Requirements Analysis

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09/09/2019

Step 1:

Students: Who take the programming class and want to submit programming work.
TAs: Who is the TA of the programming class
Instructors: Who is the instructor of the programming class

Step 2:

For students:

1. Submit their programming work
2. Check their programming work
3. Check their grades of the programming work
4. Ask questions for the programming work

For TAs:

1. Collect/Check the students' programming work
2. Grade the students' programming work
3. Answer the students' question
4. Give feedback for the assignment

For Instructors:

1. Manage the courses: Instructors can add/delete courses.
2. Manage the sections of the class: Instructors can add/delete/edit the sections of a class.
3. Manage the TAs: Instructors can add/delete/change the TA of a class.
4. Manage the assignments of the students: Instructors can add/change the grades of the students' assignment.
5. Manage the assignments of a course: Instructors can add/delete/edit the information of the assignments.

Step 3:

For students:

1. Submit their programming work
   1) Data entities and attributes

Assignment
Type
Student name
Grade
Submission time
State

Student
Name
Id
Course

Course
Name Instructor Section Assignment TA

2) Constraints (non-functional) or the resultant state
Get a response within 2 seconds after submission.
System assurance stable.
System is secure.

2. Check their programming work
   1) Data entities and attributes

Assignment
Type Student name Grade Submission time State

Student
Name Id

2) Constraints (non-functional) or the resultant state
System should have security.
System should have interoperability: Student can download their assignment to check.
System should have Security.

3. Check their grades of the programming work
   1) Data entities and attributes

Assignment
Student name Grade

Student
Name Id

2) Constraints (non-functional) or the resultant state
System should give a response within 2 seconds after submission.
System should return the student's score.
System should be secure.

4. Ask questions for the programming work
   1) Data entities and attributes

Student
Name Id

TA
Name Course Email

Question
Student name Content Course State Authority

   2) Constraints or the resultant state
      System should give feedback on whether the problem was successfully submitted.
      System should give a response within 1.5 seconds after submission.
      System should give the correct authority.

For TAs:

1. Collect the students' programming work
   1) Date entities and attributes

Assignment
Type Student name Grade Submission time State

TA
Name Course Email

   2) Constraints or the resultant state
      System should be able to download and check assignment in 2 seconds.
      System should have security to protect students' assignment.
      System should have interoperability to download the assignment.

2. Grade the students' programming work
   1) Date entities and attributes

Assignment
Type Student name Grade Submission time State

Student
Name Id

TA
Name Course Email

   2) Constraints or the resultant state
   System should have interoperability to make TA to grade the assignment.
   System should have reliability to make sure the grade and assignment are corresponding.
   System should be secure to protect the students' information.

3. Answer the students' question
   1) Date entities and attributes

Question
Student name Content Course State Authority

Student
Name Id

TA
Name Course Email

   2) Constraints or the resultant state
   System should give the correct authority.

System should give feedback to the TA's answer in 1.5 seconds.
System should be secure to protect student's data.

4. Give feedback for the assignment
   1) Date entities and attributes

Assignment
Type Student name Grade Submission time State Feedback

Student
Name Id

TA
Name Course Email

   2) Constraints or the resultant state
   System should be reliable to make sure the feedback and students' assignment are corresponding.
   System should be secure to protect students' data.
   System should give feedback to TA in 2 seconds, for example, show "Feedback submitted successfully".

For Instructors:

1. Manage the courses: Instructors can add/delete courses.
   1) Date entities and attributes

Course
Name Instructor Section Assignment TA

Instructor
Name Major Courses

2) Constraints or the resultant state
System should give feedback to instructor to make sure the add or delete is successful.
System should be reliable to make sure that only instructor can edit the course's information.
System should be stable.

2. Manage the sections of the class: Instructors can add/delete/edit the sections of a class.
   1) Date entities and attributes

Course
Name Instructor Section Assignment TA

Instructor
Name Major Courses

   2) Constraints or the resultant state
   System should give feedback to instructor to make sure the edit is successful.
   System should be reliable to make sure that only instructor can edit the sections.
   System should be stable.

3. Manage the TAs: Instructors can add/delete/change the TA of a class.
   1) Date entities and attributes

Course
Name Instructor Section Assignment TA

Instructor
Name Major Courses

TA
Name Course Email

2) Constraints or the resultant state
   System should be stable.
   System should give feedback to instructor in 2 seconds.
   System should be reliable to make sure that only instructor can edit the TA of the course
   System should be secure to protect the instructor and TA's data.

4. Manage the assignments of the students: Instructors can add/change the grades of the students' assignment.
   1) Date entities and attributes

Assignment
Type Student name Grade Submission time State

Student
Name Id

Instructor
Name Major Courses

   2) Constraints or the resultant state
      System should be stable.
      System should give feedback to instructor in 1.5 seconds.
      System should be secure to protect students' data.
5. Manage the assignments of a course: Instructors can add/delete/edit the information of the assignments.
   1) Date entities and attributes

Course
Name Instructor Section Assignment TA

Instructor
Name Major Courses

2) Constraints or the resultant state
   System should be stable.
   System should give feedback to instructor in 1.5 seconds.
   System should be secure to provide others to change the information about the assignment.

Step 4:

System requirement and constraints:

1. System need to use less money to complete.
2. System should be used in different operating system, like iOS, Windows.
3. Storage should be big enough to store all the data.
4. CPU should be good enough to reduce the time of transmission the information.
5. System need some support service: database service and internet service.