Software Engineering IT314
Project: Student leave and TA assistantship management
Group: 9

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Lab : 02

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❖ Needs:

- Record Keeping: Maintain a record of vital information such as working hours, leaves, notices, and replacements in a more efficient and systematic way.
- Access Control: Implement access control to ensure that only authorized persons, such as HOD and Faculty have permission to view and manage data.
- Leave Approval: Provide a module for leave approval by the department head, which would help to reduce the processing workload and improve the efficiency of the HR department.
- Student Leave Approval: Provide a separate module for student leave approval, which would allow students to apply for leaves and get approval from the relevant authority.
- Paperwork Reduction: Reduce paperwork by implementing an online system that can store all the necessary data, eliminating the need for manual record-keeping.
- Calculation of Leaves and Hours Worked: Enable the system to calculate the number of leaves taken monthly or yearly, and gather data with respect to the number of hours worked, which would help the System to calculate the salary of the Faculty/Teaching Assistant.

❖ Features:

Users:

1. HOD
2. Faculty
3. TA
4. Student

For HoD:

- He will be able to approve/reject the leave applications.
- He will create student and Faculty accounts
- On his homepage he will be able to see Pending requests, Approved requests and Rejected requests.
- He would be able to see data of every student,faculty and TA's leaves.
- Automated monthly/yearly workdays and working hours will be calculated for every Faculty and TA. HR will be able to fetch this information.
- TAs and faculty will get the salary based on their working days and working hours.

For Faculty:

- Login using Credentials.
- Faculty can see the leave data of TAs assigned for their course and also the students who have asked for leave in their class.
- Faculty can post the notice for the Teaching Assistant requirement for a particular course.
- Faculty can view the list of the students who have applied for Teaching Assistant and from the list, he/she can select the Teaching Assistant for a particular course.
- Faculty will be able to see the replacements for the TAs who are on leave.

For TA:

- Login using Credentials.
- Similar to students, TAs will also be able to request leave.
- Their leave application will be approved/rejected by HOD.
- TAs can see the list of the other TAs who are on leave and can substitute any particular TA for a specified time.

For Students:

- Login using Credentials.
- They can view the Leave history.
- They can choose a day(s) for which they want to take a leave.
- In the text box they can write reasoning for leave and also add supporting documents on the same via mail.
- When HOD reviews the leave they will be able to see if their application is accepted or rejected.
- Students can apply for TAship to the concerned faculty, after the approval of the faculty, they will be allotted the course(manually) and added to the TAship.

❖ Functional Requirements:

For Students:

- **Login -** Using credentials generated by the system administrator.
- **Submit Leave Application -** In application students will be able to choose Date(From and To) based on which leave days will be counted. They will be asked to attach the Reason for the Leave and attach the supporting documents.
- **Leave History -** Students can see the history of the leaves taken by them.
- **Leave Application Status -** Application status page will display all the applications and their status like Approved or Rejected or Pending.
- **Apply for TAship -** Students will be able to see the list of the TAs requirement courses which are open for their batch. Students can apply for TAship by selecting any courses.

For TA:

- **Login** - Using credentials generated by the system administrator.
- **Submit Leave Application -** In application TA will be able to choose Date(From and To) based on which leave days will be counted. They will also be able to add Lab, notes and attach the supporting documents.
- **Leave History -** TAs can see the history of the leaves taken by them.
- **Leave Application Status** - Application status page will display all the applications and their status like Approved or Rejected or Pending.
- **Notification -** The notification panel will display the notification if any student leave application is approved by HOD for their subject. TA can substitute any other TA for specified time.

When a student becomes a TA:

- If a student becomes a TA then he gets a space in both the student database and the TA database.
- When a student becomes a TA, then a new Email ID and password for the TA account will be provided by the system on the student email.
- While login in, the TA cum student is asked whether to log in as a student or as a TA after he/she submits the email address.
- Both the TA and student Id will remain same, but the Domain will change password for it will be different to maintain the security of the system.

For Faculty:

- **Login** - Using credentials generated by the system administrator.
- **Submit Leave Application -** In application, Faculty can choose Date(From and To) based on which leave days will be counted.
- **Leave History -** Faculties can see the history of the leaves taken by them.
- **Leave Application Status** - The application status page will display all the applications and their statuses like Approved or Rejected or Pending.
- **Notification -** Faculty will be notified if any Student or TA in their course is approved by HoD for leave.
- **Requirement for TAs -** Faculty can post the notice for Teaching Assistant requirement and batches for which the role is open.
- **Select Teaching Assistant -** Faculty can see the list of the students who have applied for the TAship. Faculty can select the TA from the list and select students will be notified via email. TA ID and password will be generated by the system and will be mailed on student ID.

