P-3241

QUALITY MANAGEMENT SYSTEM FOR ACADEMIC INSTITUTIONS

PROJECT REPORT

Submitted By

T.NAVEENA

Register No.: 0720300024

in partial fulfillment for the award of the degree

of

MASTER OF COMPUTER APPLICATIONS

in

COMPUTER APPLICATIONS

KUMARAGURU COLLEGE OF TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University, Coimbatore)

May, 2010

KUMARAGURU COLLEGE OF TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University, Coimbatore)

COIMBATORE – 641 006.

Department of Computer Applications

PROJECT WORK

MAY 2010

This is to certify that the project entitled

QUALITY MANAGEMENT SYSTEM FOR ACADEMIC INSTITUTIONS

is the bonafide record of project work done by

T.NAVEENA

Register No: 0720300024

of MCA (Computer Applications) during the year 2009-2010.

5/5/2010

Project Guide

Head of the Department

Submitted for the Project Viva-Voce examination held on 17/05/10

17/5/10

Internal Examiner

17/05/2010

External Examiner

DECLARATION

I affirm that the project work titled **QUALITY MANAGEMENT SYSTEM FOR ACADEMIC INSTITUTIONS** being submitted in partial fulfillment for the award of **MASTER OF COMPUTER APPLICATIONS** is the original work carried out by me. It has not formed the part of any other project work submitted for award of any degree or diploma, either in this or any other University.

(Signature of the Candidate)

T.Naveena

0720300024

I certify that the declaration made above by the candidate is true

Signature of the Guide,

V. Geetha, AP/MCA

With Name & Designation

Cognizant

This is to certify that **T Naveena,** a **MCA** student of **Kumaraguru College of Technology** has done project work in the company on Quality Management System for Academic Institution under the guidance of Prasanna Natarajan, as part of the college requirement, between the period January 2010 and April 2010.

Yours sincerely,

for **Cognizant Technology Solutions India Pvt. Ltd.,**

Sriram Iyer
Manager – Human Resources

I accept the terms and conditions of the offer as mentioned above.

Signature:
Date: 4|05|10

ABSTRACT

The project entitled "Quality Management System for academic institutions" describes about automation of accreditation process carried out by NBA (National Board of Accreditation), for recognition and guarantee of minimum quality. A process of giving credit for demonstrable strategies of academic activities and objectives of the institutions, with the potential for continuous improvement in quality for effective growth. This system was developed by ASP.NET as front end and SQL Server 2005 as back end.

This system helps an institution to evaluate itself, before accreditation process starts. The administrator is the person who maintains the criteria whenever it is updated by NBA. Criteria's formats are maintained in MS Excel and its total criterion weightage must not exceed 1000. Institutions and Evaluators can register as users of this system where each evaluator is assigned one or more number of institutions.

The registered institutions can login to register the courses to be evaluated. They can view the criteria and download it to fill up the information as per the guidelines provided. The information document can be uploaded for the corresponding criteria.

The registered evaluator can login to choose the institution and corresponding courses. They can view the uploaded file of the corresponding institution and analysis it to award marks. They can provide suggestions for each criterion for future enhancement. Any number of evaluators can evaluate an institutions and average of the marks provided by the evaluators for an institution is taken to evaluate their current position. Suggestions for each criterion by an evaluator for a particular institution can be viewed.

ACKNOWLEDGEMENT

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My unending gratitude must be conveyed to **Mrs.V.Geetha**, Assistant Professor, Department of Computer Applications, for her unrelenting help, support and advice with regards to my project work. Her perpetual hindsight greatly aided the speed with which I was able to produce this project and document.

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My everlasting gratitude to my **Parents and Sister** for their love and support.

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CHAPTER 1

INTRODUCTION

1.1 ORGANIZATION PROFILE

Cognizant is a U.S. based global IT services and business process outsourcing solutions provider headquartered in Teaneck, N.J. Cognizant was founded in 1994 as an IT development and maintenance services arm of The Dun & Bradstreet Corporation. The company was spun-off as an independent organization two years later. Since 1996, Cognizant has worked closely with large organizations to help them build stronger, more efficient, and more agile businesses. By emphasizing its strengths in close customer relationships, highly flexible operations, seamless global delivery culture, and deep knowledge of companies and markets, Cognizant helps its customers achieve better bottom-line results and delivers a better return on outsourcing.

Cognizant Technology Solutions (CTS) remains mindful of the state of your software. CTS provides application maintenance services, data warehousing, software development and integration, and reengineering services for legacy systems, primarily to medium-sized and large businesses. The majority of its sales are to customers in North America, including IMS Health, First Data, and ACNielsen. Most of the company's software development centers and employees are located in India, with others in the US. CTS serves clients in industries including financial services, health care, retail, and manufacturing.

Cognizant India has been successful in establishing vertical relationships with its business clients in different industries. Some of the important industries being catered to by Cognizant India are Banking and Financial Services, Healthcare, Information, Media and Entertainment, Life Insurance, Annuities and Retirement, Property and Casualty Insurance, Life Sciences, Manufacturing and Logistics, Retail and Hospitality, Technology, and Telecommunications. The main aim of Cognizant India is to deliver solutions even on the most complex business challenges of their client base.

1.2 PROBLEM DEFINITION

The Quality Management System for academic institutions is used to pre-evaluate an institution by renowned evaluators to improve the quality of the courses registered. The suggestions provided by evaluator can be viewed by institution for future enhancement of each criterion.

The project is categorized into the following modules:

- Admin Module
- Institution Module
- Evaluator Module
- Report Module

Admin Module

This module is used to define the functionalities of an administrator. The administrator is a person who performs operations such as Adding, Updating and Deleting Criteria. They also include formats and marks for each criterion. Institutions and Evaluators registration is also performed in this part, where admin creates dynamically a space for each institution to upload their information. Once institution and evaluators are registered, admin assigns one or more number of evaluators for an institution.

Institution Module

This module is used to manage the details of the Institution registered. It includes registering courses under Undergraduate, Postgraduate or Diploma for evaluation. The institution select a particular course and view the criteria along with available formats, guidelines for the chosen format and marks allocated. The file can be downloaded to fill information. The file can be uploaded to the corresponding criteria.

Evaluator Module

This module is used to define the role of evaluator in this system. The evaluator can login to choose the assigned college with corresponding course. The uploaded information of the institution can be viewed with allocated marks. The uploaded file can be downloaded for analysis and evaluated to provide marks. Once the marks are provided the information is submitted. The provided marks can be updated whenever necessary.

Report Module

This module is used to manage the entire reports take place in Quality Management System for academic institutions. Since any numbers of institutions are assigned to an evaluator and any number of evaluators can evaluate an institution, average of total marks provided by the evaluators for an institution is calculated. Final marks obtained for 1000 is obtained. Suggestion given by each evaluator for an institution for all the criteria's can also be viewed.

CHAPTER 2

SYSTEM ANALYSIS

Systems analysis is the study of systems, which include existing system, proposed system.

2.1 EXISTING SYSTEM

No such system exists early. But when analyzed the current existing process, the following problems exists. They are,

- Pre-evaluation technique was not carried out to evaluate quality.
- Maintenance of scattered data in paper.
- Data regarding human resources, teaching process, supplementary process are difficult to maintain.

2.2 PROPOSED SYSTEM

The benefits of proposed system are,

- Pre-evaluation technique (Financial statements, teaching process, human resources , utilization, allocation and various criteria are automated and given weightage) which helps to figure out the areas of improvement.
- Suggestions are provided for each criteria by any number of evaluators, so there is no chance to miss any analysis of data.
- Different dimension of suggestions helps to view data in different aspect.
- The required documents can be attached so that the information is not lost.

