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Measurable, Safe and Secure Data Management for Sensitive User in Cloud Computing

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Abstract:
Several Universities have adopted the paper based system where the students have to submit their work in the paper only during the specific office hours. Even though this was effective at the beginning, this paper based system faced a lot of problems as the number of students started increasingly. Marketing of the students work has become very difficult to the supervisors in this paper based system. To solve this problem online project assessment system is uploaded in cloud computing servers with attribute based algorithms. This online project assessment will not only be useful to the student and the supervisor but also will be useful for the administrator as the maintenance of the system is very easy and also flexible. This online project assessment system will also be very scalable and therefore a new student can be added very easily.

Keyword:
cloud computing, attribute based access rights, Secure Computing.

Introduction:
Many Universities are still using paper based method for their students to submit their assignment and their project. In this paper based system the students will make a paper copy of their work and they will submit it before the deadline in the concerned department. This process of paper based submission takes a lot of time for the students and also for the supervisors to mark them. The process of assessment submission, feedback process will be fastened when these assignments are submitted online. In this online submission the assignments will be submitted in the electronic format and the various feedback methods will be used to provide the feedback through online itself. Various tools are present in the market to provide the online submission facilities however the selection of the best tool will provide various benefits to the online submission of the assessments. This online submission will help the students to submit their work to their tutors with the help of the internet.

Objectives:
* To investigate the alternative solutions for online submission without any time delay and duplicated work.
* To design and develop a web based application to facilitate the students project work and assignments submission online without duplication of data.
* To explore the possible software application methodology to attain the requirement specification of the concept.
* To examine the application utility with user interaction i.e student assignment submission and university verification and marking with relevant comments.
* To compare the performance of the application functionality according to the functional requirements of the concept.

Proposed Solution:
As the number of students is increasing the supervisor will face problem in marking their assessments if it is a paper based submission. To overcome this, an efficient project assessment system like online submissions system is need which can solve this problem. Both the students and the supervisor can feel it easy in working with this system. The time required for submitting the assessment will be less and the time required for marking the student assessment will also be less. The developed online project assessment system will also be reliable, scalable, flexible, and efficient to all its users. This online project assessment system website will be having three users namely
* Admin
* Supervisor
* Students

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Based on each user there will be given certain roles and responsibilities. The student will have the chance to upload his work and can also check his result. The supervisor will be having the chance to view the submitted work of the student and also to give the feedback to the student work. The administrator on the other hand will be having the right to add the students and the supervisor. The administrator will allocate a certain number of students to a supervisor and he will also be having the rights to manage all the users present in the project assessment system. The admin must act as the main person who is responsible for maintaining the other users of the online project assessment system. The admin should assign the access rights to view his own work submitted to the guide. And also restrict him to access other works submitted to the guide. The supervisor should check the assessments that are submitted by the students and must mark those works. The student on the other hand should be capable of submitting their work and check his result. In addition to all these requirements the administrator is required to instruct the supervisor to mark the assessments of the students by sending those emails. This proposed system will be developed with the help of visual studio .net and sql server 2008.

Literature Survey:
Online college portals:

Universities are rich with large number of students. The assignment, projects, dissertation reports submission in a specific date and time is become very difficult for the administrative staff as well as to the students also -ict support [2011].The article from Center for Teaching Excellence[2009] describes the specific web applications developed for online learning have attained the goal of formative and summative assessment of the students and their learning capabilities. The online web application for learning has developed to achieve the formative3 assessment techniques online concept mapping with the inbuilt tool. The concept mapping has been developed from the ability to draw reasonable inferences from observations, synthesize and integrate information and ideas and learning concepts and theories in the subject area.

Attribute Based Access Rights:

Susan Hohenberger (2014) described the attribute is a term used in database. The attribute can be distinguished as the schema of the database. It may be a column or row of the table.

Attribute based concepts are generally used in the data mining concepts. When the data is huge and searching time is remarkably high, this attribute based concepts can be used.

Online Security:

Richard N. Katz and Associates [2011] states that online security is one of the most important aspects for the university portals.Portals are basically divided into three types. These are vertical portal horizontal portals and University Enterprise portals. Portals are basically interactive.

HTML Injection:

HTML Injection is an attack for web based applications. This is normally affecting different web sites where security loop holes are there. This will be called as Hypertext Markup Language injection. –Microsoft Corporation has identified thatthis is sometimes called virtual defacement attack.

PRIVACY ISSUES AND CHALLENGES:

The benefits extracted from cloud computing are dominating the other fields from 2008. The recent privacy issues and challenges found in the cloud computing have constructed the barrier to the exponential growth of cloud computingJaydipSen [2013].

Research methodology:

Methodology will guide the student to expertize the topics related to the research work. The relevant topics identification, exploration and research study will be possible through the methodology. The following research methods are followed to develop the research report. The present project is a web based application to facilitate the students to upload the submissions of their academic fulfillment within the prescribed time. The present application development has been done on the basis of different knowledge material acquisition from different sources. The research work has been done by doing different research methods and interacting with the people and for knowledge exploration.

