



PROJECT PRESENTATION

GENERAL ALLOCATION PORTAL

codeMAFIA



INTRODUCTION

- The aim of this project was to explore new things besides the course curriculum and learn to apply new tools to make a useful programs. Django is a powerful python web-framework which can be used to develop complex database models and we have tried to explore most of the aspects and features of it.
- All institutes, from educational to corporate companies to government sector, are faced with problems where they have to allot some choices to the applicants based upon their preferences and other criteria through a portal. We need a shorthand method to quickly create such a portal. Through the General Allocation Portal, any institute can create a portal and allocate choices without making a separate one for itself.



MOTIVATION

- Since large data handling is a big deal nowadays, so this database project has helped us understand and critically evaluate the features of competing big data technologies.
- Since every institute needs an application portal to fill in vacancies while relying on the preferences of the candidates, our portal can easily be used by them. Our portal will definitely spare a great deal of time and resources for all of them. Our portal may be well used in our institute as well as our department.
- Already many portals exist for these problems but no abstract portal for all institutes. This is what made this problem interesting. We have created an abstract portal applicable in various such matchmaking problems.



Problem Statement

Develop a generic portal for any institution to register and create an application portal and to allot their candidates the choices based on their preferences and the candidates' data given by the institution.



Software and hardware requirements

- 1) Python3
- 2) Django
- 3) HTML5
- 4) CSS3
- 5) SQLite3
- 6) A server to base the web based portal though we have used a virtual server on our laptop itself
- 7) git



Implementation



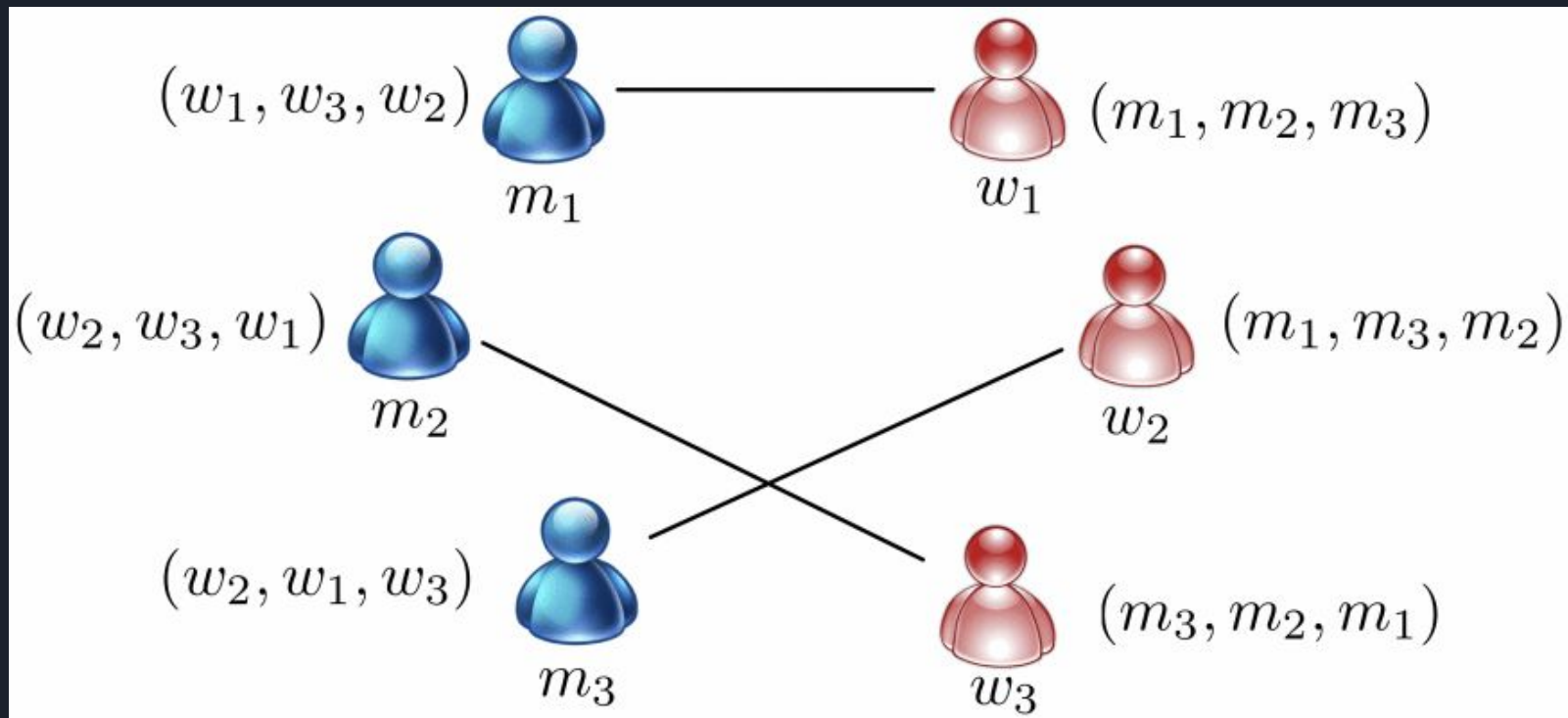
(a) Algorithm Used

We have used a modification of the Gale Shapley algorithm to allocate for the allocation of the seats.



