

CSE 5335 - WEB DATA MANAGEMENT

PREP REPORT

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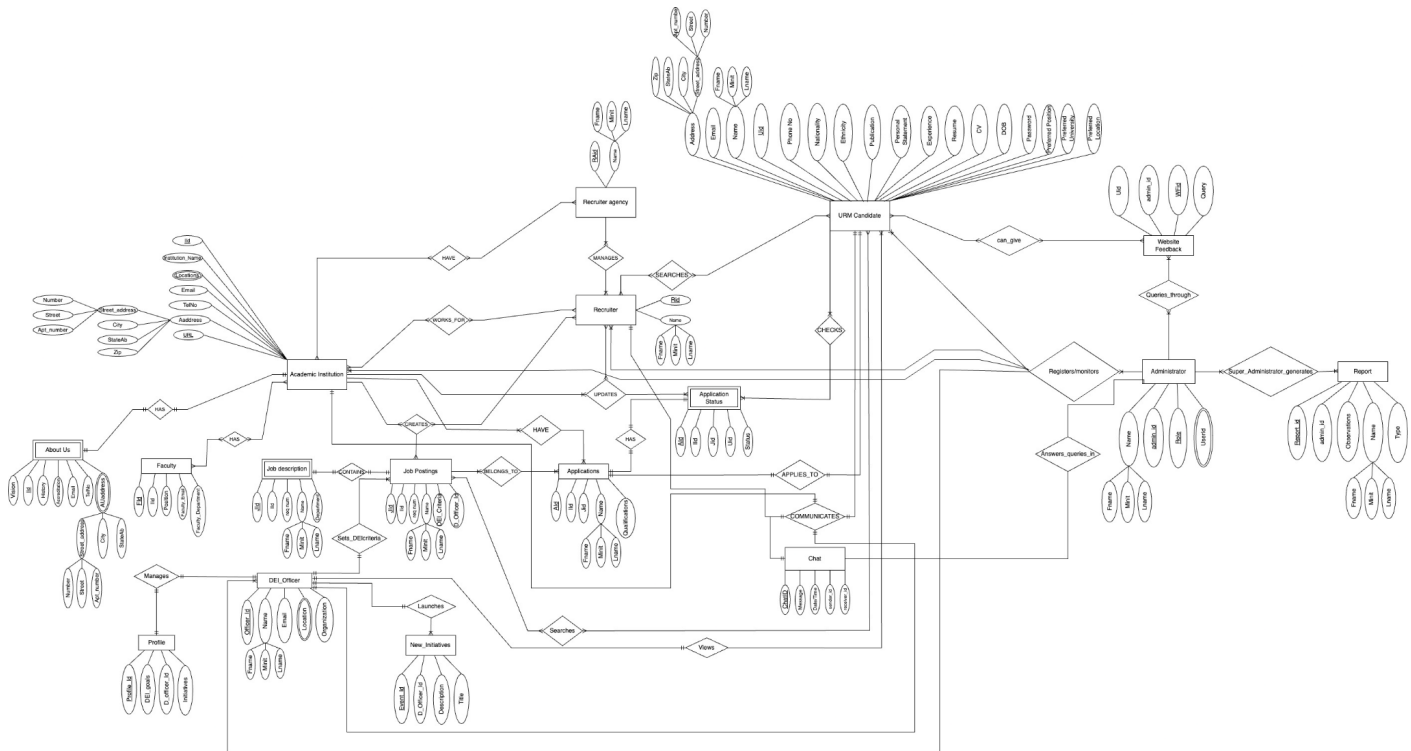
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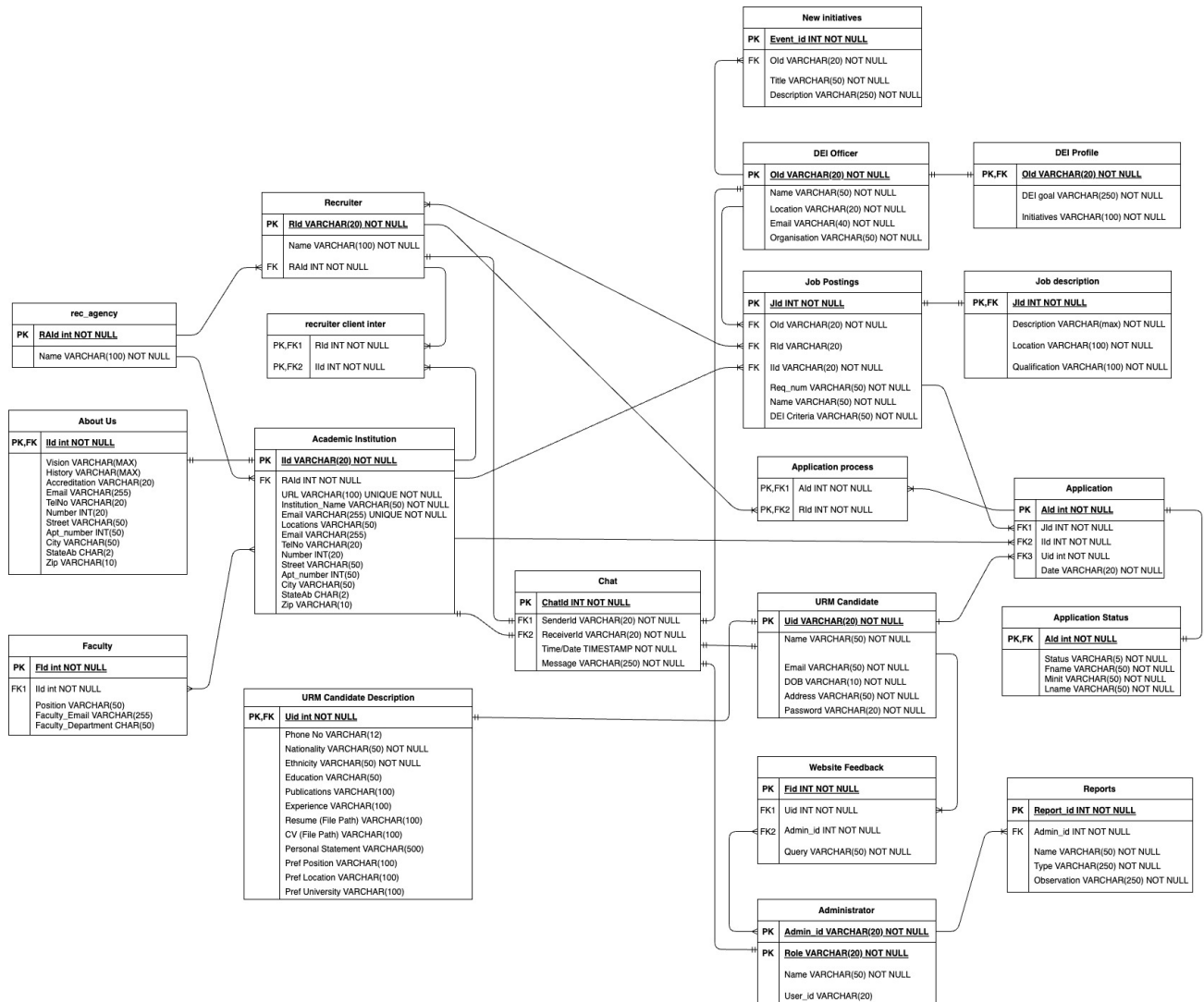
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ENTITY-RELATIONSHIP DIAGRAM



