

Course Project: Seat Allocation

Presented by
Cr!pt!cS

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Group Number: 10

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- Seat Allocation problem solved implementing two different Algorithms using Object Oriented Programming
 - **Modified Gale-Shapley Stable Matching Algorithm**
 - **Merit List Order Allocation**

Programming language used: Java

- GUI (WEB - UI) that allows a high school senior graduate engineering college aspirants to fill their college preferences
 - **Python GUI programming**

Programming language used: Python 3.4
Web application : Django framework

- The project is a full packed version for the various seat allotments that take place after the entrance exams for various colleges
- It can allocate seats using two different algorithms
 - **Fool-proof Modified Gale-Shapley Matching algorithm**
 - **Merit Order list algorithm which has quite a few drawbacks**
- Web User-Interface helps the eligible aspirants to do a various set of useful tasks

- We implemented the algorithm using the principles of OOP in Java
- This algorithm is fair and optimal for the seat allocation to be done after the listing of eligible candidates
- Our implementation handles the following cases efficiently
 - Foreign nationals
 - Dereservation
 - DS
 - A reserved candidate not featuring in GE-list but is in the reserved list

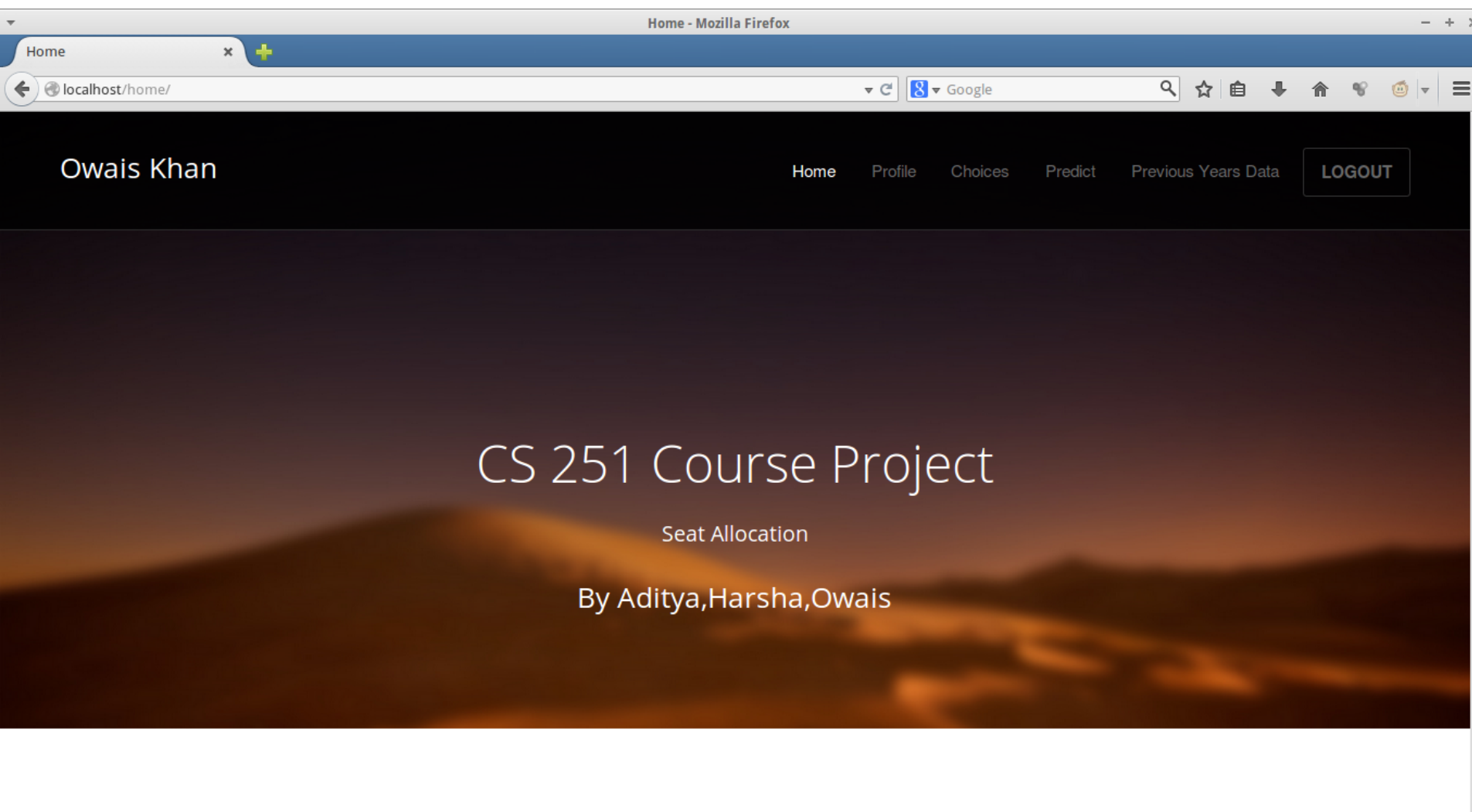
**G111100093,B1
G111100105,B1
G111100327,B1
G111100459,B1
G111100469,B2
G111100690,B2
G111100778,B1
G111100829,B2
G111101131,B1**

