CS 387: Database and Information Systems Lab

Requirements And Analysis: **Placement Portal**

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Contents

1 Team members

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2 Placement Portal

We plan to build a database information system (web application) that comprehensively deals with the placement-related activities and logistics. The **Placement Portal** is a one-stop platform for students, company recruiters and placement coordinators.

The system maintains the data of all the students along with their program, department, CPI, etc. A recruiter can login on the portal, create job roles and define the eligibility criterion for that role. Henceforth, the portal also stores the data of all the firms interested in placements via the portal.

The recruiter opens the job roles (a.k.a. *JAFs*) for students to apply. Students will see the JAFs on their interface that are currently open. Students can apply to the JAF with one of their uploaded resumes if they meet the eligibility criterion for the JAF. Once the JAF closes, the recruiter shortlists the students based on various parameters including but not limited to CPI, resume, etc. Recruiters can conduct variable stages of filtering the students (test, group discussion, etc) and therefore selectively moves students to the next stages.

The portal allows the recruiter to add/remove the students for interviews. Once the interviews are conducted, the recruiter releases the final offers. In case of multiple offers, students are allocated one job based on their preference. Thereafter, they are not allowed to apply for any further JAFs.

Furthermore, each recruiter will be appointed a coordinator to help him/her throughout the process. Similarly, a coordinator will be assigned various firms. He/she can see the firms allotted to him/her and associated features to manage the JAFs, shortlists and selections.

There will be a Superuser (a.k.a Admin) who has access to information of all students, firms and JAFs, and can edit them. This has to be backed up by secure authentication mechanism.

The portal will show various analytics such as department-wise/program-wise student strength, profile-wise average CTC, top K popular JAFs, department-wise unplaced students, etc **selectively** to various users as mentioned in the next section.

We plan to use a relational database for the application. Relational databases are an obvious choice since there are a set of well defined entities and a set of well defined relations between the entities. Also we want the data to follow a set of constraints while being inserted/updated/retrieved from the database. Hence we use a relational database (postgres).

3   Entities and their attributes

1. Student

    (a) Roll Number
    (b) Name
    (c) Gender (Male/Female/Other/Prefer not to say)
    (d) Date of birth
    (e) Email address
    (f) Contact number
    (g) Year of admission
    (h) Current year
    (i) CPI
    (j) Incentive points

2. Recruiter

    (a) Unique identifier
    (b) Name
    (c) Contact number
    (d) Email address

3. Coordinator

    (a) Unique identifier
    (b) Name
    (c) Contact number
    (d) Email address

4. JAF (Job Application Form)

    (a) Unique identifier

(b) Job description

(c) Bond duration (if any)

(d) Location of posting

(e) Currency of compensation

(f) CTC compensation

(g) Gross compensation

(h) CPI cutoff

(i) Are bonus applications allowed (Yes/No)

(j) Opened on

(k) Closed on

(l) Slot

5. Company

(a) Unique identifier

(b) Name

(c) Country of Origin

6. Profile

(a) Unique identifier

(b) Name

(c) Description

7. Resume

(a) Unique identifier

(b) URL of the resume

(c) Number of pages (1/2)

8. Department

(a) Unique identifier

(b) Dept. Name

9. Program

(a) Unique identifier

(b) Name

(c) Number of years

(d) UG or PG (UG/PG)