2.3 PROBLEM FORMULATION

2.3.1 Objective

The objective of the Quality Management System for academic institutions is to pre-evaluate an institution's specified course before it is evaluated by NBA directly.

2.4 FEASIBILITY ANALYSIS

Feasibility analysis is the measure of how beneficial or practical the development of an information system will be to the organization. Once the problem is explained, information is gathered about the system to test whether the system is viable Technically, Financially and Operationally.

2.4.1 Feasibility Considerations

The key considerations that are involved in the feasibility analysis are:

- Economic
- Technical
- Operational

2.4.1.1 Economic Feasibility

Economic feasibility is the measure of the cost-effectiveness of the proposed system. The investment to be made in the proposed system must prove a good investment to the organization by returning benefits equal to or exceeding the cost incurred in developing the system.

The proposed benefits of the system outweigh the cost to be incurred during the system development. The system does not require any special hardware facilities. The institution can register and can upload their information through online. Any changes can be made by administrator which involve less work may be once in six months. In addition capability of the system to incorporate future enhancements will improve the performance to suit the future needs of the user.

2.4.1.2 Technical Feasibility

Technical Feasibility is the measure of the measure of practicality of a specific technical solution and the availability of technical resources and expertise. It centers on the existing computer system (hardware, software, etc.) and to what extent it can support the new addition.

The system is developed using ASP.NET and SQL SERVER 2005 as back end. The GUI is developed using ASP. The business logic is implemented using .NET. The main component used in this system is the TreeViewControl, which is used to develop hierarchical structures.

2.4.1.3 Operational Feasibility

The resources that are required to implement are already with the institution. Only registration of institutions and evaluators are necessary. The administrator will assign course and institution to the evaluators. Once assigned the institution can upload their information before original review. The registered evaluators will evaluate the uploaded information of the assigned institution and provide information for future improvement of quality.

CHAPTER 3

SYSTEM REQUIREMENTS

To be used efficiently, all computer software needs certain hardware components or other software resources to be present on a computer. These pre-requisites are known as (computer) system requirements.

3.1 HARDWARE SPECIFICATION

To develop the project titled "Quality Management System for academic institutions" the following hardware specification is used.

Processor	INTEL Core2 Duo
CPU Speed	2 GHz
Hard Disk	250 GB
Monitor	DELL Inspiron 1545
RAM	2 GB

3.2 SOFTWARE SPECIFICATION

To develop the project titled "Quality Management System for academic institutions" the following software specification is used.

Operating System	Microsoft Windows XP Professional
Front End	ASP.NET
Server	Default ASP.NET Server
Back End	SQL Server 2005
Development Tool	Visual Studio 2005

3.3 SOFTWARE DESCRIPTION

ASP.NET

ASP.NET was developed in direct response to the problems that developers had with classic ASP. Since ASP is in such wide use, however, Microsoft ensured that ASP scripts execute without modification on a machine with the .NET Framework (the ASP engine, ASP.DLL, is not modified when installing the .NET Framework). Thus, IIS can house both ASP and ASP.NET scripts on the same machine.

Advantages of ASP.NET:

Separation of Code from HTML

To make a clean sweep, with ASP.NET you have the ability to completely separate layout and business logic. This makes it much easier for teams of programmers and designers to collaborate efficiently. This makes it much easier for teams of programmers and designers to collaborate efficiently.

Support for compiled language

Developer can use VB.NET and access features such as strong typing and object-oriented programming. Using compiled languages also means that ASP.NET pages do not suffer the performance penalties associated with interpreted code. ASP.NET pages are precompiled to byte-code and Just In Time (JIT) compiled when first requested. Subsequent requests are directed to the fully compiled code, which is cached until the source changes.

Use services provided by the .NET Framework

The .NET Framework provides class libraries that can be used by your application. Some of the key classes help you with input/output, access to operating system services, data access, or even debugging. We will go into more detail on some of them in this module.

Graphical Development Environment

Visual Studio .NET provides a very rich development environment for Web developers. You can drag and drop controls and set properties the way you do in Visual Basic 6. And you have full IntelliSense support, not only for your code, but also for HTML and XML.

State management

To refer to the problems mentioned before, ASP.NET provides solutions for session and application state management. State information can, for example, be kept in memory or stored in a database. It can be shared across Web farms, and state information can be recovered, even if the server fails or the connection breaks down.

Update files while the server is running!

Components of your application can be updated while the server is online and clients are connected. The Framework will use the new files as soon as they are copied to the application. Removed or old files that are still in use are kept in memory until the clients have finished.

XML-Based Configuration Files

Configuration settings in ASP.NET are stored in XML files that you can easily read and edit. You can also easily copy these to another server, along with the other files that comprise your application.

SQL SERVER 2005

SQL Server 2005 (codenamed Yukon), released in October 2005, is the successor to SQL Server 2000. It included native support for managing XML data, in addition to relational data. For this purpose, it defined an xml data type that could be used either as a data type in database columns or as literals in queries.; CLR Integration was the main features with this edition where one could write SQL code as Managed Code these are those code which are being executed by CLR(Common Language Runtime).

SQL Server 2005 also allows a database server to be exposed over web services using TDS packets encapsulated within SOAP (protocol) requests. When the data is accessed over web services, results are returned as XML. Data pages are check summed for better error resiliency, and optimistic concurrency support has been added for better performance. Permissions and access control have been made more granular and the query processor handles concurrent execution of queries in a more efficient way. Partitions on tables and indexes are supported natively, so scaling out a database onto a cluster is easier. SQL CLR was introduced with SQL Server 2005 to let it integrate with the .NET Framework.

CHAPTER 3

SYSTEM DESIGN

Systems design is the process or art of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements.

4.1 PROCESS MODEL

The process model is typically used in structured analysis and design methods.

4.1.1 USE CASE DIAGRAM

A use-case corresponds to a sequence of transactions, in which each transaction is invoked from outside the system (actors) and engages internal objects to interact with one another and with the system's surroundings.

Actors

This system will be used by the following actors:

1. Admin
2. Institution
3. Evaluator

All the above actors will able to login, logout and perform their activities.

