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Matching on Bipartite Graphs with Applications to School Course Registration Systems

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Abstract : Nowadays, most universities use the course enrollment system considering students’ registration orders. However, the students’ preference level to certain courses is also one important factor to consider. In this research, the possibility of applying a preference-first system has been discussed and analyzed compared to the order-first system. A bipartite graph is applied to resemble the relationship between students and courses they tend to register. With the graph set up, we apply Ford-Fulkerson (F.F.) Algorithm to maximize parings between two sets of nodes, in our case, students and courses. Two models are proposed in this paper: the one considered students’ order first, and the one considered students’ preference first. By comparing and contrasting the two models, we highlight the usability of models which potentially leads to better designs for school course registration systems.

Keywords : bipartite graph, Ford-Fulkerson (F.F.) algorithm, graph theory, maximum matching
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