4 ER Diagram
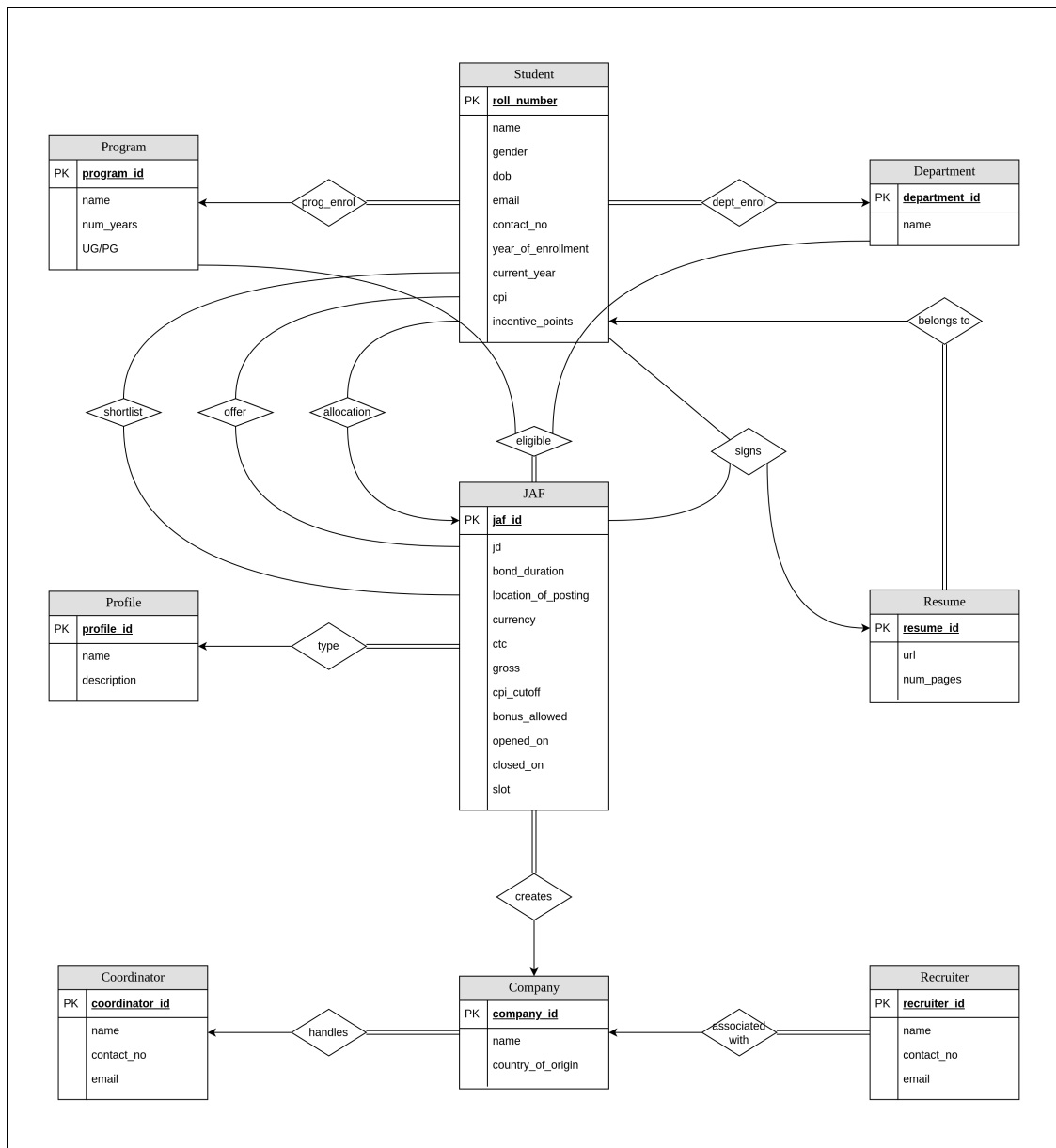
Figure 1: Entity-Relation Diagram

5 Users and Use Cases

5.1 Primary Actor: Student

5.1.1 Registering on the Portal

```
┌─────────────────┐        ┌─────────────┐
│      Input      │        │   Output    │
├─────────────────┤        └─────────────┘
│ roll_number     │        Student entry
│ email           │        gets created in
│ password        │         the database
└─────────────────┘
```
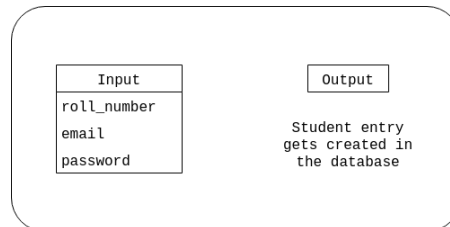
Description: This will be used for student to register on the portal.
Trigger Event: Human Trigger
Input Supplied and Constraints: Student enters his roll number - the roll number should not be already present in the database. The student supplies email address and password - the password should be AT LEAST 8 characters (alphanumeric).
Main Success Path: Student entry gets created in the database.
Post Conditions: The student account is created. He can now log on to the portal and trigger other use cases.