EVALUATOR

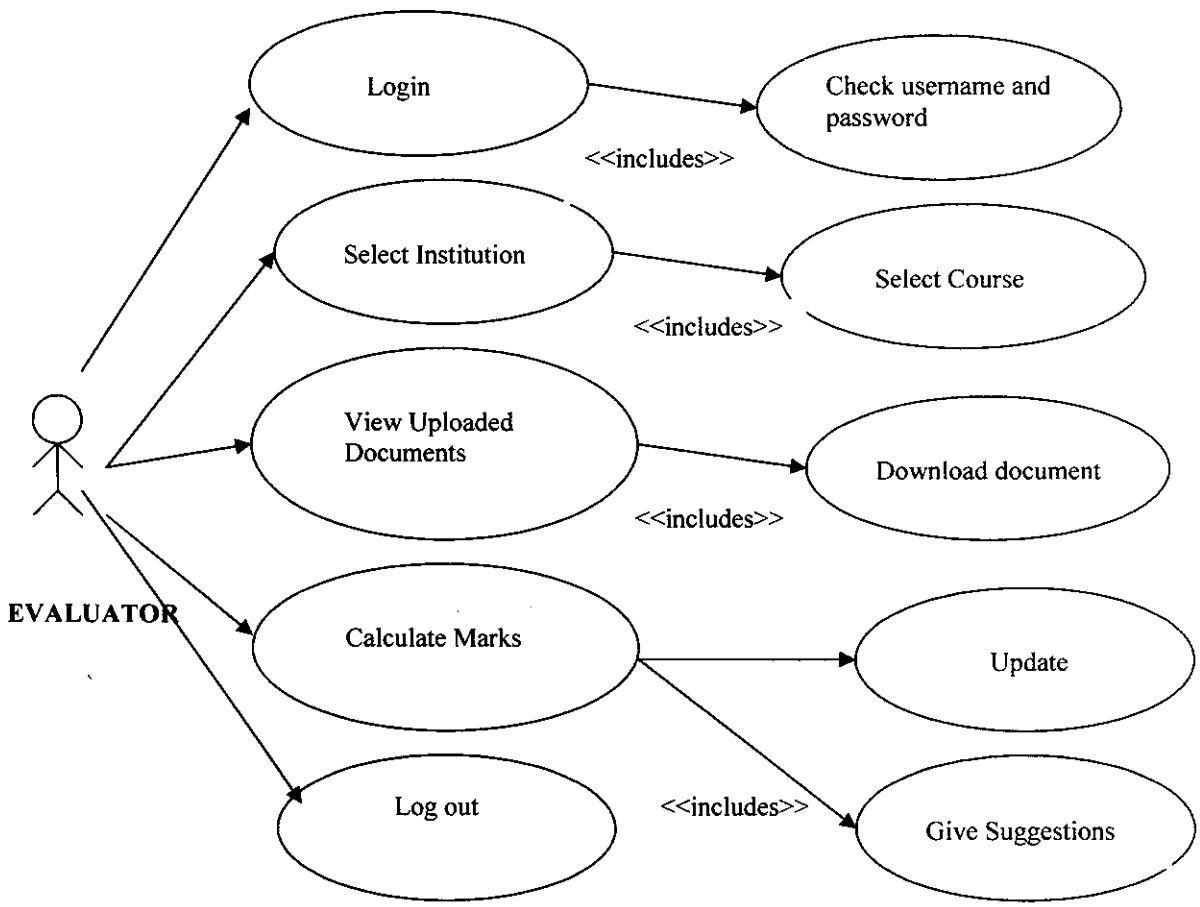

Figure A.1 : The Evaluator use-cases

ADMIN

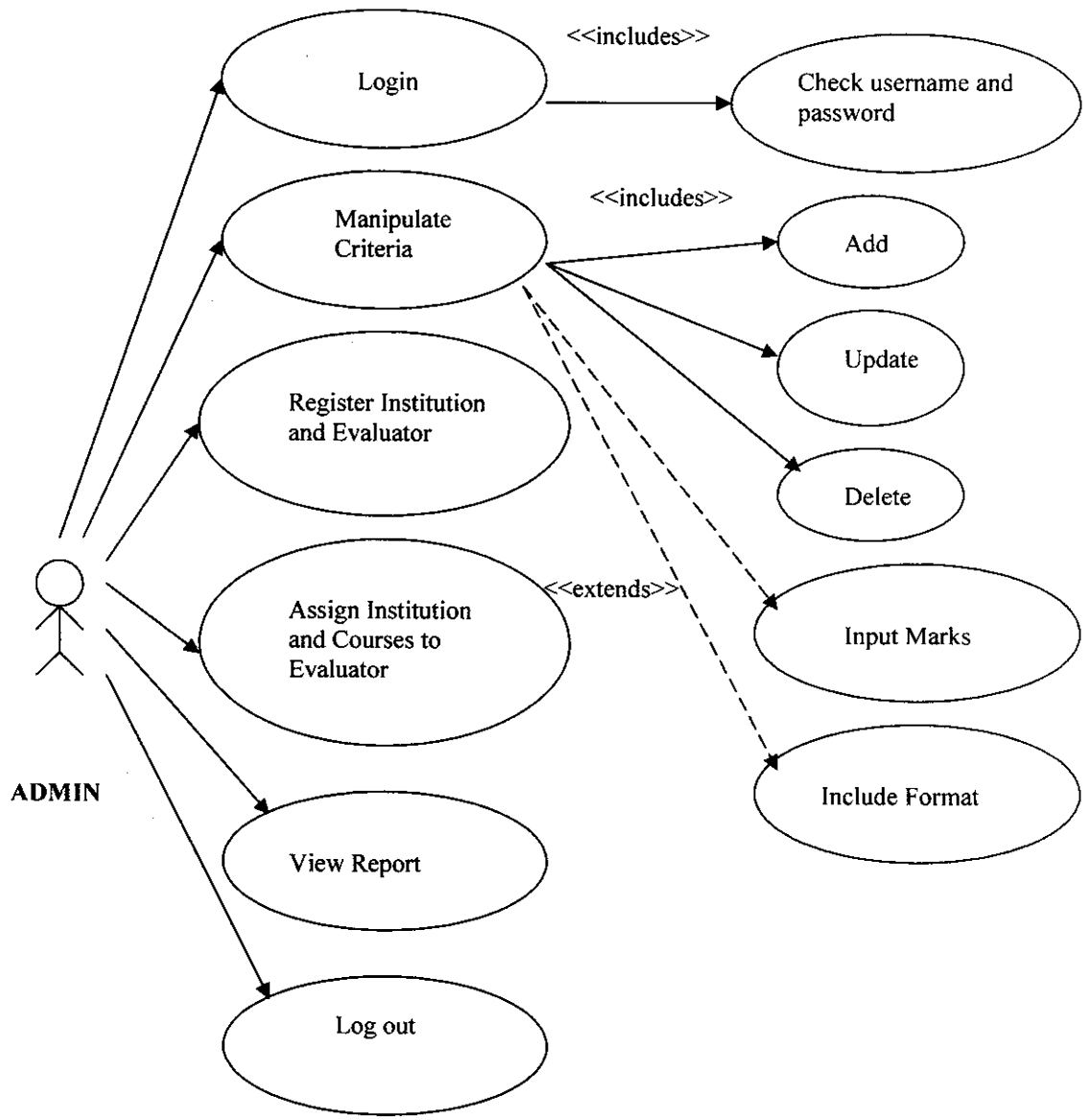

Figure A.2 : The Administrator use-cases

INSTITUTION

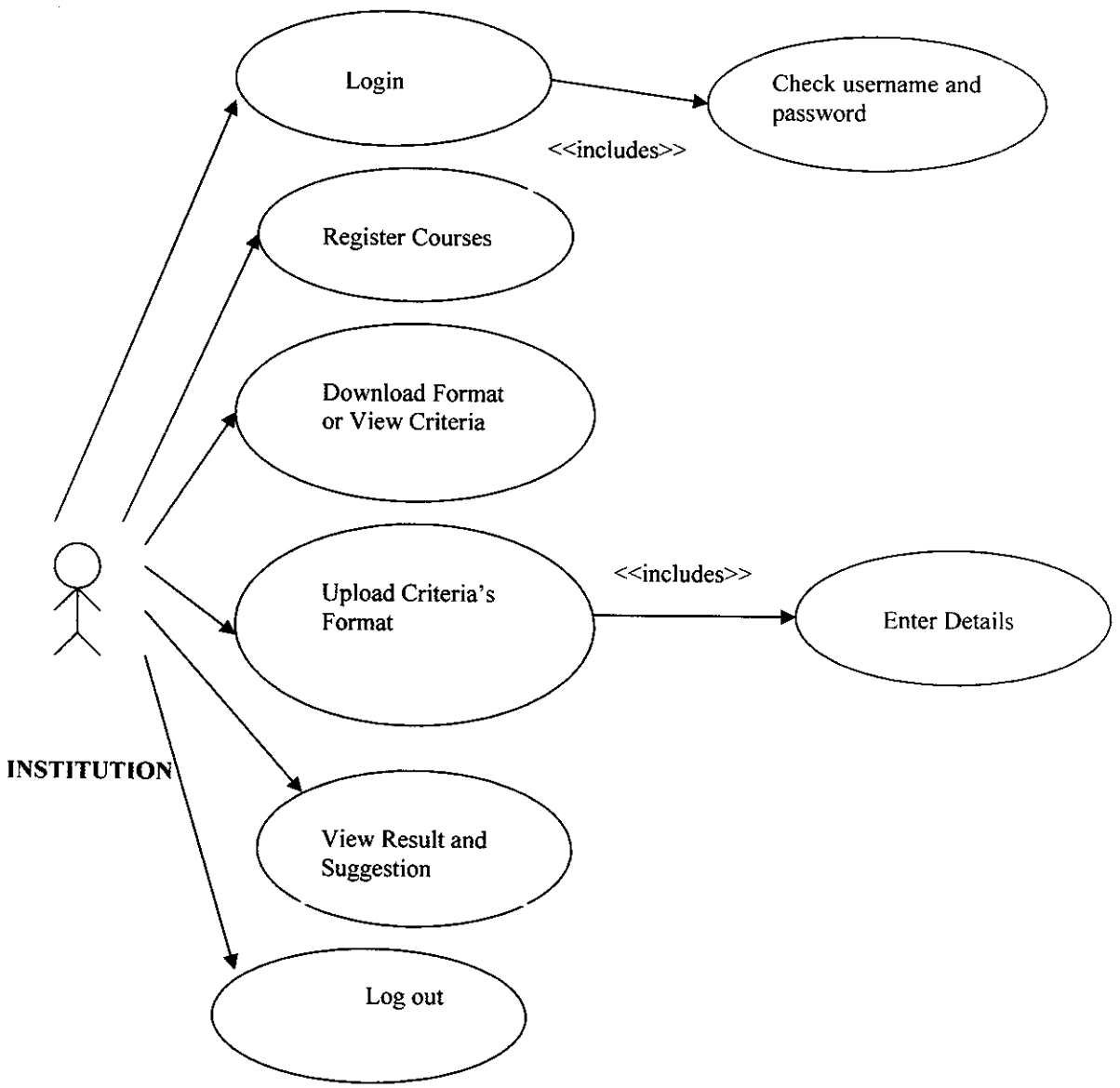

Figure A.3 : The Institution use-cases

4.2 DATABASE DESIGN

Database design is the process of producing a detailed data model of a database. This logical data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a Data Definition Language, which can then be used to create a database.The system will use SQL SERVER database for data storage.

4.2.1 Table Structure

The database design is as follows:

Table Name : Institution_Login

This table is used to store details about institution, which register for evaluation.

Attribute	Data Type	Size	Description
Institution_ID **(Primary Key)**	Integer		Auto increment unique key
Institution_UName	Varchar	Max	Username for the institution
Institution_Pwd	Varchar	50	Password for registration given to institution
Institution_Name	Varchar	Max	Name of the institution

Table 4.1

Table Name:- Report

This table is used to store details about the mark obtained for 1000 by an institution

Attribute	Data Type	Size	Description
College_Name	Varchar	Max	Name of the institution participated in evaluation
Marks_Obt	Integer		Final Marks obtained for 1000

Table 4.2

Table Name: Criteria

This table is used to store details about criteria needed for evaluation

Attribute	Data Type	Size	Description
ID **(Primary Key)**	Integer		Auto increment unique key
ParentID	Integer		It represents the parent id for which the child belongs to.
Criteria_Name	Varchar	Max	Name of the Criteria as suggested by NBA
Max_Marks	Integer		Maximum mark allocated for each criteria
Guidelines	Varchar	Max	Guidelines specified for each criteria and its format

Table 4.3

Table Name: Format

This table is used to store details about criteria's format

Attribute	Data Type	Size	Description
ID **(Primary Key)**	Integer		Auto increment unique key
Format_Name	Varchar	Max	Name of the format uploaded for each criteria
Format_Description	Varchar	Max	A short description about each uploaded format which can be used by institution to know about each format

Table 4.4

Table Name:- Course

This table is used to store details about courses registered by institutions.

Attribute	Data Type	Size	Description
ID **(Primary Key)**	Integer		Auto increment unique key
Parent_ID	Integer		It represents the parent id for which the child belongs to.
Institution_Name	Varchar	Max	Name of the institution that register this course for evaluation
Course_Name	Varchar	Max	Name of the course which comes under the categories (UG, PG , Diploma)

Table 4.5

Table Name:- AssignCourse

This table store details about assigned course and institutions to an evaluator

Attribute	Data Type	Size	Description
Evaluator_ID **(Foreign Key)**	Integer		The id of the chosen evaluator who has registered for evaluating institution
Institution_Name	Varchar	Max	Name of the Institution Registered for Evaluation
Course_Name	Varchar	Max	Name of the course to be evaluated by the evaluator for the registered institution
Evaluator_Name	Varchar	Max	Name of the Evaluator who is to be assigned courses and institutions for evaluations