Course seat	Student
B1.GE	G111100093
B1.OBC	G1111000459
B1.SC	G1111000327
B1.ST	-
B1.GE-PD	G1111000105
B1.OBC-PD	G11110001131
B1.SC-PD	-
B1.ST-PD	-
B2.GE	G1111000469
B2.OBC	G1111000690
B2.SC	-
B2.ST	-
B2.GE-PD	G1111000829
B2.OBC-PD	-
B2.SC-PD	-
B2.ST-PD	-
B.DS.1	G1111000778

- The algorithm is implemented using the principles of OOP in Java
- This algorithm is fair and optimal for the seat allocation to be done after the listing of eligible candidates only to certain extent as it has a few drawbacks in
 - Dereservation
 - The case of reserved candidate not featuring in GE-list but is in the reserved list

**G111100093,B1
G111100105,B2
G111100327,B1
G111100459,B1
G111100469,B2
G111100690,B1
G111100778,B1
G111100829,B2
G111101131,B1**

This output is after dereservation so it does not match with the given output



CS251 Lab Project - Mozilla Firefox

CS251 Lab Project

localhost/login/

Google

Username:

Password:

[Forgot your password?](#)

→

Browser tabs: Password Reset Request, Password Reset Reques...
Address bar: https://mail.google.com/mail/u/0/#inbox/149514d617ee7b92
Search: Google

Google

Gmail

COMPOSE

Inbox (100)

Starred

Important

Chats

Sent Mail

Drafts (8)

All Mail

You are invisible. [Go visible](#)

Search people...

- Sanampudi venka...
- Addanki ravi chan...
- Aditya Kusupati
- Bhargav Sri Venk...
- Chintan Dhruv
- Kuladeep Marupalli
- Nitesh Dudhev

0.22 GB (1%) of 15 GB used [Manage](#)

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Last account activity: 1 hour ago [Details](#)

Hilarious Jokes on Funtoosh.com - [Old Age Home...](#) Web Clip

2 of 548

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Password Reset Request

Cr!pt!cS
to me

4:40 PM (4 hours ago)

Hi,
You've received this email cause you've requested a password reset for your account,

Please go to the following page and choose a new password:
<http://localhost:8000/reset/Mg/3w7-1b0c8bba5a67e947f0e7/>

Your username, in case you've forgotten: owais

Cr!pt!cS.

Click here to [Reply](#) or [Forward](#)


Reset Password - Mozilla Firefox

Reset Password

localhost/reset/Mg/3w8-5ba173cca4e19d78a055/

New Password:

Re Type Pass:



- A database of authorised users their user id, password and their email-ids is stored
- Login uses csrf token to prevent cross site forgery.
- Passwords are stored in hashed format and makes it more difficult to get a users password
- ❖ In case you forgot your password our web application uses the smtp server provided by gpo.iitb.ac.in to send you a forgotten password request
- ❖ The request uses one time links and hence after you use the link it becomes void and can't be used by someone else to change your password

PROFILE - Mozilla Firefox

PROFILE x +

localhost/profile/ Google

ID Number	130050050	Some of the fields are not editable for obvious reasons. Those which are can be updated by clicking on the "Save Details" button
Rank	1200	
Category Rank	222	
Category	SC	
First Name	<input type="text" value="Owais"/>	
Last Name	<input type="text" value="Khan"/>	
Contact No.	<input type="text" value="owalskhan11@gmail.com"/>	

- Once you login we provide you the facility of changing your password or other related info such as your email and name
- We prevent users from changing sensitive information such as the user's rank, category

CHOICES - Mozilla Firefox

CHOICES

localhost/choices/

Google

<input type="checkbox"/>	B5235	Mechanical Engineering with M.Tech. in Computer Integrated Manufacturing	Indian Institute of Technology Bombay
<input type="checkbox"/>	G5216	Computer Science and Engineering	Indian Institute of Technology Kharagpur
<input type="checkbox"/>	D5305	Mathematics and Computing	Indian Institute of Technology Delhi
<input type="checkbox"/>	K4125	Mechanical Engineering	Indian Institute of Technology Kanpur
<input type="checkbox"/>	M4125	Mechanical Engineering	Indian Institute of Technology Madras
<input type="checkbox"/>	R4110	Computer Science and Engineering	Indian Institute of Technology Roorkee
<input type="checkbox"/>	B4117	Engineering Physics	Indian Institute of Technology Bombay
<input type="checkbox"/>	G4125	Mechanical Engineering	Indian Institute of Technology Kharagpur
<input type="checkbox"/>	B4107	Chemical Engineering	Indian Institute of Technology Bombay
		Mechanical Engineering (Intelligent	

