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Software for Programing Contest

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Abstract: ***Nowadays, in this competitive world it is necessary to use time wisely. There are many systems for programming contest but not every system provides test cases and is not institutespecific. The aim of this system is to minimi e the time consumption required for checking codes and result online. These days when competitions are held where human intervention is involved, the chances of genuine results are less. This is a system which can be specially used for institute level for conducting programming contests. This system helps both the faculty and students by automating evaluation of codes and immediate result. This system emphasizes on giving customized access to admin and students. This system enables admin to specify the problem statement, test cases and timer. Students will be provided online editor and compiler. After submiting the test, result are evaluated by checking each test case.***

Keywords: Security, Logging and recovery, Compiler, Editor, Online runtime

I. INTRODUCTION

A programming contest is a competitive learning in the IT. Since many contests are held on-line, it is also a form of e-learning. Many countries set up their own programming contests to encourage students to improve their programming skills. There are several international contests as well.

The two most significant international programming contests are the International Collegiate Programming Contest (ICPC) organized by the Association for Computing Machinery (ACM) for university students and the International Olympiad in Informatics (IOI) for high-school students.

Additionally, there are many online systems called “online judges.” Regardless of where he or she lives, everyone can practice programming by solving problems, including ones from past contests. Some online judges provide cloud-based environments in which programs are compiled and executed on the server, eliminating the need to prepare local tools and libraries. Although the wide acceptance of contests as educational environments, analyses of programming contests to measure their effects has been scarce. It is not clear whether these contests are effective for information education for students or not and it constricts development of an efficient and reliable programming contest.

In this research, a framework to analyze and manage a programming contest to improve educational quality and corresponding tool are proposed. These views are designed to provide insight into performance of students as well as management. The detail of the framework and tool are described and the knowledge gained from the tool is discussed in this paper. The framework and tool can contribute to the improvement of the quality and effectiveness of programming contests.

II.SYSTEM ARCHITECTURE

The requirement of the system is to have high availability in order for the students to be able to submit their projects, made us choose to decentralize the two main functions of the system that is evaluation and submission. This way even if the evaluation subsystem has some issuse or is under load, the submission subsystem is unaffected and vice versa, allowing participants to submit their solutions without problems.

If participants are not able to submit their programs they will not be evaluated. If the files have been submitted in duetime to the Submission Subsystem, they will eventually be evaluated.

This subsystem presents a layered architecture which will have three layers that is the Presentation layer, the Business Logic and the Domain layer. Layered Architecture is such that the Business Logic and Domain Layers are located at server and the Presentation Layer is located wherever the client is accessing the System. This type of architecture was chosen because this system had the need to save persistent data , provide ways to manipulate that same data and then present the results of said manipulations or the data itself to the end user of the system who is not on the same machine where the system is running.

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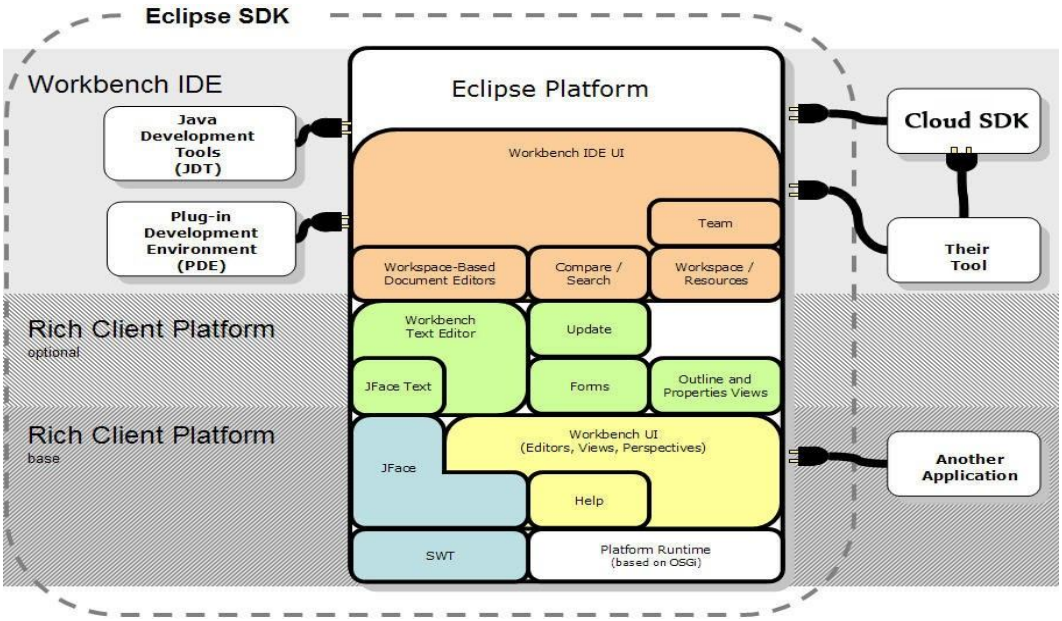