Table 4.6

Table Name:- Evaluator_Result

This table is used to store details about the mark and suggestions provide by evaluators

Attribute	Data Type	Size	Description
Evaluator_Name	Varchar	Max	Name of the evaluator
Institution_Name	Varchar	Max	Name of the Institution Registered for Evaluation
Course_Name	Varchar	Max	Name of the course to be evaluated by the evaluator for the registered institution
Criteria_Name	Varchar	Max	Name of the criteria which is evaluated by the evaluator assigned
Marks_Awarded	Integer		Maximum mark awarded for each criteria against original mark
Suggestion	Varchar	Max	Suggestions proposed by evaluator for each criteria

Table 4.7

Table Name:- Evaluator_Login

This table is used to store details about evaluators, who register for evaluation

Attribute	Data Type	Size	Description
Evaluator_ID **(Primary Key)**	Integer		Auto increment unique key
Evaluator_UName	Varchar	Max	Username for the evaluator
Evaluator_Pwd	Varchar	50	Password given by evaluator for registration
Evaluator_Name	Varchar	Max	Name of the evaluator
Evaluator_Address	Varchar	Max	Address of location of evaluator

Table 4.8

CHAPTER 5

SYSTEM TESTING

System testing of software or hardware is testing conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements. Unit testing and Integration testing has been carried out.

5.1 TESTING METHODOLOGY

5.1.1 Unit Testing

In this project, we have tested each pair of modules before it could be integrated and packaged. Each module (Admin, Institution and Evaluator) ie., each form in this module has been tested for their functionality. Whether the CURD operation can be performed correctly by Administrator, whether the files can be correctly uploaded in their corresponding criteria by the institution and finally, whether evaluators can provide suggestions and marks for the uploaded criteria.

5.1.2 Integration Testing

The software is tested after all its modules are put together. The problem, of course, is "putting them together" that is interfacing. Data can be lost across when sub-functions are combined. So carefully integration testing is done. The flow must be such that the format uploaded by the administrator can be viewed by institution that is registered. And the uploaded information of the institution must be viewed by evaluator. The final marks for thousand and the suggestions for criteria's are viewed by both administrator and institution. This flow is tested through integration testing.

5.2 TEST PLAN

5.2.1 Test Environment

Testing will be done using a single web site and a minimum of two clients. The web site will be set up on a Windows machine using Asp.Net Default server with Visual Studio 2005. Clients will also be Windows machines with a web browser. Testing will be done on Internet Explorer browser.

5.2.2 Features to be tested

The following functional features will be tested:

- Admin, institution and evaluator login
- Add, update and delete criteria's
- Add and delete formats
- Add, update and delete marks
- View criteria
- Upload criteria
- View uploaded criteria and provide marks

Additionally testing will be done simultaneously from multiple clients to ensure that all data changes are done online.

