

University Contest Application Progress

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The University Contest application is an android application where students form teams to answer to quizzes from other universities and score points for their own university. The application uses MOVA to sign unfilled/filled quizzes. The architecture of the application will be described in this report.

1 Architecture

The application has the following architecture. It is composed of three participants: the Android application on which the students mainly fill the quizzes, the server of the first university and the opposing university.

1.1 The Android Application

The Android application on the phone has three main activities:

ChallengeActivity The activity allowing the user to fill the current quiz.

TeamScoreActivity The activity used to get the score of the team and the result/correction of the quizzes.

UniversityScoreActivity The activity allowing the user to obtain the score of all universities participating the contest.

The **ChallengeActivity** is the most useful activity. When starting it first checks if the phone already knows the MOVA public keys/parameters of both servers. If not it retrieves them from the respective server. Then it checks if there is an ongoing challenge already available on the phone. If not it tries to get a new one from the server of the opposing university. Then the student can fill the quiz and has to send it before a deadline. When sending the quiz, it is first sent to the respective university of the student which will sign it

and send it back to the user. Then it automatically checks the signature and sends it to the opposing university which will grade it.

The **TeamScoreActivity** is an activity containing the list of all quizzes submitted by the team with the score and the responses. It also contains the cumulated score of the team. This part is not implemented yet.

The **UniversityScoreActivity** is an activity containing the list of all universities participating the contest with their respective score. This part is not implemented yet.

1.2 The Servers

The two servers run the same custom protocol because of the symmetry of the application. To make simple, the client can

- Ask for the servers MOVA public key and MOVA parameters.
- Ask a new challenge (to the opposing university).
- Ask for his team score with the result of all quizzes his team submitted (to the opposing university).
- Ask for the score of all universities (to all servers, so by default it will ask his university server).
- Ask to sign his fill quiz (to his university server).
- Ask for the verification/denial of a message signed using MOVA.
- Send a filled quiz so that the server signs it (to his university server).
- Send a filled signed quiz so that the server grades it (to the opposing server).

The servers also communicate together to verify the signature of the filled quizzes they receive and to update the scores of the universities.