III. MODEL SPECIFICATION AND MATEMATICAL MODEL.

A. The Overall Design

Experimental system consists of four modules designed respectively. Server module, web platform module, a software test system module.

B. Server

Automatic detection system software and hardware test evaluation support system as a background MOOC environment, the need to support the server,

C. Website Platform Module

MOOC evaluation as a background support system environment, the front-end site is essential, web platform is the basis of all experimental detection. Experimental web platform designed with the Django framework, Django framework is based on the Python language to create modules needed by Python language website, simply call the module function can be detected when the assay. Experimental evaluation system is a background support system MOOC environment, so the production site to take into account the diversity of user groups, web design done as simple as possible, so that all the experimenter can simply and easily using the website features. For these considerations, the website platform module intended function is simple, easy to understand in line with requirements under MOOC environment, which has three main user functions:

1) Log in Register function
2) File upload function
3) Online editing

IV. MATHEMATICAL MODEL

1) *NP-Hard:* (Non-deterministic polynomial time hard) in computational theory, is a class of problems that are informally, at least as hard as the hardest problems in NP*. More precisely, a problem H. As a consequence finding a polynomial algorithm to solve an NP-Hard problem would give polynomial algorithms for all problems in NP which is unlikely as many of them are considered hard. Class of problems which are at least as hard as the hardest problems in NP, each element of NP, indeed they may not be decision problems.
2) *NP Complete:* Class of problem which contains hardest problems in NP, each element of NP complete has to be element of NP .Mathematical model: The system takes input from the set IN and gives output as assessment of programs and grading result to user for ranking orcheck correct programs, provides a good way to reduce the required time and human error factor with improving the efficiency. It can efficiently deal with large-scale contest. The proposed system S is defined as follows:

S= {I, F, O}
I= Set of output obtain from programs of contestants.
I= {I1, I2...In}
F= Automation testing done to generate the o/p for grading.
F= {F1, F2, F3}
F1: Preprocessing on the storage obtained after the test.
F2: Time required to test each program.
F3: Detection of the overall test quality.
O= Module for score board set.

V.METHODOLOGY

The system developed using the UM framework is to facilitate the competition organizing committee that has its own rules but still comply with the basic rules of ACM online judge.

A. Design System

Interfaces are designed for contestants, committees, checkers, audiences and online judge servers. Each interface has its own privilege depend on the access rights as logging in to the online judge server.

B. Sytem Function Contestant

login, training, contest per session, complain and see the score board. x Committe : login, give privilege for user, rules of competition, selection of questions for competitions and training, communication with contestants, disqualifying contestants and determining race results based on judges' decisions. x Checker : observe and evaluate the source code from contestant.

C. Operational Principle

The source code data transmission from the user server to the web service server is employed by base64 encoding method to avoid unsupported characters in XML format, such as "<" and tags used in other XML formats. The source code of the user server will be encoded using base64 method first and then inserted into the HTTPrequest containing the XML. The codes are returned or decoded and then the results are reshaped into source code files afterwards on the web service server.