5.3 TEST CASES

Use case	Test case	Expected result
Admin, institution and evaluator login	Log in as regular user with correct name and password	Institution can register course, view criteria with format, upload and view uploaded format Evaluator can view the assigned institution and course along with uploaded documents.
	Log in as regular user with incorrect name and password	An error message is displayed to enter correct format

	Log in as admin user with correct name and password	Admin can add , update and delete criteria , marks and format and finally can assign evaluator
Add, update and delete criteria's Precondition : admin user logged in Post condition : Add format and correct marks for added criteria	Add the criteria along with marks and guidelines correctly	Select the parent criteria under which the child criteria is added
	Add the criteria along with marks and guidelines in inappropriate location	An error message is displayed
	Update the criteria	The criteria to be updated are chosen. First correct the marks that is allocated to the criteria
	Deleting a Criteria	The sub criteria's are deleted first along with the format and finally the delete command works
Add and delete formats Precondition : admin user logged in	Upload the specified format for the criteria correctly	Choose the criteria for which the format is to be uploaded. View the uploaded file in the list
	Upload the specified format for the criteria incorrectly	The uploaded file will be in the list. If uploaded wrongly choose the criteria and the file wrongly uploaded and delete the files.
Add , update and delete marks	Added marks is displayed in the data grid correctly	Select the criteria and view all the sub criteria along with the marks Update the marks. The total marks of the parent criteria and the child criteria will be updated
	Check for total marks	If the total mark exceeds 1000. Error message is displayed. Check all the criteria's and its marks
View criteria	The institution can view the criteria	Select the criteria to view the

Precondition: Institution logged in Post Condition: Registration of course		guidelines Format's can be downloaded Format description can be viewed
	The institution can view the criteria	The specified criteria must be chosen to view their formats Click download button to download the specified format
Uploading criteria Precondition: Institution Logged in	The institution can upload the format for corresponding criteria	Download and fill the file before uploading Choose the criteria for which the file is to be uploaded. .
	If the uploaded format is incorrect	Choose the criteria Choose the "Click here to download the uploaded Documents" Select the "Select" button and click "Delete" button Upload the correct format
View uploaded criteria and provide marks Precondition: Evaluator logged in	The evaluator must choose the college and corresponding course assigned	Click continue. The uploaded format of the college and course chosen will be displayed along with maximum mark Download the format, analysis it, provide mark and suggestion and click submit
	The evaluator didn't chosen the college and course	Error message will be displayed. If marks entered wrongly the mark can be updated

CHAPTER 6

PERFORMANCE AND LIMITATIONS

This involves merits of the system, limitation and future enhancement of the system.

6.1 MERITS OF THE SYSTEM

The Quality Management System for academic institutions is the system that does not exist early. This system is newly developed to help all the institutions to pre-evaluate their institution and courses registered. It mainly focuses on improvement of quality through conducting pre-reviews.

The evaluators may be in any location. Well renowned evaluators, evaluate the uploaded information of the assigned institution. Since any number of evaluator's can analyze the information, the suggestion provided by them are concatenated and provided to the institution, which points out the improvements that must be carried out before original or manual review.

This system helps the institutions to find out their level before the original review by NBA. It helps each institution to rectify their mistakes and improve the quality of their institution.

6.2 LIMITATIONS OF THE SYSTEM

Quality Management System for academic institutions totally satisfies the user's needs. The only limitation is that the evaluators can evaluate the institution only once.

6.3 FUTURE ENHANCEMENTS

This system is developed newly to pre-evaluate the institutions by evaluators located in different institutions. In future, it can be extended such that the institution can upload information after making changes based on the suggestions provided by the evaluators. ie., the institution can apply for re-evaluation after making changes and find out their positions. This system can also be extended to cover all the courses of the institution country-wide.

