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Interactive Virtual Learning Environment for Information Technology Academia

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ABSTRACT: Students during practical often come across doubts or grievances during the busy schedule of the lab-instructor. The instructor has to supervise gradual performance of daily lab-work. The outcome attainment of each lab session will be measured periodically. The success or progress status of E-learning will be realistic and closer to manual instruction. This paper attempts to provide an easy solution technique through Virtual Learning Method. The proposed technique is economically feasible and provides live interaction between students and instructors. The students are given access to view the latest support articles, support events through the notifications. Virtual Learning will stimulate the processes and actions that can take place in a real Lab. The students can perform their coding and implementation adjusting their schedule and instructors convenience. Cloud computing is rapidly gaining the interest of service providers, programmers and the public as no one wants to miss the new hype while Web applications are outperforming native and hybrid applications, with agility in updates and rapid access with mobility, probably the future of the learning will be based on these foundation technologies.

KEYWORDS: Web Applications; E-Learning; Virtual Learning; Cloud Computing; Cost effective; Open Source

I. INTRODUCTION

This project aims at creating a computer laboratory having all the teaching techniques such as virtual meeting, virtual tutorials, access to various online learning sites, access to documents of knowledge made for students and learning methods like access to various documents of knowledge or daily updated notices, virtual learning classes, easy access to the students files virtually. It's a web-oriented platform for the students to perform experiments, collect data from various sources. Students can ask their doubts to one another on the virtual platform and seek answers from any legitimate user be it Student or Instructor.

Virtual Learning is a model for convenient, on-demand, free of cost network access to student and instructor to rapidly provision and release the progress rate of a student or solve doubts with minimal management effort. The paper aims to describe online compilers related to the syllabus such as java compiler, python compiler in the application which helps to reduce the problems of portability and storage space by making use of the concept of cloud computing. The compilers at the server end will reduce the storage of multiple compiler on the total PCs in lab. The ability to use different compilers allows a programmer to pick up the fastest or the most convenient tool to compile the code and remove the errors. Moreover, a web-based application can be used remotely throughout any network connection and it is platform independent. The errors/outputs of the code are stored in a more convenient way. Also, the trouble of installing the compiler on each computer is avoided. Thus, these advantages make this application ideal for conducting examinations online.



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While there are many theories on how the cloud will evolve no real discussion on the programmability has yet taken place. In this project an online compiler is described, that enables user compile programs to run in a distributed manner in the cloud. This is done by creating an object oriented syntax and interpretation environment that can create objects on various distributed locations throughout a network and address them in a scalable, fault tolerant and transparent way. This is followed by a discussion of the problems faced and an outlook into the future. Also students and faculties are communicating with each other by discussion board. This will to reduce teacher's functional overhead and efforts along with the enhancement in the teaching system where teachers get utilize the saved time in more productive work and keep an eye on students when they are on a leave or absent.

Paper has following sections Literature Survey, Proposed System, Methodology. Literature Survey comprises of comparison made between MOOCS,LMS and proposed Virtual Learning Solution, while the proposed system consists of enhancement and solutions that are offered by Virtual Learning Solution, Methodology mentions of theoretical analysis of the methods applied to a field of study

II. LITERATURE SURVEY

Students can exploit diverse learning tools accessible on the cloud, through Google Docs, Office365, and Windows Azure. Students can get to the instructive assets they require from any place and whenever with any gadget that has web get to. Educators can encounter benefits from the flexibility of cloud stages, primarily the simplicity of getting ready introductions, classes, gatherings, articles, and so on. Instructors can likewise benefit from the utilization of the most recent advances and equipment to play out their tests.

Most devices have centered methodologies, which implies that they grasp just specific assignments. For instance, Learning Management System (LMS) and Massive Open Online Courses (MOOCs) bolster the association and dissemination of assets and exercises, while they presently can't seem to grasp social connections. Then again, informal communities and distributed computing administrations have risen because of the age, cooperation, and sharing of assets and substance.

