Assignment 3: Requirements Analysis

Problem

Need: A method for easily submitting and collecting programming assignments.

Purpose: To create a system which allows students in programming classes to submit programming work. Additionally, the TAs must be able to collect assignments. Finally, the instructors need to be capable of managing the course, its sections, TAs, and assignments.

Client Base: CS Department – faculty, staff, and students

Types of Users of the software system:
- ⇨ Admin
- ⇨ Instructor
- ⇨ TA
- ⇨ Student

Roles:

Admin:
- Can create, edit and delete attributes every entity.
- Can modify information in attribute in each entity, but it depends on the reference entity and constraints in each attribute.
- Can define limit access the user to access in each entity.

Instructor:
- can access all of the basic students' information.
- can release the assignment to the student.
- can grading the assignments without request permission.
- can modify the score of students without request permission.
- can control the release of the assignment, score, and solution(key).
- can modify the due date of the assignment without request permission. (extend the due date)
- can confirm or decline the request permission from TA.

TA:

- can grading the assignment from students with the request permission to instructor first and the instructor confirms only.
- can modifying the score of the assignment from students with the request permission to instructor first and the instructor confirms only.
- can modify the due date of the assignment with the request permission to instructor first and the instructor confirms only. (extend the due date)

Student:

- submit the assignment.
- view the grade.
- view the instruction of the assignment that the instructor release.
- modify some of the basic Information.

Entities and Attributes of Each User:

Information: Entity name
- Stored information of each user.
- All of the users can access to this entity.
- All of the users can only modify Email and Password.

Attributes name: data types
1. Firstname: varchar
2. Lastname: varchar
3. DOB (Date of birth): date
4. Position: varchar
5. Pawprint: varchar
6. Email: varchar
7. Password: varchar

Assignment: Entity name
- Stored all of the information on assignments.
- The instructor can create, modify and delete all of the attributes.
- The TA can modify Name of the assignment, Description of the assignment and Due date with the request permission to instructor first and the instructor confirms only.
- The Student can only view all of this Information on attributes.

Attributes name: data types
1. Number of the assignment: int
2. Name of the assignment: varchar
3. Description of the assignment: varchar
4. Maximum Score: double
5. Average Score: double
6. Highest Score: double
7. Lowest Score: double
8. Release date: date
9. Due date: date

Request: Entity name

- Stored the task, details of task and status that request from TA.
- Only the instructor can modify Status.
- None of the users can access this entity except the instructor and TA.

Attributes name: data types
1. Number of Tasks: int
2. Name of the task: varchar
3. Description of the task: varchar
4. Request Date: date
5. Status: varchar

Score: Entity name

- Stored all of the student score in each assignment
- The instructor can view this entity and modify the score.
- The TA can view this entity and modify the score with the request permission to instructor first and the instructor confirms only.
- The Student can only view this entity but can only insert the Document.

Attributes name: data types
1. Assignment Number: int
2. Name of the assignment: varchar
3. Pawprint: varchar
4. Document: varchar
5. Score: double
6. Submit Date: date

Queue: Entity name

- Stored the task, UserInfo, user type, StartTask and Status of all users that request to do anything from the system and order as a queue to makes the system more stable.
- User type used for defining the priority to access in the system.
- None of the users can access this entity except system or admin.

Attributes name: data types
1. Task number: int
2. UserInfo: varchar
3. User type: varchar
4. StartTask: datetime
5. Status: varchar

Summary

This system has 4 types of users:

1. The admin can access, modify information and constraints in each entity.

2. The instructor can access almost every entity except some specific entity that only system use followed by the direction.

3. The TA almost like the instructor, but if the TA want to modify some specific attributes, the TA will need permission from the instructor first

4. The student most of the actions are view, but some attributes in some entities can access and modify depends on the constraints.

This system is using a queue for making the system more stable by arranging priorities from Admin, Instructor, TA, and Student respectively and identify the user to access the entity and when the student submits the assignment, the system will collect date and time that the student starts to upload the assignment first as submitted time, no matter how long it takes for uploading to prevent the case that the system and student time are not matched, but the system will check that finally, the assignment is complete upload or not and collect the complete time in transactions and another case is many students submit the assignment at the same time nearly the deadline time can avoid the failure of server.