APPENDICES

SCREEN SHOTS

Home page

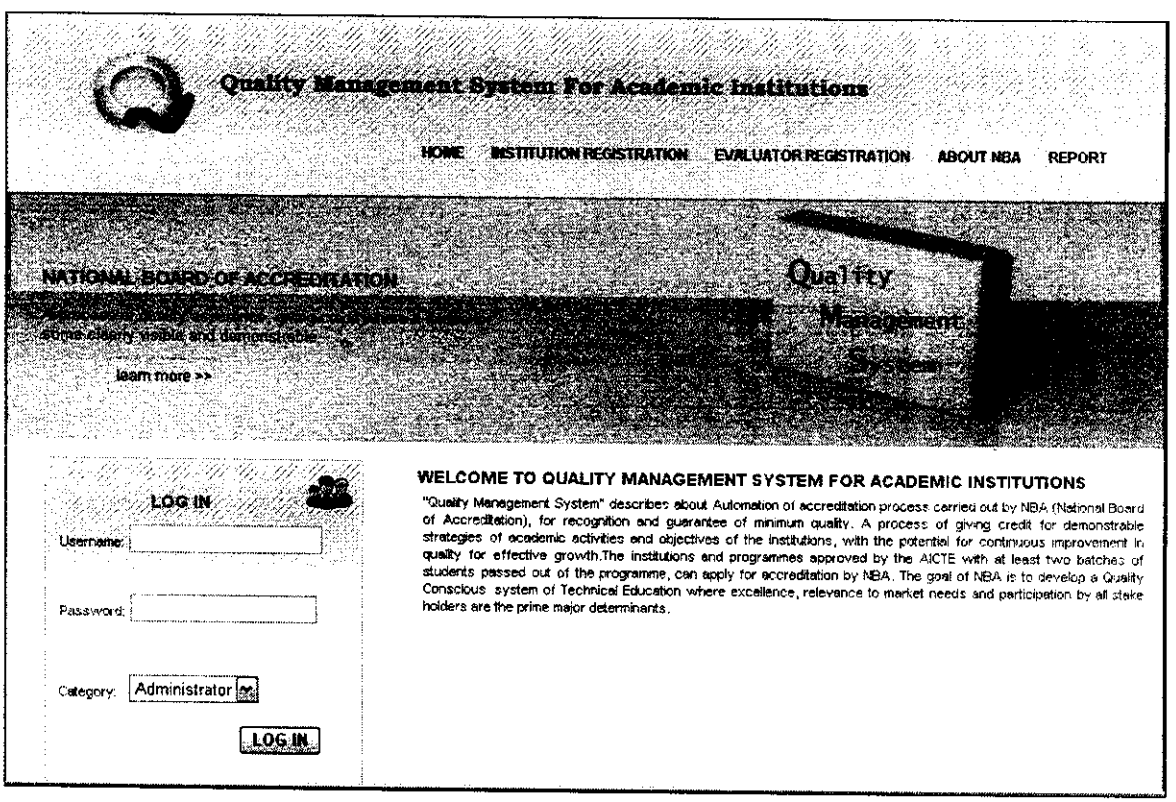

Figure A.4

Institution registration

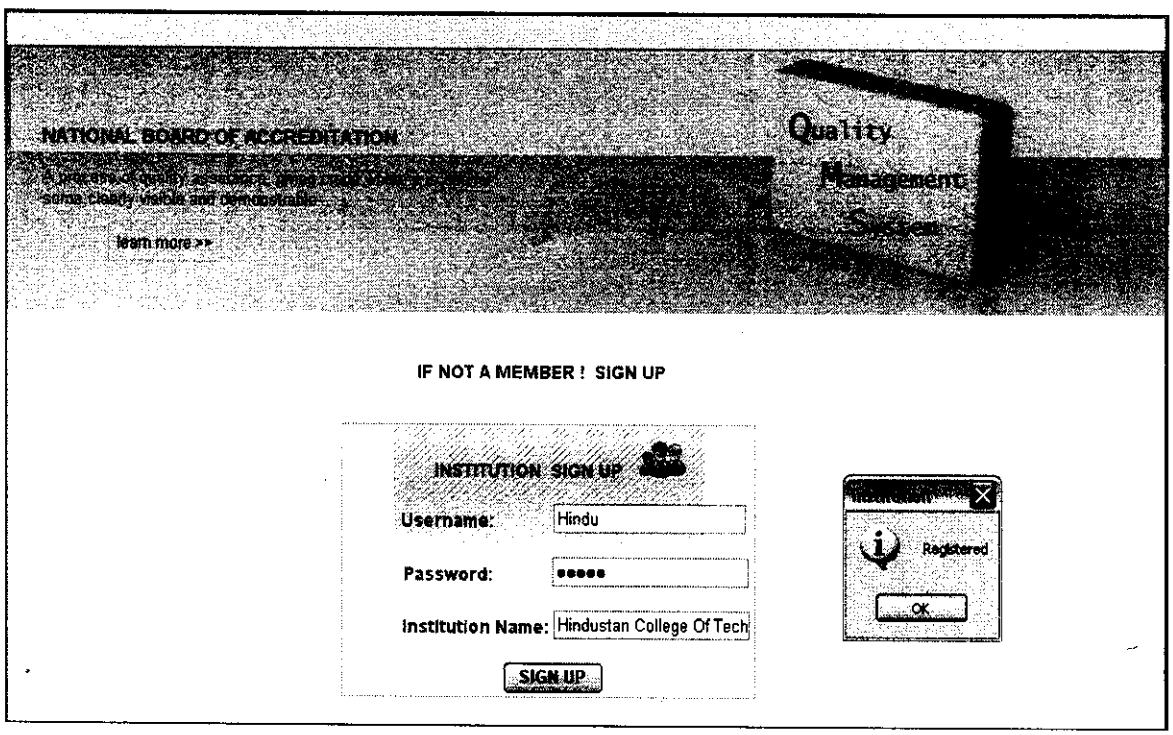

Figure A.5

Criteria page

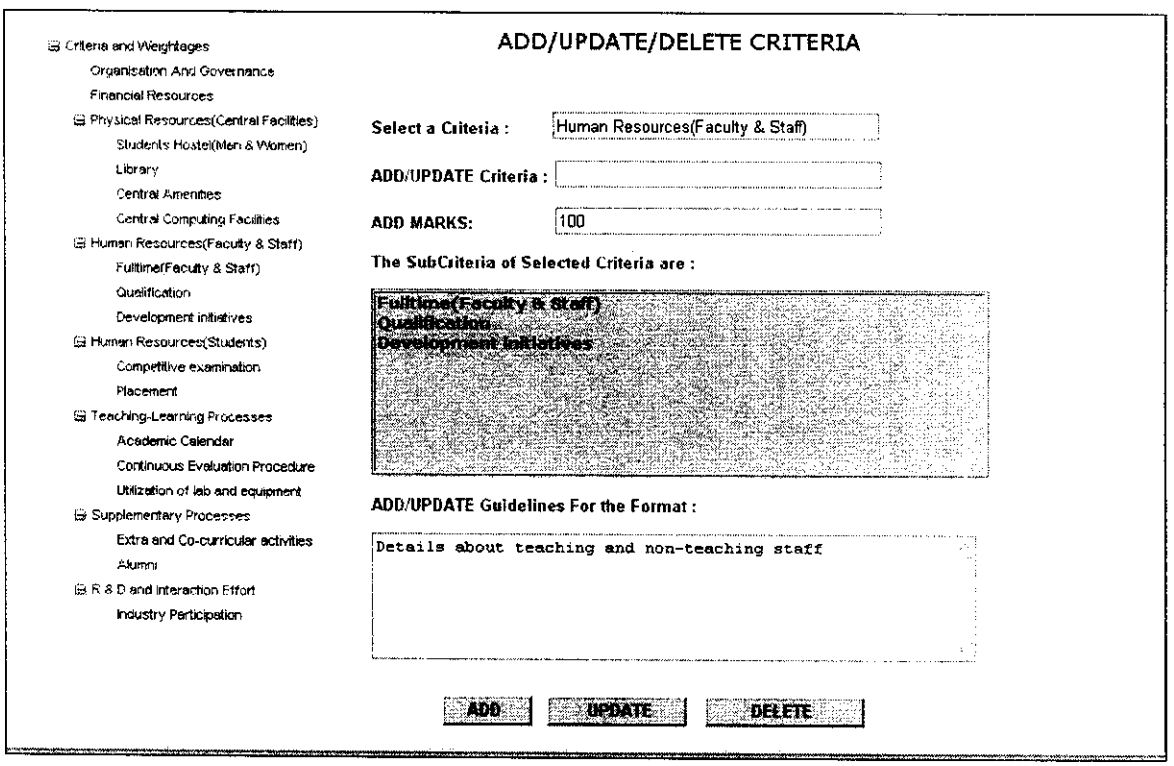

Figure A.6