5.1.2 Logging on to the Portal

```
┌─────────────────┐        ┌─────────────┐
│      Input      │        │   Output    │
├─────────────────┤        └─────────────┘
│ roll_number     │        Student interface
│ password        │        opens on the
└─────────────────┘        portal.
```
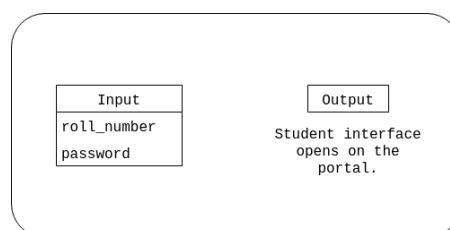
Description: This will be used for student login to the portal.
Trigger Event: Human Trigger
Input Supplied and Constraints: Student enters the roll number and password.
Main Success Path: Student interface opens on the portal.
Post Conditions: N.A.

5.1.3 Viewing Personal Details

Description: This will be used for student to view his personal details.
Trigger Event: Human Trigger
Input Supplied and Constraints: N.A.

Main Success Path: Details of student are returned, no changes to overall state.
Post Conditions: N.A.

5.1.4   Editing Personal Details

```
┌─────────────────────┐
│  ┌───────────┐            │
│  │   Input   │            │
│  ├───────────┤  ┌────────┐ │
│  │ gender    │  │ Output │ │
│  │ dob       │  └────────┘ │
│  │ email     │ Student entity is │
│  │ contact_no│  updated with   │
│  └───────────┘ student details. │
└─────────────────────┘
```
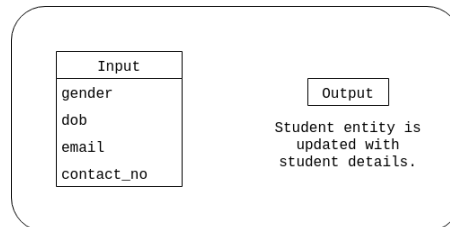
Description: This will be used for student to edit his personal details (gender, dob, contact_no).
Trigger Event: Human Trigger
Input Supplied and Constraints: The student supplies the updated details for the attributes they need to change.
Main Success Path: Student entity is updated with student details.
Post Conditions: World returns to the same state.

5.1.5   Viewing Resume

Description: This will be used for student to view their resumes. A student can have a maximum of three resumes (one slot for each resume).
Trigger Event: Human Trigger
Input Supplied and Constraints: Click on the resume that is to be viewed.
Main Success Path: Student resume is returned and can be viewed by the user.
Post Conditions: World returns to normal state.

5.1.6   Uploading Resume

```
┌─────────────────────┐
│                           │
│  ┌───────────┐            │
│  │   Input   │  ┌────────┐ │
│  ├───────────┤  │ Output │ │
│  │ Slot      │  └────────┘ │
│  │ Resume    │ Student resume is │
│  └───────────┘ uploaded on the │
│                   portal.     │
└─────────────────────┘
```
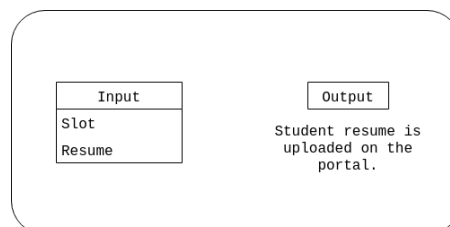
Description: Student can upload/edit any of his resumes.
Trigger Event: Human Trigger
Input Supplied and Constraints: The student supplies the resume to be uploaded and the slot to be overwritten.

Main Success Path: Student resume is uploaded on the portal.
Post Conditions: World returns to initial state with the student resume added.

5.1.7 View list of open JAFs with eligibility

Description: A student can view the list of JAFs that are currently open to apply for.
Trigger Event: Can be viewed on the homepage of student interface on the portal.
Input Supplied and Constraints: N.A.
Main Success Path: List of JAFs is returned.
Post Conditions: World is returned to normal state.

5.1.8 Apply to open and eligible JAF

Input	Output
JAF Resume slot	The student application is accepted.
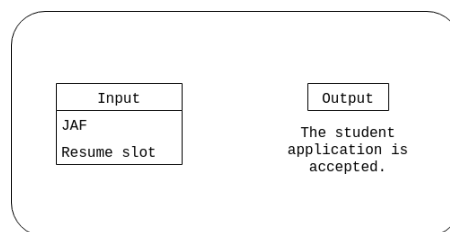
Description: A student can apply to any JAF that is open currently and he is eligible as per the CPI cutoff, Program and Department.
Trigger Event: Human Trigger
Input Supplied and Constraints: The student clicks on the JAF to apply for and the resume (out of the three) to use. The student must be eligible for the JAF and the resume must exist.
Main Success Path: The student application is accepted.