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Functional Requirements:

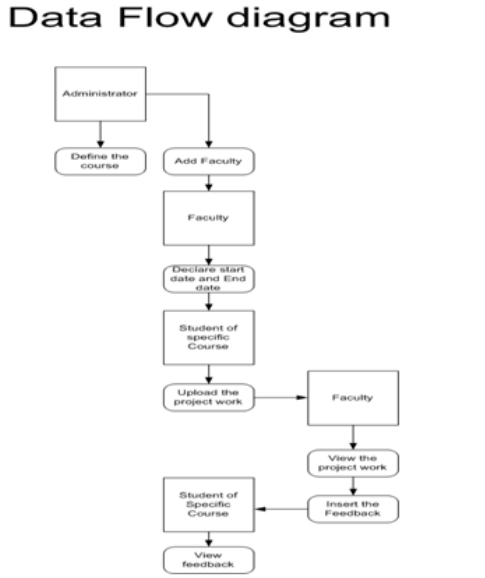
The functional requirements can be defined with the functionality of the project as well as the module description. The main modules of the project are

* Administrator
* The supervisor
* The user

Module Description:

Administrator: This module is designed to describe the details of the university programs. This module is responsible for defining the start and end dates of the assignments, dissertations and other academic programs. The supervisor: This module is designed to view the details of the assignments, dissertations and other academic works of the student. This module is designed to insert the feedback in the prescribed window of the module. The feedback will be sent to the student as well as it will be displayed against the students hall ticket no. The supervisor should be facilitated to write the feedback on the uploaded work and store it in the database. The feedback should also be displayed to the user.The user will be considered as student. Every student will be identified with the hall ticket no. The student will send the project work, assignment work or dissertation work to the university through the upload. The system will stop the duplicate uploads from the students. The user will have to view the status of the uploaded work. The user should be facilitated to view the details of the feedback of the project or uploaded work.

Design of the project:



Design Patterns:

Design patterns in .Net technologies are reusable solution to common software design problems - Christopher Alexander[2013].Design patterns will be used when a problem is encountered in any application again and again with specific context. Every pattern illustrates the specific problem and its solution in specific environment. Design patterns are used by the developers according to the design of the application. The design patterns will decide the class or object of the application programming. In this application the design patterns are defined and used in connecting the database with the user interface screens with the help of ADO.Net classes and statements.

The application is rich with 'N' tire architecture. The code written for attribute based access rights for each user is illustrated in C#.Net. The project is rich with creational design patterns, structural design patterns. The creational design pattern is used for connecting the user interface screens with the specific tables with factory method, abstract method and builder pattern. N tire architecture is configured with adapter design patterns and composite design patterns. In this system Behavioral design patterns are also used to illustrate the attribute based access rights. In this the chain of responsibility, interpreter, memento, observer and template method design patterns are used. ChristopherAlexander[2013]

Code behind the technique:

Code behind the technique is done with C#.Net and ADO.Net. In this project Stored procedures are used for well connectivity of the tables. The user interface screens are developed using ASP.Net and the tables are created in SQL Server 2005. To connect the tables with the relevant user interface screens ADO.Net classes and statements have been used. The attribute based access rights have been designed in C#.Net. The code behind the technique is predominantly used with the help of ADO.net and C#.Net to give full functionality of the project.

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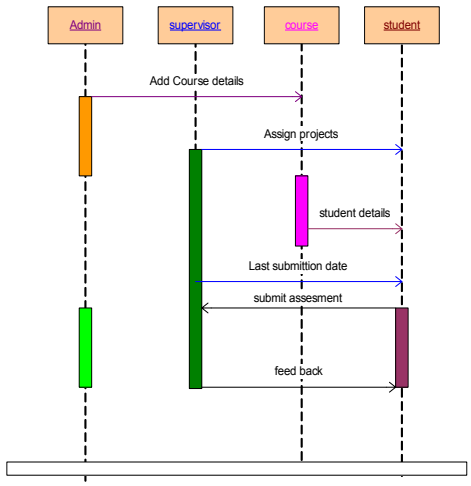
Sequence Diagram



TEST REPORTS:

The test cases mentioned above are properly executed and given pass results. The consolidated test results are said to be good and passed all the tests.

CONSOLIDATED TEST RESULTS:

The test cases are given by the test engineer and the test reports are generated as soon as all the test cases are executed positively the summary of the test reports are consolidated module wise. The consolidated test results have revealed that the project has been developed according to the goals and objectives of the project. All the test cases have been passed and the application is proven to be correct.

Critical Points :

The application should enable the administrator to give access rights to authorized faculty to define the assignments, projects and other academic works. The application should enable the faculty to define the assignments, projects and other works with date of submission.The application should fix the deadline for project submission The project submitted after submission data and time should not be allowed. The project work or assignment with the duplicate name should not be allowed. The system should compare the submitted work with the previous submitted works and check the duplication. The duplicated works should not be allowed to upload into the system. The feedback on the submitted projects should be viewed by the students.

Conclusion:

Safe and Secure Project assessment using attribute based access rights is a web based application. This application is designed and developed with proper security in ASP. Net and SQL Server technologies. The project is means for all universities which are facilitating the online submission of project work or any assignment work given to the students. The project has been designed and developed according to the software development life cycle model. The specific application development model used for this project is Rapid Application Development model. The database tables are designed and developed with relational database management system. The project is designed with appropriate security for uploading the files from student end and configured the attribute based access rights to the uploaded files to view and give feedback by the faculty members. The project facilitate the student to view the feedback on the submitted project file after submitting and approved by the faculty members. The project functionality is appropriate for online submission system to any university. The critical evaluation results have been tested and found the project is fulfilling the objectives of the project.

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