Format page

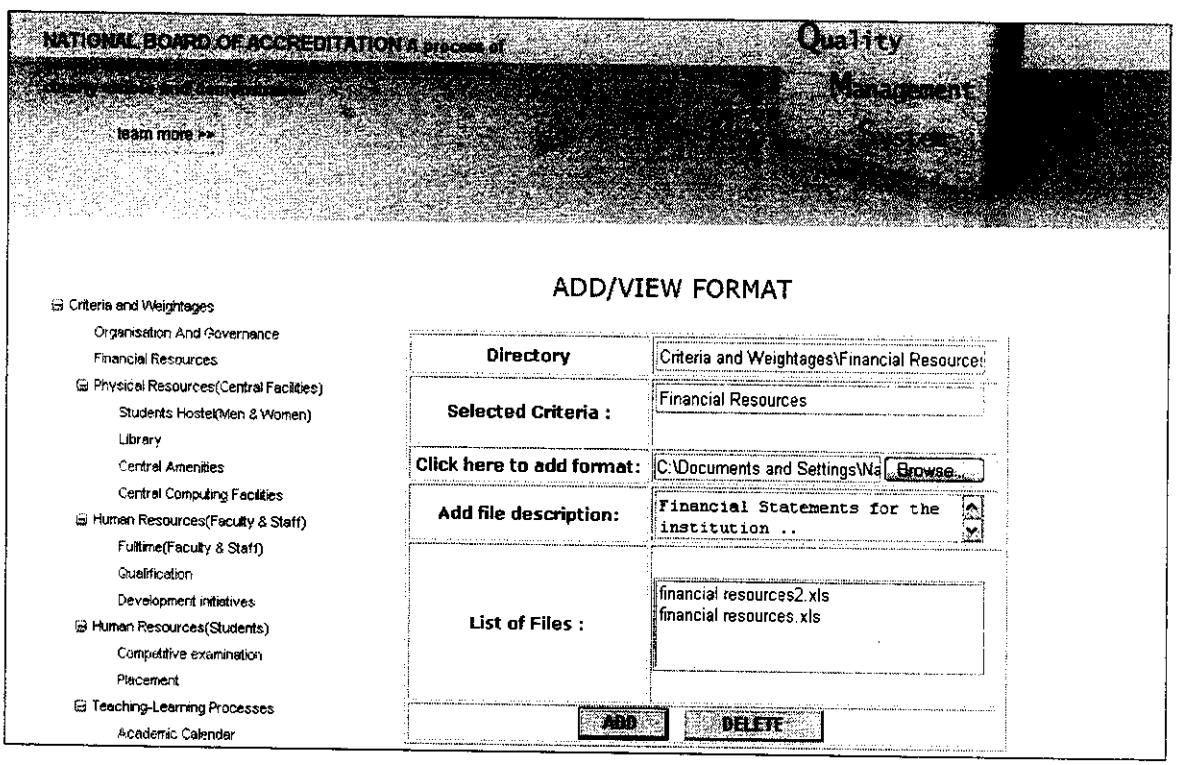

Figure A.7

Marks allocation

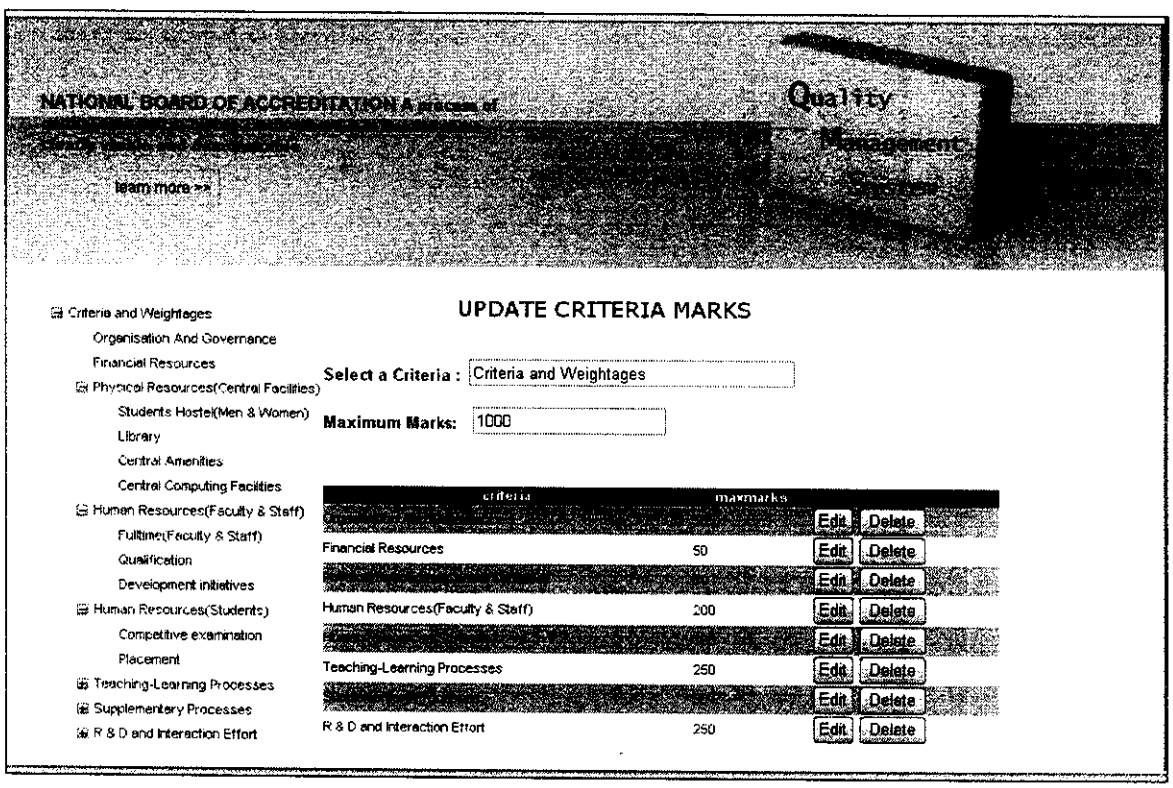

Figure A.8

Assign course to evaluator

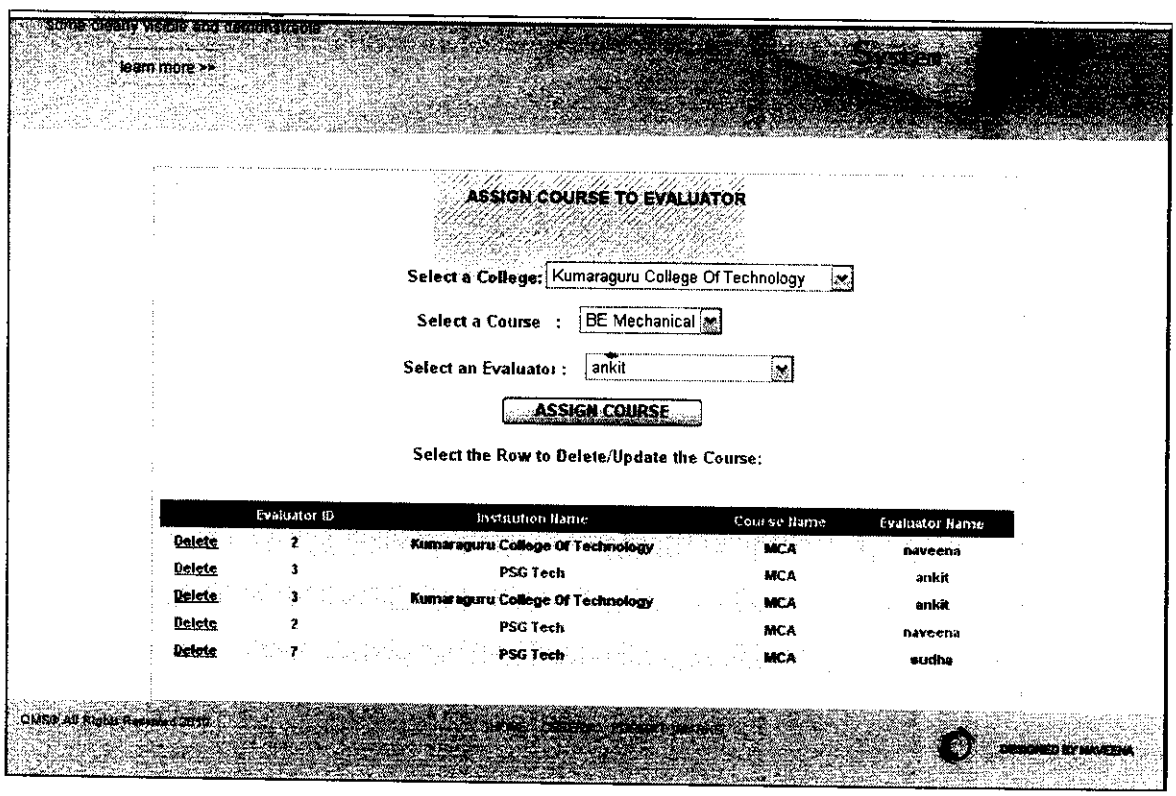

Figure A.9

Course registration