5.1.9 View list of applied JAFs with status

Description: Student can see the list of JAFs he has applied for and his status of JAF (Applied, Shortlisted for test, Shortlisted for interview).
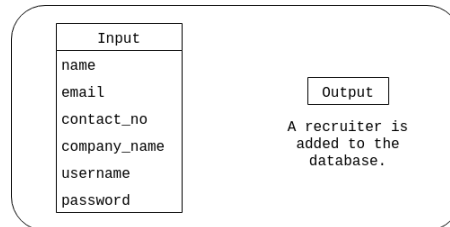**Trigger Event:** Human Trigger
Input Supplied and Constraints: N.A.
Main Success Path: The JAF details are returned.
Post Conditions: The world returns to normal state.

5.2   Primary Actor: Recruiter

5.2.1   Registering on the Portal

```
+-------------------+
| +-----------+     |
| |   Input   |     |
| +-----------+     |
| name              |
|              +--------+
| email        | Output |
|              +--------+
| contact_no   A recruiter is
|              added to the
| company_name  database.
|
| username          |
|                   |
| password          |
+-------------------+
```

Description: This will be used for recruiter register to portal.
Trigger Event: Human Trigger
Input Supplied and Constraints: Inputs - recruiter's name, contact number, email address, company name, username and password, the username should not be present in the database and the password should be atleast 8 characters.
Main Success Path: A recruiter is added to the database.
Post Conditions: The world returns to original state with the new recruiter added to the database.

5.2.2   Logging on to the Portal

```
+-------------------------------+
|                               |
| +-----------+   +--------+    |
| |   Input   |   | Output |    |
| +-----------+   +--------+    |
| username        Recruiter logs|
| password          into portal.|
|                               |
+-------------------------------+
```
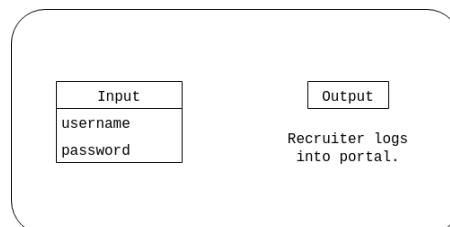
Description: This will be used for recruiter login to portal.
Trigger Event: Human Trigger
Input Supplied and Constraints: Recruiter's username and password are supplied. The username and password must correspond to a valid recruiter.
Main Success Path: Recruiter logs into portal.
Post Conditions: N.A.

5.2.3   View Personal Details

Description: Recruiter views his personal details.
Trigger Event: Human Trigger
Input Supplied and Constraints: Recruiter must be logged in.
Main Success Path: Recruiter is able to view details.
Post Conditions: N.A.

5.2.4 View Company Details

Description: Recruiter views the details of the company he is recruiting for.
Trigger Event: Human Trigger
Input Supplied and Constraints: Recruiter must be logged in, recruiter must be handling the company.
Main Success Path: Recruiter is able to view details.
Post Conditions: N.A.

5.2.5 Edit Personal Details

```
Input                    Output
name                 Recruiter entity
email                is updated with
contact_no              the details.
```
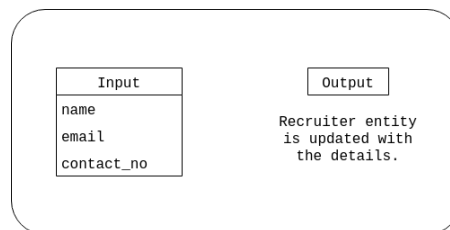
Description: Recruiter can edit personal details.
Trigger Event: Human triggered
Input Supplied and Constraints: Details of the recruiter to be updated.
Main Success Path: Recruiter entity is updated with the details.
Post Conditions: World returns to normal state.

5.2.6 Edit Company Details

```
Input                    Output
company_name        Company entity is
country_of_org      updated with the
                        details.
```

Description: Recruiter can edit details of company they handle.
Trigger Event: Human triggered
Input Supplied and Constraints: Details of the company to be updated.
Main Success Path: Company entity is updated with the details.
Post Conditions: World returns to normal state.

