**PROJECT TITLE: TEACHING ASSISTANT MANAGEMENT SYSTEM (TAMS)**

**TEAM MEMBERS**

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**TAMS System Level Design**

A diagram of a circular object

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TA candidates, administrators, instructors, members of the TA committee, and the application server are the five different user groups that the system serves. For effective system engagement, every group has an interface customized to their tasks.

Streamlined Application Processing: To make the TA application process more efficient, the system makes use of a number of services, including application processing, evaluation, notification, authentication, and matching. These services automate processes such as gathering application information, assessing candidates according to preset standards, notifying users, guaranteeing user authentication, and assigning candidates to courses.

The functionality and data correctness of the system are improved by integration with external systems such as the email system, TAMS database, and university course system. To ensure smooth operation and data consistency, the system interfaces with various external systems seamlessly to retrieve course information, TA data, and to deliver notifications.  
  
By taking into account variables including the applicant's credentials and the instructors' requirements, the matching service is essential in effectively allocating teaching assistants to courses. By doing this, instructors and students can benefit from the finest possible teaching and learning environment, as TAs are matched to courses in which they can make the greatest contributions.

**Department staff**

**System Level Design**

A diagram of a company

Description automatically generated

Sales, Marketing, Production, Finance, and Human Resources are the company's five core departments. A distinct line of command is in place, with each department having a manager who answers to the CEO.  
  
Every department has distinct duties that are in line with the main operations of the business. Sales produces income, Marketing raises awareness and generates leads, Production produces goods, Finance oversees financial matters, and HR recruits and trains staff.  
  
As the person at the head of the organization, the CEO offers general guidance and leadership. They are in charge of formulating the company's strategy, making sure that all departments are in sync, and leading it to success.

The board of directors makes sure that decisions are made with the best interests of the company's shareholders in mind and supervises the operation of the business. In order to preserve ethical standards, they offer accountability, strategic counsel, and governance.   
  
The organization employs support personnel in addition to the primary departments, including administrative assistants, accountants, attorneys, and IT specialists. These experts contribute to overall effectiveness and efficiency by helping with daily operations, financial management, legal compliance, and technology support.

**State Diagram**

A diagram of a flowchart

Description automatically generated

To ensure optimal alignment and reduce the need for manual intervention, the system effectively aligns the expertise of available TAs with the requirements of the courses.

The TA committee receives preliminary suggestions that speed up the decision-making process, allowing for committee scrutiny and final approval while still permitting timely placement of TAs.

The system streamlines the administrative work involved in placing teaching assistants by handling TA applications in an efficient manner, from collection to screening and interview scheduling.

The system gives both usability and security top priority before deciding on locations. TAs, committee members, and department employees all benefit from usability measures that guarantee a seamless user experience, and sensitive data is protected at every stage by strong security safeguards.

If the initial matches are not appropriate, the system can review TA matching through the flowchart's architecture, which enables an iterative process. The best TA candidates for each course are more likely to be found via this iterative strategy, which maximizes teaching support.

**Sequence Diagram**

A diagram of a company

Description automatically generated

The system effectively combines course information, including subject, level, and teacher, giving the TA assignment process crucial context and enabling precise matching of TA qualifications with course prerequisites.

The system makes use of an automated matching algorithm to produce initial TA suggestions based on experience, abilities, and interests. This optimizes the selection process by drawing on data about TA expertise and course requirements.

Employees in the department can offer their opinions on the initial TA recommendations, which allows for ongoing improvement of the matching procedure and guarantees that it is in line with departmental goals and course requirements.

The system increases efficiency and organization throughout the hiring process by streamlining TA application administration duties such as gathering applications, vetting prospects, and setting up interviews.

**Activity Diagram**

A diagram with text and arrows

Description automatically generated with medium confidence

Department employees start the process by entering the subject, level, and instructor criteria for the course. This stage ensures that TA assignments are in line with course requirements and forms the basis for the future matching procedure.

Taking into account experience, abilities, and interests, the system aligns TAs' areas of expertise with the demands of each course. Once a good fit is identified, the algorithm starts making suggestions. If not, it keeps looking for a suitable applicant, guaranteeing a customized approach to teaching assistant responsibilities.

Department Staff is able to examine and offer input on preliminary recommendations that are produced through the matching process. With the help of feedback from people who are familiar with the dynamics of the course, this iterative process makes sure that the best TAs are chosen for each course.

The system gathers, screens, and arranges interviews for prospective TAs in order to manage applications, if applicable. This simplified method of managing applications speeds up the selection process and guarantees that qualified TAs are given consideration for open jobs.

Recommendations that have been polished are brought before the TA committee for approval. Prior to process completion, the system performs security and usability tests. All stakeholders benefit from usability's smooth and user-friendly experience, and sensitive data is protected throughout the process by strong security measures that preserve confidentiality and integrity.

**Instructors**

**System Level Design Diagram**

A diagram of a process flow

Description automatically generated

The system places a high priority on data security and does so by utilizing a number of different components, including a secure data storage module, a secure authentication system, and secure database access. By limiting access to sensitive information to authorized individuals, these safeguards maintain the security and integrity of data.  
  