VI. CONCLUSIONS

A. The System shows detailed design and implementation for Programming Contest. Furthermore, the system does not require a large number of judges to assist in the management during the contest.
B. For the near future it envisages further system development, specially concerning the following issues:
1) Evaluation and Classification of different programming languages(C++,Java).and import export problem statements.
2) Notifications will be sent using Email and SMS to Participants .

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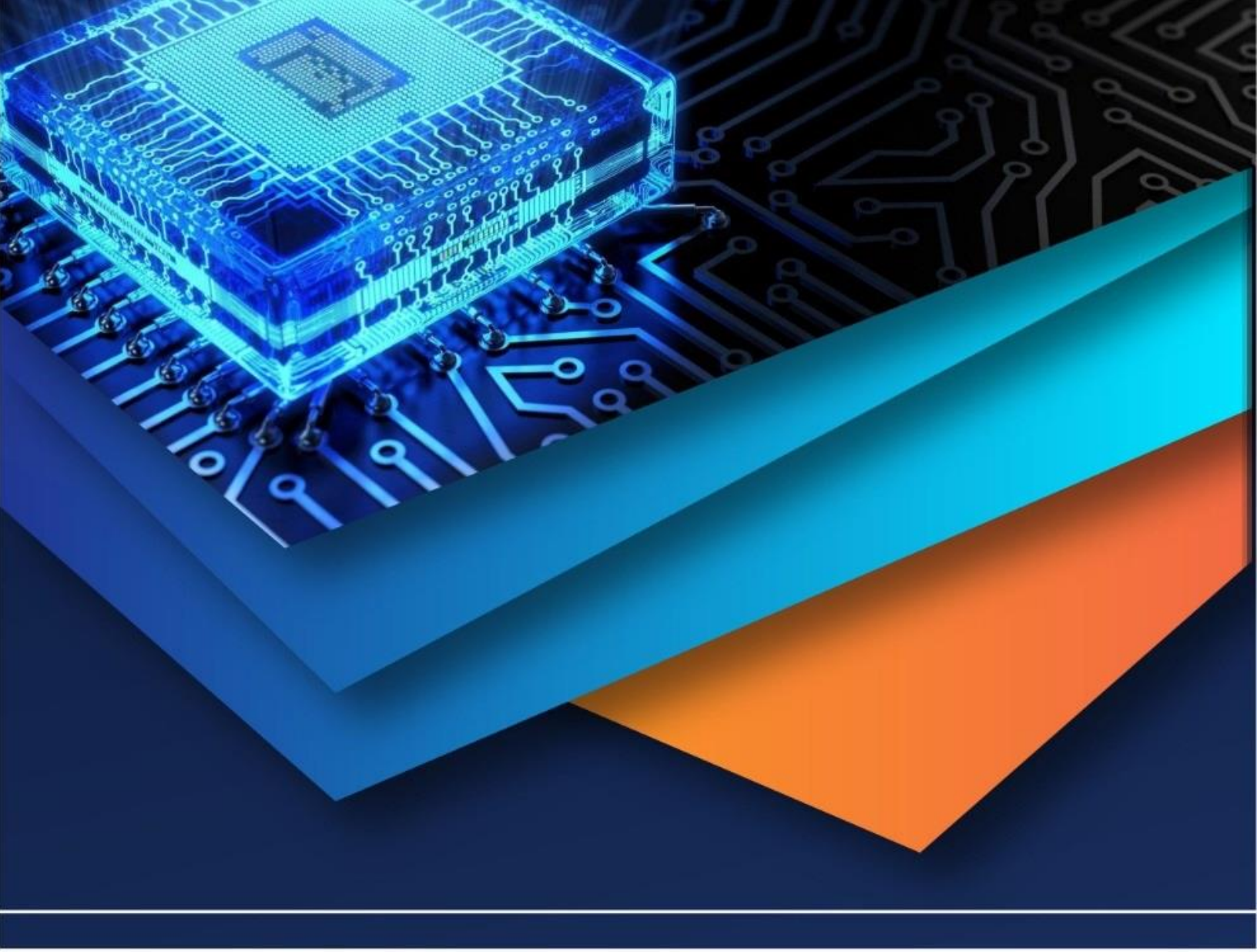

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