In proposed framework, it is basic to advance all the instructive columns, in particular, "figure out how to know", "figure out how to be" and particularly "figure out how to do". Utilizing distributed computing administrations to champion those columns in a route like or superior to anything that which can be gotten at a college grounds research center, it is important to utilize a mix of mechanical devices that advance the instructive transmission of information, association, joint effort, and hands-on involvement.

III. PROPOSED SYSTEM

The project tries to create an online multiple programming languages compiler which. It can use an array of services provided in the cloud. Users will be allowed to register to the system & can manage their profiles. A user can write Programs online & save those in their profile. Also is allowed to later can update / delete the programs. Online Programming allows the user to write and manage their programs. A Cloud managed Distributed architecture will be used for Processor load balancing for the compiler allocation. Multiple users can write programs in different programming languages and also can run, compile and debug program. While the program is running user can give input in program so the program is execute and also displays the output. Forum module is also provided for students' interaction with other.

Role of cloud computing in proposed system:

1. The programs then stored on cloud manager & the compilation of the programs will be managed by the cloud for forwarding the request to the required processor for compilation.
2. For Example suppose one user writing program is 'C' language and at a same time another user is writing program in JAVA language. Both the users compiling their programs at same time at that time cloud manager

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act as identifier. It identifies the programming language and sends the program in 'C' language to the 'C' compiler and program in JAVA sends to JAVA Compiler.

Advantages of Proposed System:

1. Using cloud computing we can share any kind of data between a numbers of clients.
2. The idea of the project is "Carry Less, Use More!"
3. This is an web Based application so that can open on your home pc, office pc, your tablet and also on your mobile
4. Main advantage of this project is it supports multiple languages compiling.
5. User can save their programs, update and also can delete it.