SCHEMA DIAGRAM



Overview:

The URM Application is a specialized platform developed to address minority underrepresentation in academia. It offers academics an easy-to-use registration and login method, as well as access to a comprehensive Academia Dashboard. This dashboard serves as a central point for academics to search for, view, and bookmark possible URM applicants for PhD programmes, postdoctoral opportunities, and teaching posts. The website has a large database of URM Candidate Profiles, each with important information such as education, research experience, publications, and personal statements. Recruiters can customize their candidate search based on specific requirements by using advanced search and filter tools. Through its user-friendly interface, robust search capabilities, and personalized dashboards, the application creates an efficient and effective platform for fostering diversity and inclusivity in academic institutions.

URM Candidate Dashboard ER Diagram:

The URM Register/Login page will give options to the URM Candidate to either Register or Login to the URM Dashboard or register as a new candidate. For registration the URM Candidate has to fill in the following details: First Name , Last Name (Optional), Email , Date of Birth, Address , Password. The URM candidate once registered can login and further strengthen his profile by filling in the following details: Phone No (Optional) , Nationality , Ethnicity , Education , Publications , Experience , Resume , CV , Personal Statement, Preferred Position, Location and University. URM Dashboard after Login has the following main features: Job Search , Applications Status, Messages/Chat, Feedback and Notifications.

Job Search: This feature allows the URM Candidate to search and apply for various available job postings at different Academic Institutions (1:N). The candidate can also filter the search as per his preference of position and university.

