Online Programming Contest Hosting Platform Database

Design a database for an online code judge which facilitates users to solve practice problems and participate in and hold programming contests.
In this database, information about users, problems, programming contests and submissions to problems is stored.

Each user is uniquely identified by a username. Associated with each user is the name, country, email ID, date of birth, age, whether he/she is a student or a professional, institution name, About Me, and status(admin etc.). The about me field can be null. The user also has an associated password, which is used for login. On the basis of the problems solved by a user in programming contests, a ranking is generated and stored.

For every problem, there is a unique problem ID. The title of the problem, its author, time limit, source limit, date on which problem was added, link to the problem statement file, address of test case files, address of solution files.

Every submission made to the online judge is recorded. Every submission has a unique submission ID, date and time of submission, result, time taken by program, memory used by program, language used for submission, link to solution file, the user who submitted the solution and the problem for which the solution was submitted. For every problem that occurs in a contest, the contest ID is stored along with the submission. Result can have possible values as Compile Error, Wrong Answer, Time Limit Exceeded, Runtime Error, Correct Answer. The languages used for submission can be Java, C++, C, Python.

For each user, we display the practice problems solved by the user, contests he/she has taken part in, the problems solved in each contest. For each solved problem, all the attempts are stored.

The online judge is also used to host programming contests, which are organised by the users. Only one user can be the organiser of a programming contest. Each contest has a contest code(unique), contest name, start date/time, end date/time, status, number of problems in the contest, the problems for the contest, the organiser of the contest. The status of the contest can take three values- past, current and scheduled. The users have to register for each contest and so for each competition we have a list of registered users. One problem can occur in only one programming contest.