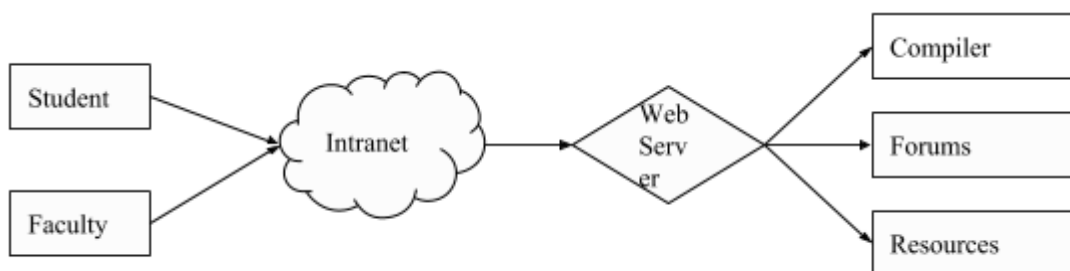


Fig 3.1 Proposed System

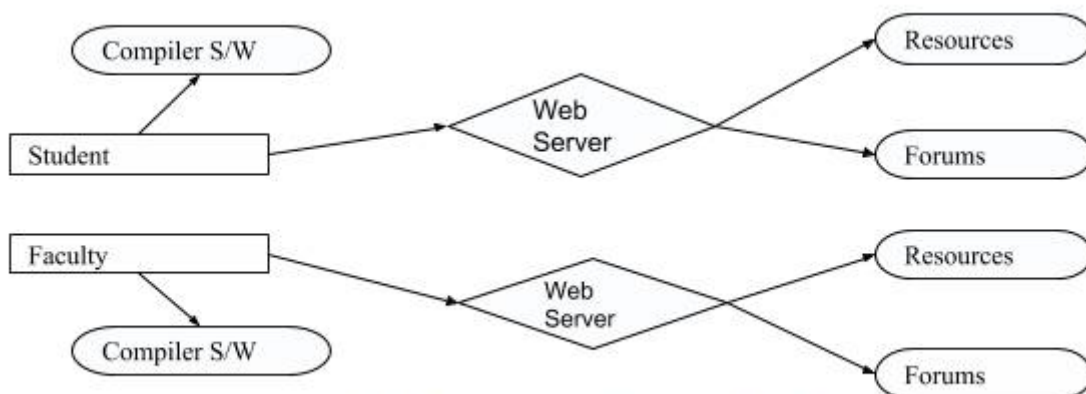


Fig 3.2 Infrastructure Existing System Diagram

IV. METHODOLOGY

Methodology is the systematic, theoretical analysis of the methods applied to a field of study, basically our approach to solve the problem. Our system basically aims for reforming the conventional and established lab environment for the IT Academia. For this purpose, we are making an interactive lab environment using Web Applications and Cloud Technologies which would be the means of interaction with the system for the user (student). In which the user has to login to the system with the correct user name and password for authentication purposes. After gaining the access user can control the whole virtual pc as of their own of the required applications and image.



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Proposed Lab Environment will provide references of almost all the topics and concepts ranging from basic to in-depth knowledge base related to the particular program or lab being performed by user (student) as practical. The main focus of the virtual lab environment is to make the IT learning more interactive and captivating for students. Following are the diagrams related to the working of this project

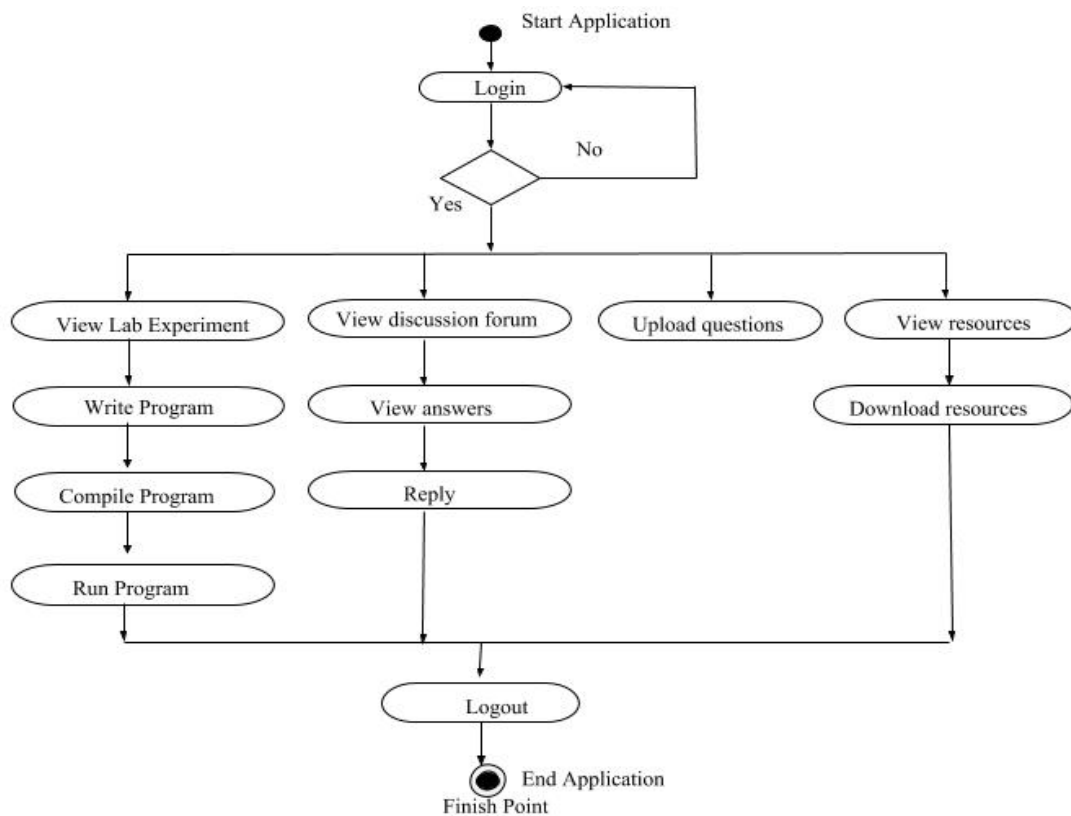


Fig 4.1 Activity Diagram of Student

The functions of the student are:

1. Authentication
2. Access Control
3. Access details of an experiment and tutorials
4. Discuss on forum
5. Use software tools like compiler for programming languages.
6. View research papers.