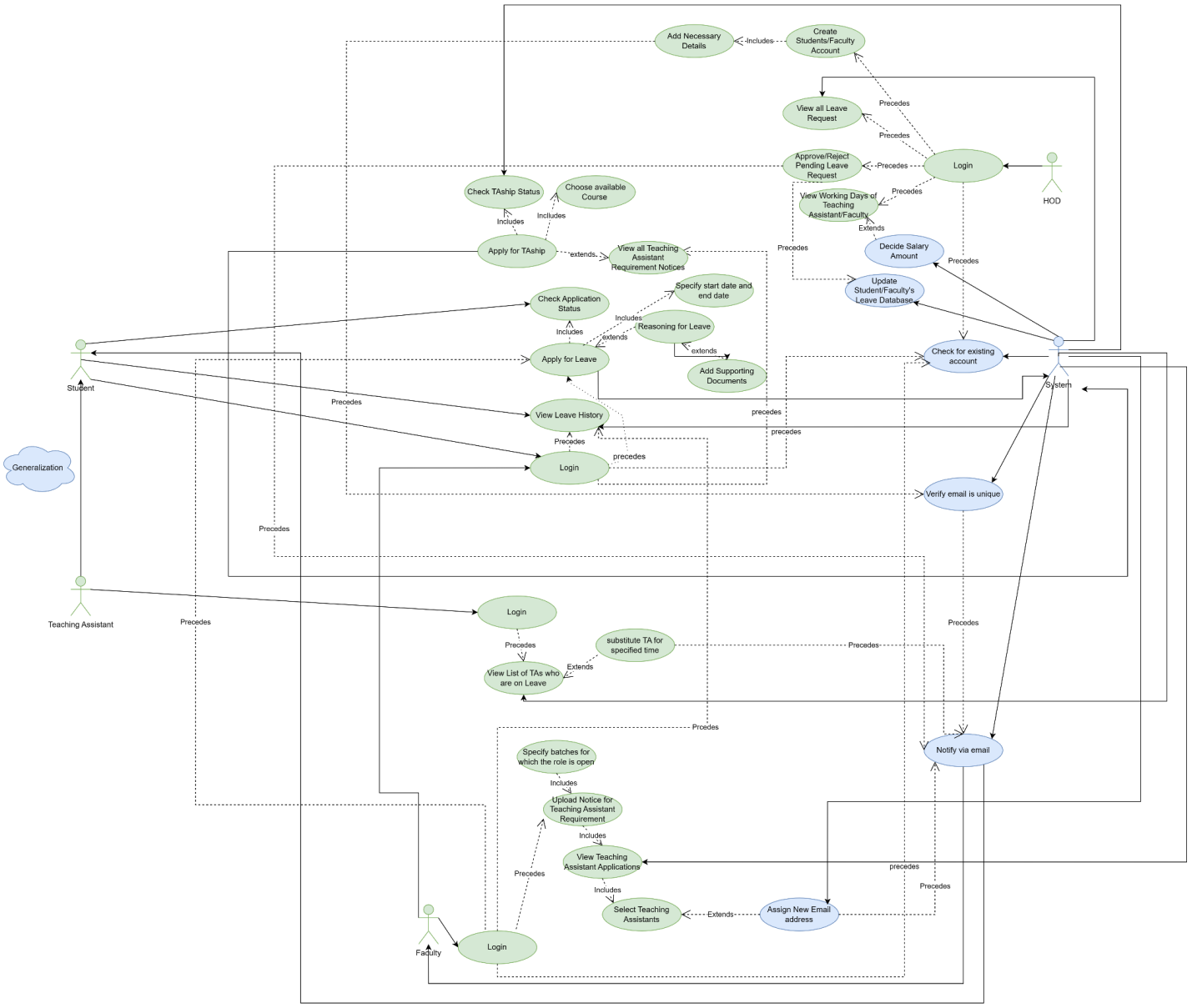
For HoD:

- **Login -** Using credentials generated by the system administrator.
- **Leave Applications -** HoD will be able to see all leave applications and will get options to **Approve** or **Reject** it.
- **Filter -** HoD can filter applications based on approved or rejected stored in his database. And also filter applications by particular faculty or students.
- **Working Data -** HoD can see working days or working hours of any faculty or TA.
- **Create student account -** HOD can create the students account by entering required information. System will verify that the ID is unique. Student ID and password will be mailed to students on his/her personal mail ID by the system.
- **Create Faculty account -** HOD can create the Faculty account by entering required information. System will verify that the ID is unique. Faculty ID and password will be mailed to students on his/her personal mail ID by the system.

❖ Non-Functional Requirements:

- **Performance:** The system should be able to handle a large number of users and requests without any performance issues. Response times should be fast and reliable, and the system should be able to handle peak loads without any downtime.
- **Security:** The system should be designed with security in mind and should use appropriate measures to protect sensitive data from unauthorized access, such as authentication, access control, and data encryption.
- **Availability:** The system should be available 24/7, with minimal downtime for maintenance and updates. Any downtime should be scheduled in advance and communicated to the users.
- **Usability:** The system should be user-friendly and easy to use, with a simple and intuitive user interface that does not require extensive training or technical knowledge.
- **Scalability:** The system should be able to handle an increasing number of users and requests as the organization grows, without compromising its performance or functionality.
- **Reliability:** The system should be reliable and free from errors, bugs, and crashes. It should be tested rigorously to ensure that it works as expected.
- **Data Integrity:** The system should ensure the integrity and accuracy of data, with appropriate data validation and error checking mechanisms.

❖ Use Case Diagram:



For better view :

https://drive.google.com/file/d/1KxH_h_GDJolTVII8XkMkfWIGmDVKyrct/view?usp=sharing

❖ Software Process Model:

Iterative Waterfall

We are using this model because of the following reasons ->

- The waterfall model is a linear SDLC model whereas the iterative model is cyclical in nature. Combination of both helps us in changing the requirements, designing and coding after testing the model.
- As in the waterfall model, the 1st stage is the planning stage. Here we map out the requirements be it software or hardware.
- The 2nd stage is the analysis phase, where we check that the requirements thought about can be incorporated into the project or not.
- Then comes the designing, even if the project is small and the requirements for the project are simple, still there is a mental design process that takes place.
- The fourth stage is the implementation and coding stage.
- Then comes the testing phase, where we test the software against some standard norms and if there are changes to be made, then again the process from stage 2 can be continued.
- This framework is very flexible. Since it is still under construction, additional features can be added at any time.
- Compared to other process models, this one is far less expensive to modify the requirements.