caution is suggested for prospective contributors.

Keywords — Database, Spring framework, migration

I. Introduction

COVID has caused major disruptions in our daily lives, including the education processes. As face-to-face interactions have been discouraged during the period, examinations were also to be conducted online, which brought forth the problem, invigilating a couple dozen of students through webcam feeds concurrently being quite difficult. While a severe resource demand, 1:1 monitoring of students is a much-needed process to eliminate cheating and ensure fairness. This then led to the need of allocating timeslots for individual students' examinations.

Although COVID-19 is now a part of history, there are no guarantees that no future circumstance necessitates online examinations. Hence, a suitable platform is needed to coordinate the timeslot allocation process.

An existing teacher-student meeting reservation system has previously been extended and improved by senior students into a teacher-student examination timeslot preference/allocation system, and student Yu's project has been selected to be iterated upon by this year's students.

For this year, while not having specified a problem, us students have been tasked to "perfect" the system. Having seen the project demonstration, it can be seen that the finished work is more-or-less in a prototype state, which may require some further development and polishing to reach a production ready state. But upon further inspection, the maintenance of the project may prove difficult.

II. Design/Methodology/Implementation

The project is rewritten in another framework with the following objectives in mind:

A. Technical design
   I. DB-level design
   II. Functional business logic
B. UI/UX design
   I. Language
   II. Localization / Internationalization
   III. Interaction flow
C. General code health
   I. Code tests
   II. Documentation
   III. Project structure
   IV. Convention adherence

III. Evalauation and Results

The above objectives are mostly fulfilled. While the framework migration was not fully realized and some regressions exist, it should be an overall improvement to the development experience and future possibilities.

IV. Conclusion

This project's efforts are mostly for paying back the accumulated technical debt and temporarily alleviating the yearly knowledge-transferal (or the lack thereof) by establishing better conventions and patterns, which enables the project's extendibility by allowing easier future changes.