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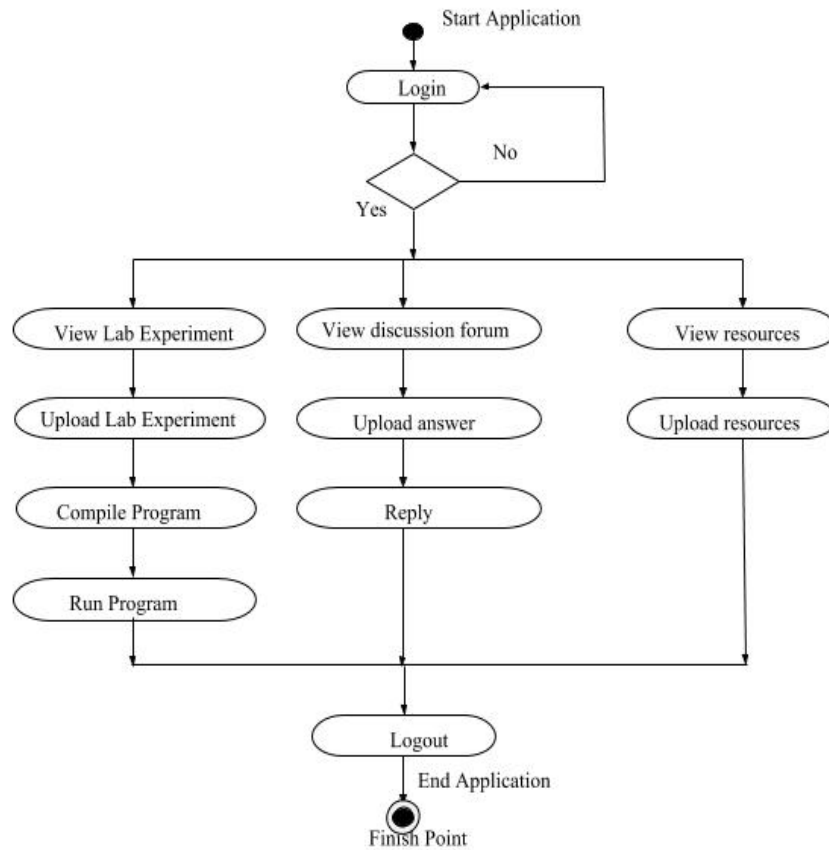


Fig 4.2 Activity Diagram of Instructor

The functions of the Instructor are:

1. Authentication
2. Access Control
3. Access details of an experiment and tutorials
4. Discuss on forum
5. Use software tools like compiler for programming languages.
6. Upload tutorials and details about experiment
7. View research papers