5.2.7 Create new JAF

```
┌─────────────────────────────────────────────┐
│  ┌──────────────┐                            │
│  │    Input     │                            │
│  ├──────────────┤    ┌──────────┐            │
│  │ jd           │    │  Output  │            │
│  │ posting      │    └──────────┘            │
│  │ bond_duration│    JAF is created          │
│  │ currency     │    and added to the        │
│  │ ctc          │    database.               │
│  │ gross        │                            │
│  │ profile      │                            │
│  │ eligibility  │                            │
│  └──────────────┘                            │
└─────────────────────────────────────────────┘
```

Description: Recruiter is able to create a new JAF for the company they handle.
Trigger Event: Human triggered
Input Supplied and Constraints: All details regarding JAF such as profile, CTC, gross, tuple of (department, program) for eligibility. Constraints : Recruiter must be handling the company for creating the JAF.
Main Success Path: JAF is created and added to the database.
Post Conditions: World returns to normal state.

5.2.8 Edit a JAF

```
┌─────────────────────────────────────────────┐
│  ┌──────────────┐                            │
│  │    Input     │                            │
│  ├──────────────┤    ┌──────────┐            │
│  │ jd           │    │  Output  │            │
│  │ posting      │    └──────────┘            │
│  │ bond_duration│    JAF is updated in       │
│  │ currency     │    the database.           │
│  │ ctc          │                            │
│  │ gross        │                            │
│  │ profile      │                            │
│  │ eligibility  │                            │
│  └──────────────┘                            │
└─────────────────────────────────────────────┘
```

Description: Recruiter is able to edit a JAF for the company they handle.
Trigger Event: Human triggered
Input Supplied and Constraints: JAF ID, details to be updated regarding JAF such as profile, CTC, gross, tuple of (department, program) for eligibility. Constraints : Recruiter must be handling the company, JAF ID must exist.
Main Success Path: JAF is updated in the database.
Post Conditions: World returns to normal state.

5.2.9 View list of created JAFs

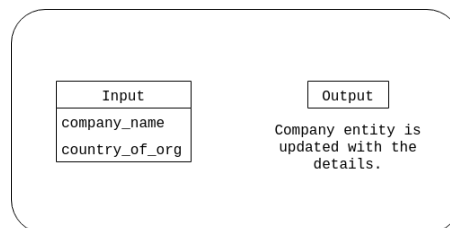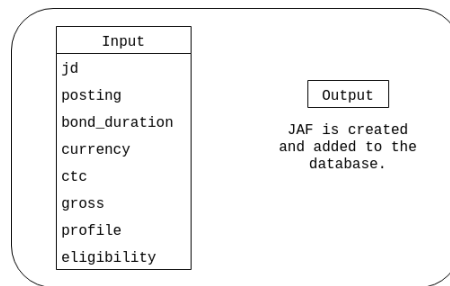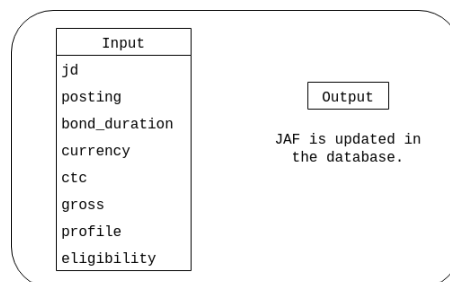**Description:** Recruiter can see the list of JAFs for the company.
Trigger Event: Human triggered
Input Supplied and Constraints: Recruiter can only view JAFs for the company they are handling.

Main Success Path: Recruiter is able to view the JAFs.
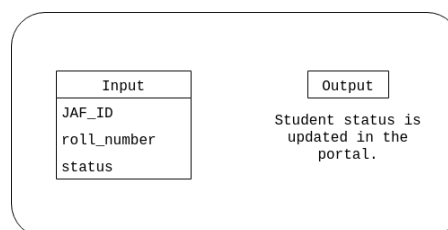**Post Conditions:** N.A.

5.2.10   View list of applicants to a JAF

Description: Recruiter can view the list of students who applied to a particular JAF.
Trigger Event: Human triggered
Input Supplied and Constraints: JAF ID. The JAF ID must exist and the company must be handled by the recruiter.
Main Success Path: Recruiter is able to view the list of students.
Post Conditions: N.A.