Data entry via the teacher interface or performance evaluation module is the first step in the system's well-defined workflow. Before being safely stored in the database using the secure data storage module, data must first pass authentication. The system's data correctness, dependability, and consistency are guaranteed by this standardized procedure.

The system takes a user-centered approach by having distinct interfaces for various user roles, such as instructors and the authentication system. This design balances security and usability to meet the varied needs of users, enabling them to work effectively inside their specialized interfaces.  
  
The scalability, maintainability, and flexibility of the system are improved by its modular architecture. The system is made easier to comprehend, maintain, and update by being divided into discrete modules, each with a specified function. It facilitates simpler modification and debugging, increasing the system's overall agility and capacity to adjust to shifting needs.

The system offers a complete data storage solution by integrating with other systems, such as the database and the performance assessment module. With its strong reporting capabilities, this integration guarantees smooth data interchange, improves functionality, and helps with well-informed decision-making. The system optimizes data management and analysis efficiency and effectiveness by utilizing current resources and technologies.

**Sequence Diagram**

A diagram of a company

Description automatically generated

To build an organized method for measuring TA performance, the teacher first evaluates the TA's performance and enters the data into the performance assessment interface.

To improve data security and integrity, the performance assessment interface is outfitted with strong authentication and authorization procedures that guarantee that only authorized users—such as administrators and instructors—can view and alter performance data.

TA performance measures, such as strengths, shortcomings, and teacher feedback, are all saved in a centralized database, which makes it easier to make well-informed decisions and monitor TA progress over time.

By making performance data freely viewable and shareable, the interface promotes cooperation, communication among teachers. and improve strategies.

Performance data is available to administrators and TA committees, enabling them to make data-driven choices about professional development opportunities, TA reappointment, and promotion. This maximizes the use of TA resources and improves overall teaching effectiveness.

**Activity Diagram**

A diagram of a flowchart

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The assessment provides a comprehensive picture of the teaching assistant's performance by considering a number of criteria, including interactions with students, subject matter expertise, and teaching skills.

system facilitates the efficient input of data by file uploads or manual entry. It incorporates validation checks that guarantee the integrity and correctness of the assessment data, improving the quality and dependability of the data.

The system confirms the instructor's authorization prior to processing the assessment data. This ensures that only those with the proper authorization can administer tests, protecting the security and privacy of the data.

pertinent performance data from the system, such as previous assessments and student comments, is triggered by valid assessment data. This allows for a thorough examination of the TA's performance history.

The system creates personalized reports that highlight the TA's strengths, shortcomings, and suggestions for improvement based on the evaluation and performance data. These reports can be customized to meet the needs of particular stakeholders, like administrative/TA committees, TAs, or instructors, making it easier to provide focused input and make decisions.

**State Diagram**

A diagram of a diagram

Description automatically generated with medium confidence

To protect sensitive data and guarantee that only authorized users can access the system, the process starts with secure authentication. By laying a safe basis for later steps, this step improves overall data confidentiality and integrity.

Instructors select a class, identify a particular TA to evaluate, and select an assessment interface to start the assessment process. This methodical methodology ensures accurate assessment of TA performance while streamlining the evaluation process and giving teachers clarity and direction.

There are several parts in the assessment process. First, instructors fill out evaluations. Next, they aggregate information on the TA's performance from a variety of sources, including observation reports, student feedback, and self-evaluations. This thorough process guarantees that evaluations are balanced, combining many viewpoints to provide.

To guarantee impartiality and uniformity in the assessment procedure, the system collects assessments and anonymizes data. The system fosters an objective assessment environment that is conducive to fair evaluations by protecting the privacy of those participating and mitigating biases through data anonymization.

Conducting a performance review and analysis is the last phase. It may entail producing reports, examining anonymized data, and offering suggestions regarding the TA's performance. Through this methodical evaluation process, stakeholders can better understand trends in TA performance, pinpoint areas for development, and make well-informed decisions to increase the efficacy of TA support and development programs.

**TA Applicant**

**System Level Design Diagram**

A diagram of a computer

Description automatically generated

To safeguard applicants private information, the system has a secure login module with two-factor authentication and data encryption. This improves overall data security by guaranteeing that sensitive data stays private and unavailable to unauthorized users.   
  
Through the system, candidates can easily submit their resumes and applications while supplying comprehensive details on their prior TA positions and skill sets. This streamlined procedure increases TA application management efficiency, minimizes manual labor, and produces less paperwork.   
  
Through the system, candidates can monitor the progress of their applications at any moment. This tool improves openness and communication by giving applicants the ability to see how their applications are progressing without having to actively follow up. Additionally, it promotes a favorable application experience in time.

The system stores applicant data in a safe, secured database. Data confidentiality, dependability, and integrity are guaranteed by this effective data management strategy. The system increases overall data management efficiency by reducing the risk of data loss or corruption associated with manual operations by utilizing electronic submission and storage techniques.  
  