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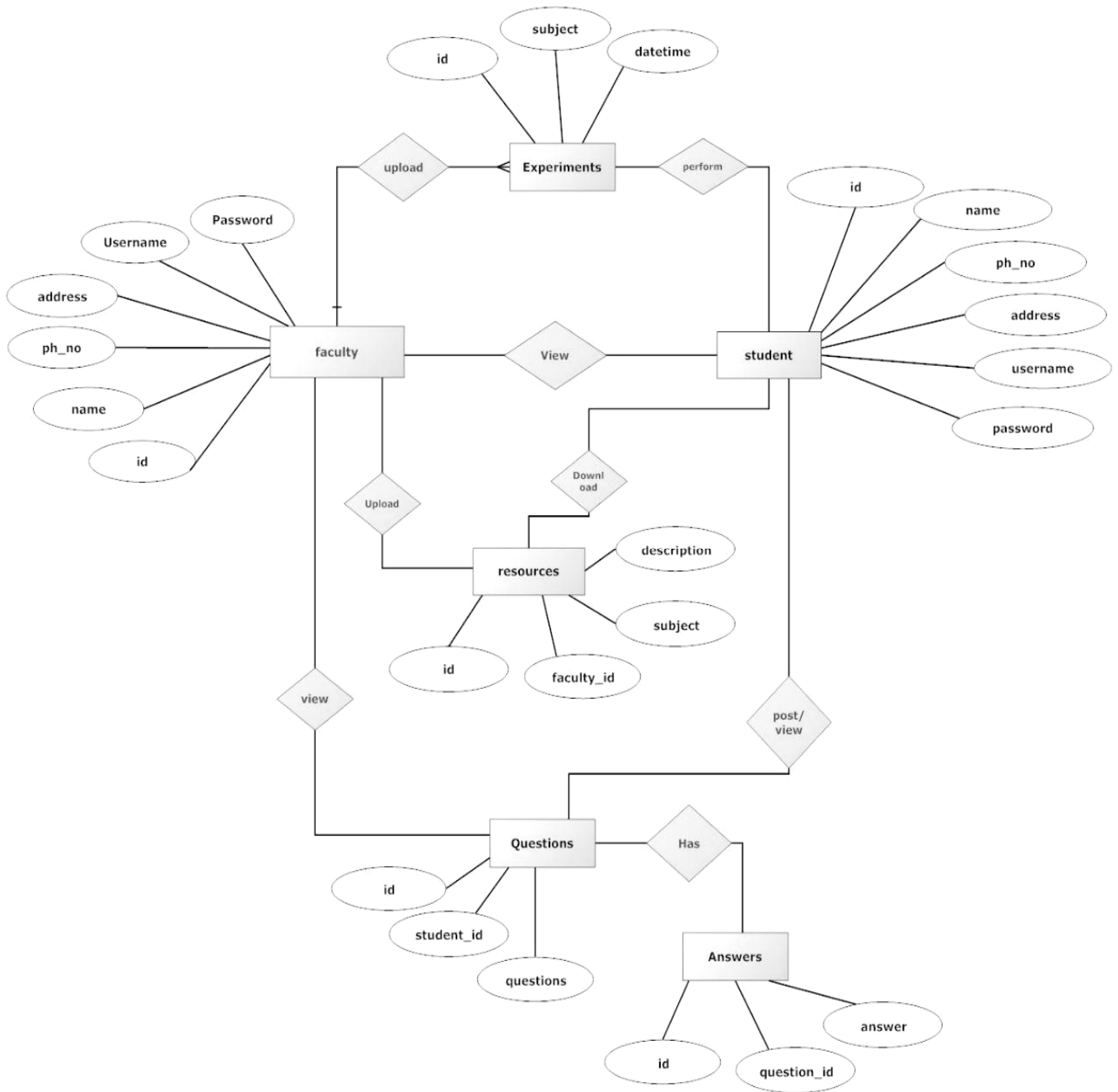