5.2.11   View Student Resume

Description: View resume of student applied for particular JAF.
Trigger Event: Human triggered
Input Supplied and Constraints: JAF ID, student's roll number. Constraints: the JAF ID must exist and the student must have applied to the JAF.
Main Success Path: Recruiter is able to view resume.
Post Conditions: N.A.

5.2.12   Change the status of a Student

```
┌──────────────────────────────────────────────────┐
│                                                    │
│   ┌──────────────────┐      ┌──────────┐           │
│   │      Input        │     │  Output   │          │
│   ├──────────────────┤      └──────────┘           │
│   │ JAF_ID            │    Student status is        │
│   │ roll_number       │    updated in the           │
│   │ status            │    portal.                   │
│   └──────────────────┘                              │
│                                                    │
└──────────────────────────────────────────────────┘
```

Description: Recruiter can change the status of student in selection process.
Trigger Event: Human triggered
Primary Conditions: JAF ID, student's roll number, updated status (Applied, Short-listed for test, Shortlisted for interview, etc). Constraints: the JAF ID must exist and student must have applied to the JAF.
Main Success Path: Student status is updated in the portal.
Post Conditions: N.A.

5.2.13   Delete a JAF

Description: Recruiter is able to delete a JAF for the company they handle.
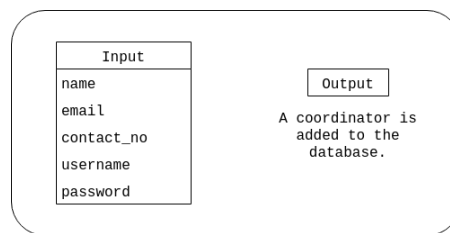**Trigger Event:** Human triggered

Input Supplied and Constraints: Recruiter must be handling the company for deleting the JAF.
Main Success Path: JAF is deleted from the database.
Post Conditions: World returns to normal state.

5.3 Primary Actor: Coordinator

5.3.1 Registering on the Portal

Input
name
email
contact_no
username
password

Output
A coordinator is added to the database.

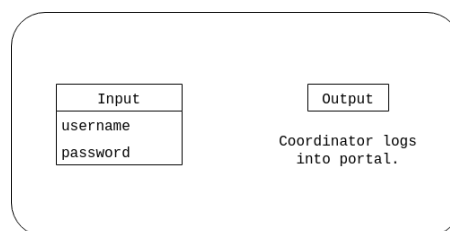**Description:** This will be used for coordinator to register to portal.
Trigger Event: Human Trigger
Input Supplied and Constraints: Inputs - coordinator's name, contact number, email address, username and password, the username should not be present in the database and the password should be atleast 8 characters.
Main Success Path: A coordinator is added to the database.
Post Conditions: The world returns to original state with the new coordinator added to the database.

5.3.2 Logging on to the Portal

Input
username
password

Output
Coordinator logs into portal.

Description: This will be used for coordinator login to portal.
Trigger Event: Human Trigger
Input Supplied and Constraints: Coordinator's username and password are supplied. The username and password must correspond to a valid coordinator.
Main Success Path: Coordinator logs into portal.
Post Conditions: N.A.

5.3.3 View list Of Alloted Companies

Description: This will be used to view the list of allotted companies.
Trigger Event: Automatically once the coordinator logs in.
Input Supplied and Constraints: The companies visible will be the companies he has been allotted.
Main Success Path: List of companies should be visible.
Post Conditions: Each company should be clickable.

5.3.4 View list Of JAFs for a Company

Description: This will be used to view the list of JAFs for a particular alloted company.
Trigger Event: Human Trigger
Input Supplied and Constraints: Click on a Company entity in the list of alloted companies.
Main Success Path: List of JAFs should be visible.
Post Conditions: All JAFs will have Open, Close and Students button.

5.3.5 View list of applicants for a JAF

Description: This will be used to see the list of students that applied with status (Applied, Shortlisted for test, Shortlisted for interview, etc).
Trigger Event: Human Trigger
Input Supplied and Constraints: Click on the Students button on a particular JAF. JAF should be present in the list of JAFs for a company he is allotted.
Main Success Path: List of students with their status should be visible.
Post Conditions: N.A.

5.3.6 Edit a JAF

Same as Recruiter's use case.

5.3.7 View Student Resume

Same as Recruiter's use case.

5.3.8 Change the status of a Student

Same as Recruiter's use case.