Add Options

Filter Options

bottom table shows the list of choices you selected and their order. Use the filter to filter out choices you want. Select them and use the add button to add them similarly for the remove button. Finally when your done click save

- The courses displayed are in the order of closing rank
- The user can use the search box to find the course the he/she is looking for
- The search box can also be used for filtering the courses based on the name or institute
- The check box at the top can be used for selecting all the courses that are displayed and thus makes bulk selection easier
- The order of Preference is the order in which they select and add the options
- In case of bulk selection it would be in the increasing order of closing rank

CHOICES - Mozilla Firefox

CHOICES

localhost/choices/

Google

<input type="checkbox"/>	Code	Name	Institute
<input type="checkbox"/>	B4111	Electrical Engineering	Indian Institute of Technology Bombay
<input type="checkbox"/>	B5221	Electrical Engineering with M.Tech. in Microelectronics	Indian Institute of Technology Bombay
<input type="checkbox"/>	D4111	Electrical Engineering	Indian Institute of Technology Delhi
<input type="checkbox"/>	B5219	Electrical Engineering with M.Tech. in Communications and Signal Processing	Indian Institute of Technology Bombay
<input type="checkbox"/>	D5220	Electrical Engineering with M.Tech. in Information and Communication Technology	Indian Institute of Technology Delhi
<input type="checkbox"/>	M4111	Electrical Engineering	Indian Institute of Technology Madras
<input type="checkbox"/>	K4111	Electrical Engineering	Indian Institute of Technology Kanpur

Remove Options

Save Options

- This box shows the list of courses in the preference order selected by the candidate
- The check box at the top can be used for removing all the selected courses
- The Save option helps us to hold the options for further modifications by the user

PREDICT - Mozilla Firefox

PREDICT

localhost/ranks/predict/

Google

Owais Khan

Home Profile Choices Predict Previous Years Data LOGOUT

Predictions

S.No	Code	Name	Institute	Prediction
1	B4111	Electrical Engineering	Indian Institute of Technology Bombay	37.42%
2	B5221	Electrical Engineering with M.Tech. in Microelectronics	Indian Institute of Technology Bombay	40.55%
3	D4111	Electrical Engineering	Indian Institute of Technology Delhi	37.98%
4	B5219	Electrical Engineering with M.Tech. in Communications and Signal Processing	Indian Institute of Technology Bombay	44.07%
5	D5220	Electrical Engineering with M.Tech. in Information and Communication	Indian Institute of Technology Delhi	41.75%

Information

Corresponding to the options that you have provided and using state of the art computing facilities we have calculated the probability of you getting a course..

- For the user's rank this predicts the probability with which a candidate will get a particular course
- State of the art computing facilities and machine learning algorithms are used for this purpose
- An exponential function was assumed for the distribution and the predictions were made based on opening, closing ranks of each course along with the user's rank

LAST YEAR DATA - Mozilla Firefox

LAST YEAR DATA

localhost/ranks/lstyear/

Google

Mechanical

The courses highlighted in red are those which require a rank better than what you have secured and those in green are ones which you would have qualified for. You can use the filter box to search for courses that you are interested in.

Code	Name	Institute	Closing Rank
B4125	Mechanical Engineering	Indian Institute of Technology Bombay	127.0
D4125	Mechanical Engineering	Indian Institute of Technology Delhi	140.0
B5234	Mechanical Engineering with M.Tech. in Computer Aided Design and Automation	Indian Institute of Technology Bombay	193.0
M4125	Mechanical Engineering	Indian Institute of Technology Madras	200.0
B5235	Mechanical Engineering with M.Tech. in Computer Integrated Manufacturing	Indian Institute of Technology Bombay	221.0
NONE	YOUR RANK	NONE	222
K4125	Mechanical Engineering	Indian Institute of Technology Kanpur	236.0
G4125	Mechanical Engineering	Indian Institute of Technology Kharagpur	256.0

- This table shows all the courses that a candidate would get selected for based on last years data
- The courses in red represent courses that require a better closing rank than that secured by the candidate and the courses in the green represent the that which the candidate would have been selected for
- The search box at the top can be used for filtering courses based on various parameters like course name , institute etc.

- Documented the code using doxygen (javadoc)
- HTML and CSS in the WEB UI where we needed to modify certain things in the template used

- WEB UI Template
 - <http://www.gettemplate.com/demo/progressus/>
- Django framework
 - <https://docs.djangoproject.com/en/1.7/intro/tutorial01/>
- Apache
 - <http://httpd.apache.org/docs/2.0/misc/tutorials.html>
- Java
 - <http://www.tutorialspoint.com/>
- Stack Overflow

We hereby affirm that we will uphold the highest principles of honesty and integrity in all my endeavours at IIT Bombay and foster an environment of mutual respect in the institute. Further We will cite all the references taken from various sources. We will abide by the code of honour and never try to copy from other groups

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