

# CS251: Software Engineering I

## 2014-2015

### Learning Management System



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### Problem Statement

Many Learning Management System websites are now available to manage educational courses (such as Acadox), however, rarely finding a good one that allows **automatic judging for programming** assignments. On the other side, there are many online judges (E.g. UVA, TopCoder, CodeForces..) that has an account for a user (not a student), and which programming problems he solved. In this project, we will build the base for a site that has basic educational course features (Doctor, Teaching Assistant, Student, Course, Assignment). In addition to that, **our new feature** will be allowing the assignment to be of two types: programming or textual. Following table describes them from doctor/student perspective:

	Doctor	Student(s)
Textual assignment (acadox style)	Doctor creates an assignment with a deadline for students to meet.  Doctor attaches a document that describes the assignment.	Student should prepare a file that contains his answer and upload it before deadline.
Programming assignment	Similar to online judges, Doctor creates a <b>programming</b> assignment with a deadline for students to meet.  Doctor attaches a document that describes the assignment. However, s/he also explicitly mentions the <b>input format and output format</b> . Based on them, we could have automatic marking. See <a href="#">example1</a> . <a href="#">example2</a> .  Doctor should in addition upload 2 extra things: 1- Set of input test files. Each file respects the mentioned input format. 2- For each test file, an output file will be	Student will submit 1 programming file using an available language (e.g. C++ / Java).  Code must respect the input / output format or it will fail.  Each time student submits the code, he will know if his code is perfect or not. Specifically, he will know how many test cases s/he passed.

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### Further concerns

- Doctors creates the course and sends invitations to TAs.
  - Each course has a password set by the doctor.
  - Students register in the the course using the password from doctor.
- Messaging Service is needed between all actors.
- Course web page has 3 tabs: Info, Board and tasks (similar to acadox).
  - Tasks are the assignments.
    - They are one of the 2 types mentioned. Has Deadline. Has attached Document.
    - For textual assignments, TA must evaluate and put grade to student.
    - For programming assignment, system put grade as **number of passed cases / total cases**.
- Doctor should be able to extract grades report for registered students.
- The online marking part will be built from scratch (e.g. we won't call an API to judge our programming problems)
- Learning management systems could have many other components (e.g. forums, resources tab, ...). Kindly, your scope is only the mentioned elements. Requirements should enhance and go in details for the mentioned items, but don't go beyond them.