5.3.9   Open JAF

Description: This will be used to open up a listed JAF.
Trigger Event: Human Trigger
Input Supplied and Constraints: Click on Open button on a particular JAF and fill the date/time in the prompt that opens up and submit.
Preconditions: JAF is present in list of JAFs page and JAF should not be already open.
Main Success Path: JAF will be opened.
Post Conditions: Back on the list of JAFs page.

5.3.10   Close JAF

Description: This will be used to close a particular JAF.
Trigger Event: Human Trigger
Input Supplied and Constraints: Click on Close button on a particular JAF and fill the date/time to close the JAF.
Preconditions: JAF is present in list of JAFs page and JAF should be open.
Main Success Path: JAF will be closed.
Post Conditions: Back on the list of JAFs page.

5.4   Primary Actor: Superuser

5.4.1   Logging in to Portal

Description: This will be used to by superuser to log in to portal.
Trigger Event: Human Trigger
Input Supplied and Constraints: Enter username and password.
Main Success Path: On a successful login, superuser interface opens up else exception raised.
Post Conditions: Superuser interface opens up.

5.4.2   Add Coordinator

Description: This will be used to add a coordinator by superuser.
Trigger Event: Human Trigger
Input Supplied and Constraints: Click on Add Coordinator button and fill the coordinator attributes along with username and password in the prompt that follows.
Main Success Path: A new coordinator entity is created.
Post Conditions: Back on the Superuser interface.

5.4.3 Create a Company entity and allocate to a Coordinator

Description: This will be used to create a new company entity and allocating to a existing coordinator.
Trigger Event: Human Trigger
Input Supplied and Constraints: Click on Add Company button and fill the Company name, country of origin, Coordinator ID allotted in the prompt that follows.
Main Success Path: A new company entity is created and coordinator is allotted.
Post Conditions: Back on Superuser interface.

5.4.4 View X

Description: This will be used to view various details by superuser. Here is a tentative list *along with* the view-access like a normal user:

- View list of all Companies

- View list of all Coordinators

- View list of all Recruiters

- View list of all JAFs with a flag to switch to Currently open, Closing today, etc.

- Total number of domestic offers

- Total number of international offers

Trigger Event: Human Trigger
Input Supplied and Constraints: No inputs to be supplied after a successful login.

6 Analytics

Users will be able to see statistical visuals selectively. Note that, the superuser can see all the analytics by default.

Analytic	Visible to
Top K popular JAFs	Student, Coordinator
Department-wise student strength	Coordinator, Recruiter
Program-wise student strength	Coordinator, Recruiter
Department-wise unplaced students	Coordinator
Profile-wise average salary	Coordinator
Profile-wise salary range	Coordinator

7 Additional: UI wireframes

Note: Do not consider the given wireframes as final. They are only for demonstrative/visual purposes.

Alex Demie

Gender: M
DOB: 17/10/01
Email: alex.demie@gmail.com
Contact No.: 8786853969
Year of Enrollment: 2019
CPI: 9.87
Incentive Points: 16

3rd Year, Computer Science & Engineering

Figure 2: Student Personal Details (View/Edit)

Open JAFs

Job ID	Profile Name	Company Name	CPI Cutoff	Bonus Allowed	Eligibility	Closing On
1	Software Engineer	Rubrik	8.0	No	eligible	Mar 24, 2022 | 12:00 PM
2	Research & Develoment	Adobe	7.5	Yes	not eligible	Mar 26, 2022 | 2:00 PM
3	Product Manager	Flipkart	None	No	eligible	Mar 22, 2022 | 12:00 PM
4	Technical Lead	Jaguar Rover	7	No	eligible	Mar 27, 2022 | 1:00 PM

Figure 3: Student Interface: list of open JAFs

on clicking over the JAF, you
land on the JAF Description Page

Job ID	Profile Name	Company Name	CPI Cutoff	Bonus Allowed	Eligibility	Closing On
1	Software Engineer	Rubrik	8.0	No	eligible	Mar 24, 2022 | 12:00 PM
2	Research & Develoment	Adobe	7.5	Yes	not eligible	Mar 26, 2022 | 2:00 PM

Software Intern

Have a framework defined for an EXPERT system development by incorporating Fuzzy logic and machine learning. Fuzzy logic is a great help in modeling the human expert system. Idea is to have this knowledge combined with the real-time data coming from systems that have different signatures than rules defined in Fuzzy logic. A template can be made in PYTHON for the same.