The system provides applicants with the convenience and flexibility of electronically submitting and tracking their applications. The application procedure is streamlined and requires no physical documentation thanks to the electronic submission and tracking feature, which saves time and money for both applicants and administrative staff.

**Activity Diagram**

A diagram of a process

Description automatically generated

The applicant starts the procedure by sending in their application.   
To confirm the submission's legitimacy, the system checks the applicant's authentication credentials once it has been submitted.   
After successful authentication, the system checks to see if the CV was submitted accurately.

After the application and CV are successfully submitted, the system keeps track of the application status and instantly notifies the applicant of any updates in real-time about the application's development.   
The system guarantees a seamless application experience by giving the applicant the chance to fix any problems by allowing them to retry the submission procedure in the case that authentication or CV submission fails.

**Sequence Diagram**

A diagram of a company

Description automatically generated

To begin with, enter your FAU email credentials to confirm your identity. This guarantees that only people with permission can submit applications.   
Using an authentication service, the system verifies your login information. Your information is safely shared if everything matches.   
After that, your data is sent to the module for submitting CVs, where your resume is kept safe in a database.

The Applicant and the TA team can monitor the status of the application by updating the application tracking system (ATS).   
Throughout the process, the ATS will notify you and provide you with updates on the status of your application.

**State Diagram**

A diagram of a diagram

Description automatically generated

The application is submitted first, and then the applicant must go through an identity-verification stage to complete the procedure.   
The candidate submits a CV if the authentication is successful; if not, the candidate is given another chance to submit their application.   
After a CV is successfully submitted, the system keeps track of the application's development and notifies the applicant in real-time of any revisions.   
To ensure that technological faults do not impede the application process, the applicant is given the opportunity to resubmit if the CV submission fails.   
Each step of the procedure includes a feedback loop that enables applicants to address any problems.

**TA Committee**

**System Level Design**

A diagram of a member interface

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Using a modular architecture, the system consists of several modules for application processing, notification, authentication, communication, TA management, and TA database. By ensuring smooth data flow and communication between various components, this integrated method improves the functioning and efficiency of the system.  
  
Committee members have access to a centralized platform through the Committee Member Interface to carry out TA administration duties such as assigning tasks, monitoring communications, and viewing applications. The whole user experience is improved, usability is increased, and user interactions are made simpler thanks to this user-centric design.  
  
The Application Processing Module and Notification Module, among other modules, enable the system's automated procedures. Committee members' manual labor is reduced, and the entire TA application and assignment process is accelerated thanks to these automated procedures. Automation boosts productivity and reduce the errors.

User interactions and automated procedures promote data flow throughout the system. The Application Processing Module processes submissions before storing them in the TA Database. This effective method to data management guarantees data accessibility, quality, and consistency, empowering committee members to make well-informed decisions based on current facts.  
  
The Communication and Notification Modules are essential to enabling users and the system to communicate with one another. By informing users of revisions to their applications or assignments, these modules promote timely communication and openness throughout the teaching assistant (TA) management process. Stakeholder satisfaction and engagement are increased by effective communication.

**Sequence Diagram**

A diagram of a company

Description automatically generated

This element of the system improves security and privacy by limiting access to the functions and information that each user (Committee Member, Administrator, Successful Candidate, etc.) needs.

To prevent unwanted access and preserve the integrity of user accounts, strong authentication procedures are in place to confirm users' identities before allowing them access to the system.

To reduce the possibility of illegal data interception and eavesdropping, all system communication channels—including alerts and data exchanges—are encrypted using industry-standard encryption protocols.

To assist with accountability, forensic analysis, and the identification of any suspect activity, the system keeps thorough audit trails of user activities, recording actions made by Committee Members, Administrators, and other users.

To ensure compliance with privacy requirements and defend against data breaches or loss, the system uses techniques including data encryption, access controls, and regular backups.

**State Diagram**

A diagram of a diagram

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This procedure enhances flexibility and adaptability by permitting Committee Members to make, carry out, and maybe reverse decisions as necessary.

The effective cascading of notifications ensures timely communication throughout the process. The Committee Member notifies the Administrator of decisions, and the Administrator swiftly notifies the successful candidate.

To encourage openness and give candidates a say in the selection process, the procedure includes a clear way for the chosen candidate to react to the results, either by accepting or rejecting the offer.

The flowchart incorporates a phase for choice reversal, enabling a methodical process for decision undoing when required, and upholding decision-making accountability.

If the candidate does not reply to the outcome notification, then additional steps like withdrawing the offer after a predetermined amount of time may be taken to guarantee effective handling of candidate responses and process integrity in general.

**Activity Diagram**

A diagram of a flowchart

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To streamline the initial decision-making stage of the process, a Committee Member decides on the assignment at the start of the process.

The Administrator is instantly notified of any decisions made by Committee Members, allowing for effective communication and prompt action.

To prevent the process from stalling and to allow for prompt action, the Administrator is immediately contacted when a Committee Member fails to decide.

To ensure transparency and keep the TA updated throughout the process, the TA is quickly informed of the decision thereof.

The TA has the choice to accept or reject an offer after receiving it, giving them flexibility and enabling them to decide on their assignment with knowledge.