Fig 4.3 Entity Relationship Diagram

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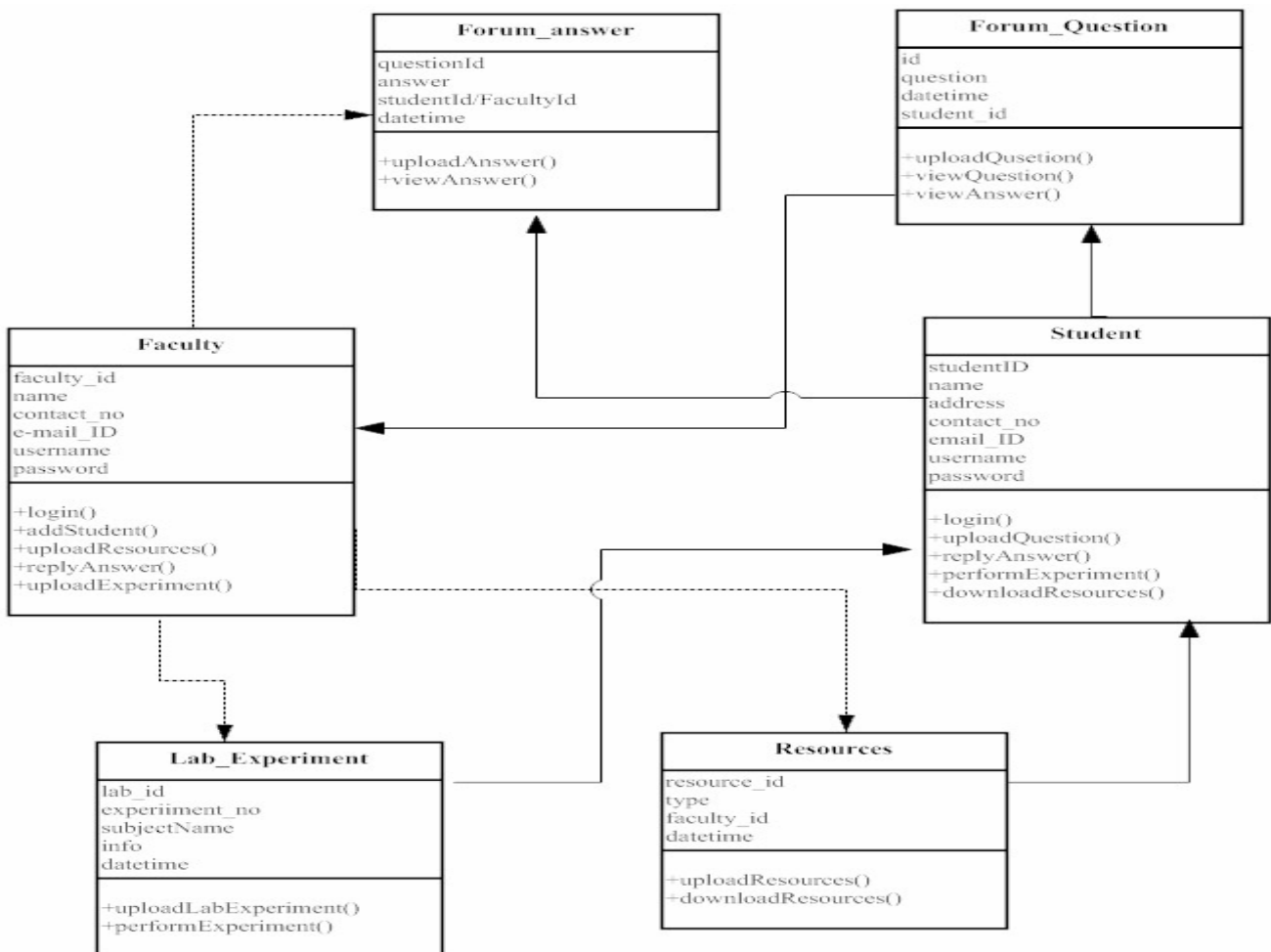


Fig 4.4 Class Diagram

We are implementing a 3-tier architecture, with supporting softwares such as Microsoft’s Visual Studio and Server. With a browser to access the system. While the hardware components will be comprising of an open source based access server at the core layer

V. CONCLUSION AND FUTURE WORK

The system proposed is the execution of Lab which is to be implemented as part of a scalable initiative to incorporate mobile computing throughout the curriculum. The lab was intended to improve student’s access to school computing resources and provide a reliable and standardized software and hardware environment. This decreases the aggregate number of hardware required thus lessens the cost to maintain and energy. The system guarantees labs in the areas of security, administration. For testing on the developed beta stage software,



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