The Stable Marriage Problem

- There are n men and n women, which are unmarried.
- Each has a preference list on the persons of the opposite sex.
- We have to find a stable matching .
- Stable matching: A matching of men and women, such that there is no pair of a man and a woman who both prefer each other above their partner in the matching.





The Stable Marriage Problem

- Solution through Gale Shapley Algorithm
- Seat allocation is a modified version of Stable Marriage Problem
- This can be modified to solve the seat allocation problem. Here the men represent the candidates and women represent the choices available. Each option can accept at most a certain number of candidates and the preference order for each choice is based on the rank of candidates.



(b) Web Application GUI

For all the web based interface, we have used HTML5 and CSS3. Our python code and the user interface have been interfaced using django. The User interface include:

Institute Registration

Home

Username:

Required. 150 characters or fewer. Letters, digits and @/./+/-/_ only.

Password:

- Your password can't be too similar to your other personal information.
- Your password must contain at least 8 characters.
- Your password can't be a commonly used password.
- Your password can't be entirely numeric.

Password confirmation:

Enter the same password as before, for verification.

Sign up

Registration
page for any
institute to
create a portal...

Home

Ongoing Round: 1

Applicants

Choices

Allocate

Institute login
home page...

Choice List

- CSE
- Civil
- EE
- Mechanical

▪ For uploading choices

no file selected

After the institute uploads .csv file for the choices...

Applicants

■ For uploading Applicant










no file selected

Name	Rank	Allocated choice
Oliver	1	
Jack	2	
Harry	3	
Jacob	4	
Charlie	5	
Thomas	6	
George	7	
Oscar	8	
James	9	
William	10	
Noah	11	
Henry	12	
Archie	13	
Joseph	14	

After the institute uploads .csv file for the applicants...

Name: George**Institute:** MIT**Rank:** 7**Ongoing Round:** 1**Allocated choice:**

Fill your choices and priorities:

- Choice: 
Priority: 
- Choice: 
Priority: 
- Choice: 
Priority: 
- Choice: 
Priority: 
- Choice: 
Priority: 

Drop

Float

Freeze

Applicant
dashboard for
specifying choices
and their priorities

Applicants

Name	Rank	Allocated choice
Oliver	1	CSE
Jack	2	Civil
Harry	3	EE
Jacob	4	Mechanical
Charlie	5	CSE
Thomas	6	Civil
George	7	EE
Oscar	8	Mechanical
James	9	CSE
William	10	Civil
Noah	11	CSE
Henry	12	EE
Archie	13	CSE
Joseph	14	CSE

■ For uploading Applicant

no file selected

After pressing allocate button on the institute dashboard, the applicant list will look like this..

[Home](#) › [Choices](#) › CSE

Choice name: CSE

Capacity: 50

Seats Filled: 6

Update

Delete

List of Applicants who have been allocated CSE choice:

Name	Rank
Oliver	1
Charlie	5
James	9
Noah	11
Archie	13
Joseph	14

Choice detail
view of the
institute login
interface after
allocation...



Deliverables Promised

- Login Page - Verification through data set
- Current Status
- Update Profile Info
- Fill Choices
- E-mail notification after each round
- Seat Confirmation after each round
- Additional implementation('if time permits') - Forum to clear doubts and queries



Features Delivered

- Abstract portal for any university to register and handle data for all of them separately.
- Registration Page to register any university and create as many applicants as it allows.
- Login Page, separate for Institutes and Applicants
- Input Page for Applicants to fill in their choices and display their currently allocated choice
- Ask for seat confirmation after each round which includes Freeze, Float and Drop
- Update Profile Info - only the admin and the institute is allowed to do so.



Deviations and Reasons

1. We have created a general portal for any institute rather than a portal to cater only one institute as promised earlier.
2. We could not implement the forum (additional task) for people to ask their queries due to time constraints. Also earlier it was meant for an institute to answer the queries but for a generic portal, it seemed futile.
3. We could not implement the email notification for all applicants but it required a domain from the SMTP server which are either paid or are not allowed anymore because of security constraints.



Bugs and Limitations

1. Applicants and choices can be added by the institute only in the .csv file. We have not implemented our version for .xls files.
2. Once all the choices are allotted to the applicants of the institute there is no option to undo the allotted choices.
3. Institute cannot add applicants post-round, so all the applicants need to be provided before the first allocation action is performed.
4. Institute cannot allot an applicant a choice manually.