Applications Status: This feature allows the URM Candidate to check the status of applications for positions they have already applied (1:N).

Messages/Chat : This feature allows the URM candidate to chat with any other user, eg: Recruiter. The recruiter can also chat with a potential URM Candidate. It is a 1:1 communication with each entity role.

Feedback: This feature allows the URM candidate to leave feedback regarding the website. This will allow the administrator to take the feedback into consideration and make any improvements where needed. Multiple candidates can leave multiple feedbacks(N:M).

Notifications: This feature will drop notifications regarding any updates on the URM Candidate's dashboard. These notifications could be one of the following cases: The recruiter shows interest and wants to message the URM candidate, any update in the application status, any new unread messages/chats.

Academic Institute Dashboard ER Diagram:

The Academic Institution entity within the URM application has several key relationships and features that contribute to its functionality. Institutions can submit an overview and information about their organization in the "About Us" section. Each Academic Institution has a single About Us attribute that contains information specific to that institution(1:1). The About Us page will be different for every academic institution so here the 'IId' acts as a foreign key. The "Register/Login" feature allows institutions to create and manage their profiles, which include information such as contact information and institutional history. Each Academic Institution has one registration and login functionality, and each registration/login functionality belongs to one specific Academic Institution(1:1). The "Faculty" section features the academic members of the institution, including their names, areas of specialization, and research interests. There is a possibility for a faculty member to be associated with multiple Academic Institutions or if multiple faculty members can be associated with a single Academic Institution, the cardinality would be many-to-many (N:M). Considering one faculty can work for many institutions the 'IId' acts as a foreign key. The "Job Postings" feature allows academic institutions to create and publish job openings for various positions. An Academic Institution can have multiple job postings, but each job posting belongs to a specific Academic Institution(1:N). Considering there can be many institutes, the 'IId' acts a foreign key here. Candidates can then submit applications, which are linked to the institution using the "Applications" link. An Academic Institution can have multiple Applications associated with it, but each Application belongs to a single Academic Institution(1:N). Considering there can be many institutions and many job postings for the 'IId', 'JId' acts as foreign key here. The "Application Status" tool enables institutions to track and control the status of applications received, providing an organized and effective selection process. Institution can receive multiple applications for its job postings, and each application belongs to a specific Academic Institution(1:N). This also features a "Chat" function that allows direct contact and collaboration between the university, URM candidates, and recruiters. This encourages participation and conversation by making it possible for questions, clarifications, and discussions within the application.

Recruiter Dashboard ER Diagram:

A recruiter acts as a connecting bridge between the academic institutions and URM candidates. A recruiting agency has recruiters working under them. Additionally they have several academic institutions as their clients. The major role of a recruiter would be getting the candidates with matching preferences for their clients(institutions). Additionally, application related details such as the number of applications being online and their respective status will be monitored over by the recruiter.

Exploring the entity relationships, "Recruiting agencies" will have multiple "Recruiters" under them. (1:M) Being the primary key of Recruiter agency, "RAid" would act as a foreign key in the Recruiter entity to track which agency they work under. "Recruiting agencies" will have multiple "Academic institutions" that they will work for. (1:M) To facilitate the interlink, "RAid" would

act as a foreign key in the institution to have a reference on which agency works for them. "Recruiter" will monitor the needs of multiple "Institutions" and similarly each institution can have several recruiters for their needs. (N:M) Being a many-to-many relationship, an associative entity would help with the keys management, namely, "Rid" and "Iid". Based on the client requirement, job postings will be managed by the "Recruiter", and respectively a "Job posting" can be managed by multiple recruiters. (M:N) Similar to the last case, an associative entity with the keys "Rid" and "Jid" would work on the relationship.

Administrator Dashboard ER Diagram :

The role of Administrator is crucial in maintaining a stable web application and helps monitor the activity and sets permissions accordingly to the user. There is also the task of updating and fixing bugs in the application that comes under the work of an administrator.