Eligible Programs

- Computer Science & Engineering, 3rd Year UG
- Computer Science & Engineering, 2nd Year PG
- Electrical Engineering, 3rd Year UG
- Electrical Engineering, 2nd Year PG
- Machine Intelligence and Data Science, 2nd Year PG
- Systems & Control Engineering, 3rd Year UG

Rubrik
Los Angles, USA

Compensation Details
In hand: $3000/pa
CTC: $6000/pa
Gross: $4000/pa

Open On
20th March \| 10:00 AM

Closing On
24th March \| 12:00 PM

CPI Cutoff
8.50

Bonus Allowed
Yes

Figure 4: Clicking on a JAF

Software Intern

Have a framework defined for an EXPERT system development by incorporating Fuzzy logic and machine learning. Fuzzy logic is a great help in modeling the human expert system. Idea is to have this knowledge combined with the real-time data coming from systems that have different signatures than rules defined in Fuzzy logic. A template can be made in PYTHON for the same.

Eligible Programs

- Computer Science & Engineering, 3rd Year UG
- Computer Science & Engineering, 2nd Year PG
- Electrical Engineering, 3rd Year UG
- Electrical Engineering, 2nd Year PG
- Machine Intelligence and Data Science, 2nd Year PG
- Systems & Control Engineering, 3rd Year UG

Rubrik
Los Angles, USA

Compensation Details
In hand: $3000/pa
CTC: $6000/pa
Gross: $4000/pa

Open On
20th March \| 10:00 AM

Closing On
24th March \| 12:00 PM

CPI Cutoff
8.50

Bonus Allowed
Yes

Figure 5: JAF Description Page

Rubrik

Los Angles, USA

Gray Bradd
gray.bradd@rubrick.com

Create JAFs

Edit JAFs

Delete JAFs

Software Intern

Compensation Details

In hand: $3000/pa
CTC: $6000/pa
Gross: $4000/pa

Closing On   24th March | 12:00 PM

Students Applied   150

Click For Details

Technical Lead

Compensation Details

In hand: $3000/pa
CTC: $6000/pa
Gross: $4000/pa

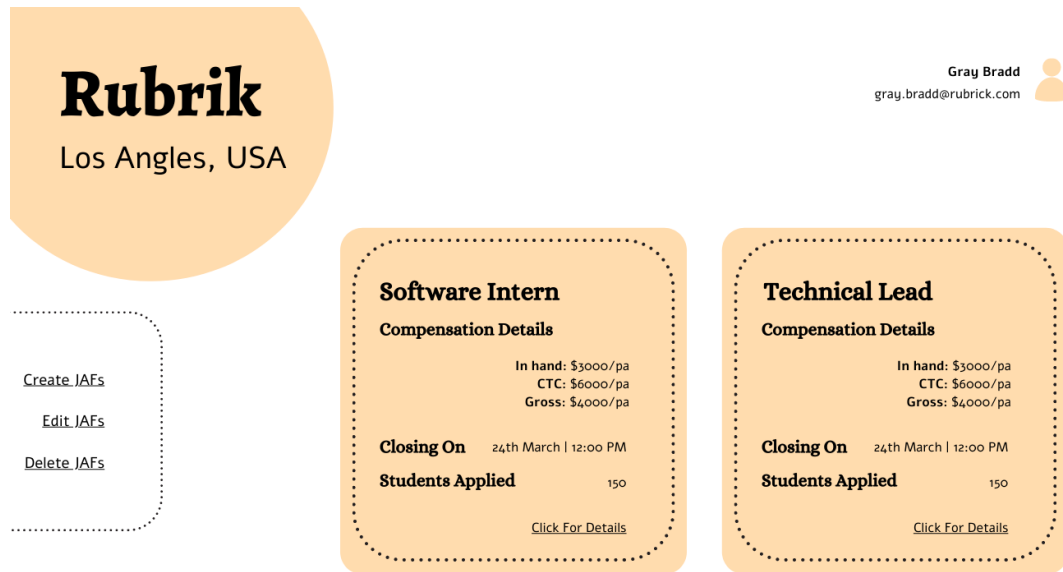**Closing On**   24th March | 12:00 PM

Students Applied   150

Click For Details

Figure 6: Company Interface