Now, coming to the representation of this role in the ER-Diagram and the Relational-Schema, the "Administrator" entity represents the administrators of the entire application. It includes attributes such as admin_id, Username, and Password and also the type attribute of administrator is an attribute which specifies whether the administrator is a super administrator or not. The admin_id and type are both a composite primary key. The "Report" entity represents the reports that are generated by the administrator of super type. It consists of attributes, such as the Name, the type of report and the details along with the primary key as "Report_id". The "Feedback" entity is utilized to receive feedback from the URM Candidate and perform the necessary tasks according to the query that has been sent. Then, the "Registers/monitors" relationship represents the registration process for URM Candidates. It includes attributes like userId, which is a multivalued attribute consisting of multiple UCM Candidates, Recruiters, DEI Officers, and Profile IDs, references to the corresponding administrator having a One-to-Many (1:M) cardinality. Another relationship is the "Super_Administrator_generates", which is also a One-to-Many (1:M) relationship that represents that multiple reports can be generated by a single administrator who is of a super administrator role. Also, the "Answers_queries_in" relationship connects the administrator to the "Chat" entity in a One-to-One relationship(1:1), so the administrator can communicate with the users if they have any questions. The entities, their respective attributes and their relationships with other entities help convey an association between the main components of the system and represent a unified process for the administrator to operate.

DEI Officer Dashboard ER Diagram:

The DEI Officer Dashboard has the following entities and their respective relationships and cardinalities:

The DEI Officer entity represents a diversity, equity, and inclusion officer. It contains attributes such as Officer_ID, Name, Location, Email, Organization. Officer_ID serves as the primary key for uniquely identifying each DEI officer. Location serves as a multivalued attribute. A foreign

key, Officer_ID connects the Profile entity to the DEI Officer entity. For every DEI_Officer, there is a single profile, which forms a one-to-one relationship. It manages information on the DEI officer's profile, such as their DEI goals, initiatives for URM candidates, and preferred location. Profile_ID serves as the primary key. The DEI Officer sets a DEI criteria for the Job postings and views Job postings that match the criteria. There is a one-to-many relationship between DEI_Officer and Job Postings as DEI_Officer can set criteria for any number of Job Postings. The Job Postings entity is connected to DEI Officer Entity through foreign key Officer_Id. Posting_Id acts as a primary key uniquely identifying each job posting. The URM Candidate entity represents an underrepresented minority candidate. The DEI Officer can view any number of URM candidates interested in specific job postings that match the DEI criteria and forms a one-to-many relationship. Candidate_Id serves as a primary key. New_Initiatives: The New_Initiatives entity represents a DEI-focused event. The DEI Officer can launch any number of new initiatives to improve the diversity in academia forms a one-to-many relationship. It is connected with the DEI Officer entity through the foreign key Officer_ID. Event_ID will be the primary key uniquely identifying each event. Chat_Requests represents chat between the URM candidates and the DEI Officer. The DEI Officer can access any number of chat requests forming one-to-many relationship. The Sender Id and Receiver Id references to the URM candidates and DEI Officer.

Rationale and Design Considerations:

The design choices made in the ER diagram were based on the understanding of the project requirements and the envisioned website design. Here are some justifications for the design decisions:

One-to-Many Relationships: For example, the one-to-many relationship between Administrator and Registration entities reflects the relationship where an administrator can handle multiple registrations. This design allows for efficient management of registration processes. **Foreign Keys:** Foreign keys have been used to establish relationships between entities, ensuring referential integrity. For instance, the foreign key admin_id in the "Report" entity allows the administrator of super type to make multiple reports. In the later phases of the project, we plan to incorporate creative additions that enhance the functionality and user experience of the website. These additions may include interactive data visualizations on the dashboards, personalized user profiles, and advanced search capabilities. The ER diagram serves as a foundation for implementing these creative additions, ensuring the data model supports the desired features. This report has presented a comprehensive overview of the Administrator Dashboard ER Diagram project. The understanding of the entire project, including the system's scope, entities, relationships, and design considerations, has been discussed. The ER diagram provides a clear

visualization of the database schema, which will be the basis for the website development. The report has also highlighted the rationale behind design choices and the plan for incorporating creative additions in future project phases.

Creative Additions:

In the later phases of the project, we plan to incorporate creative additions that enhance the functionality and user experience of the website. These additions may include interactive data visualizations on the dashboards, personalized user profiles, and advanced search capabilities. The ER diagram serves as a foundation for implementing these creative additions, ensuring the data model supports the desired features.

Additionally, we have planned on to implement a collaboration hub that can serve as a centralized platform for users to connect, share knowledge, and collaborate on initiatives related to diversity, equity, and inclusion

We also plan to implement a feature where URM candidate can have a collection of CV and Resume as applicable for different positions.

Conclusion:

This report has presented a comprehensive overview of the various dashboards necessary for the project. The understanding of the entire project, including the system's scope, entities, relationships, and design considerations, has been discussed. The ER diagram provides a clear visualization of the database schema, which will be the basis for the website development. The report has also highlighted the rationale behind design choices and the plan for incorporating creative additions in future project phases.