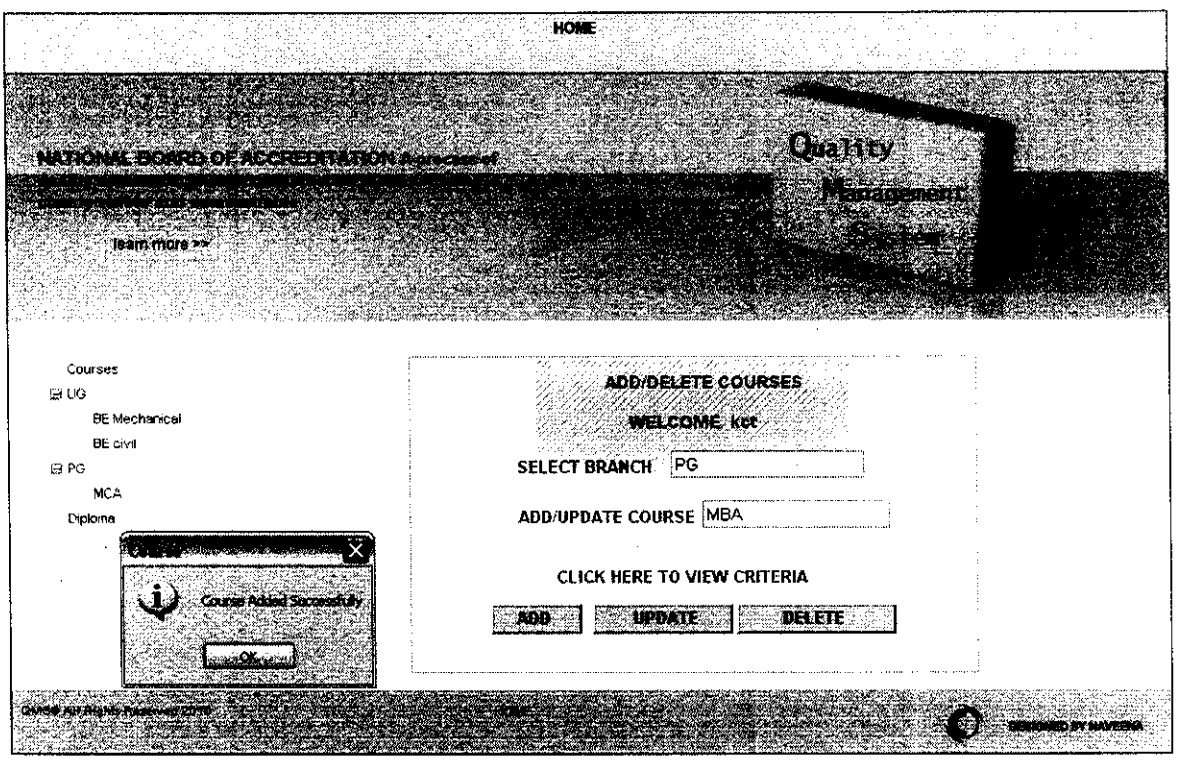

Figure A.10

View criteria with guidelines and format

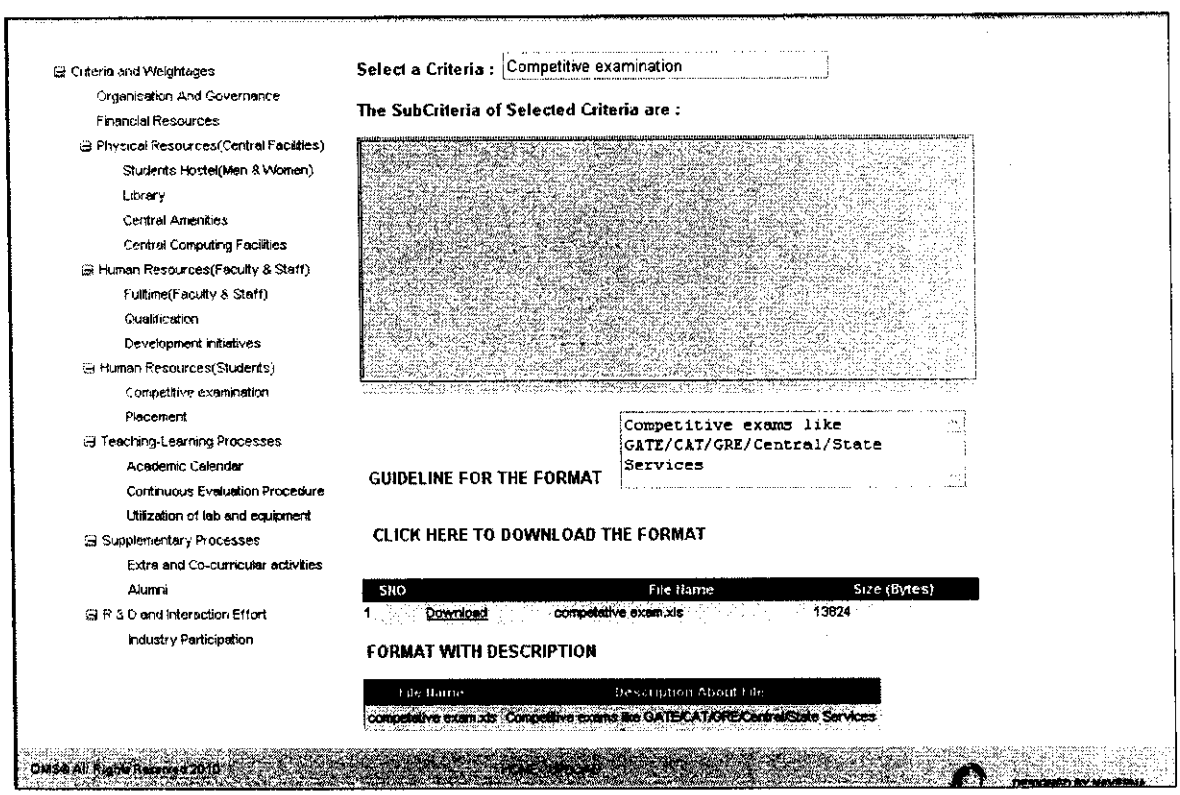

Figure A.11

Downloading format

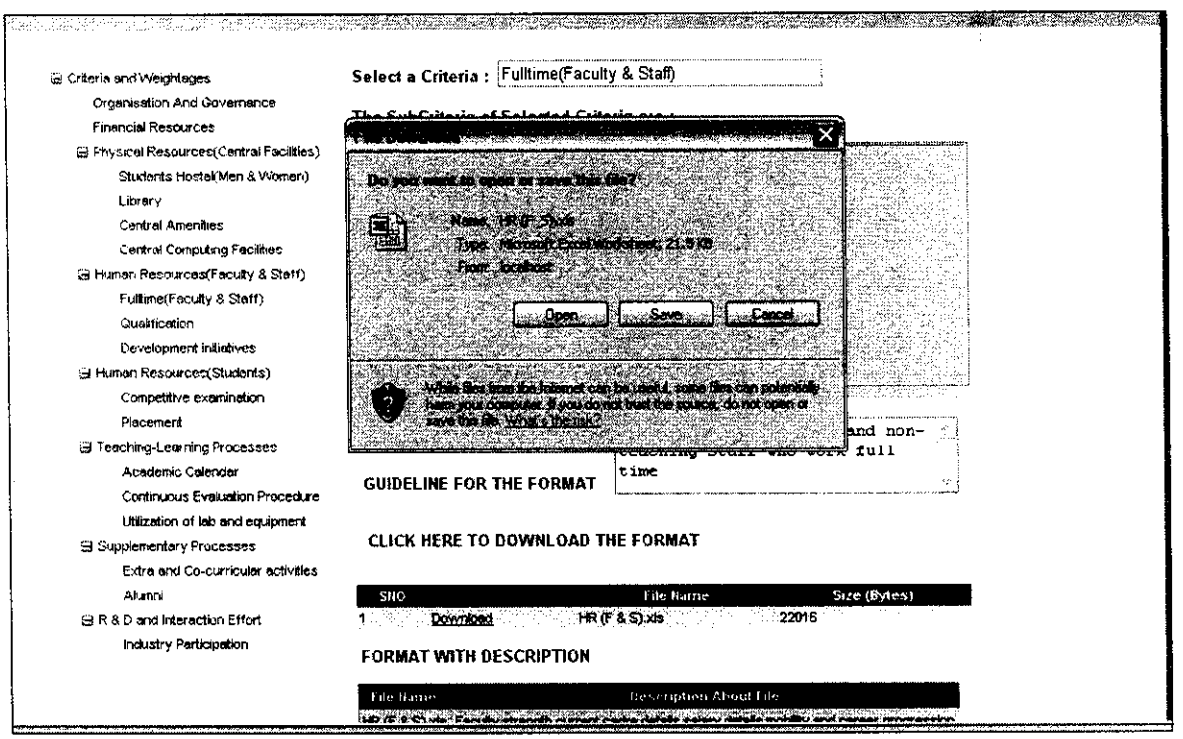

Figure A.12

Uploading document

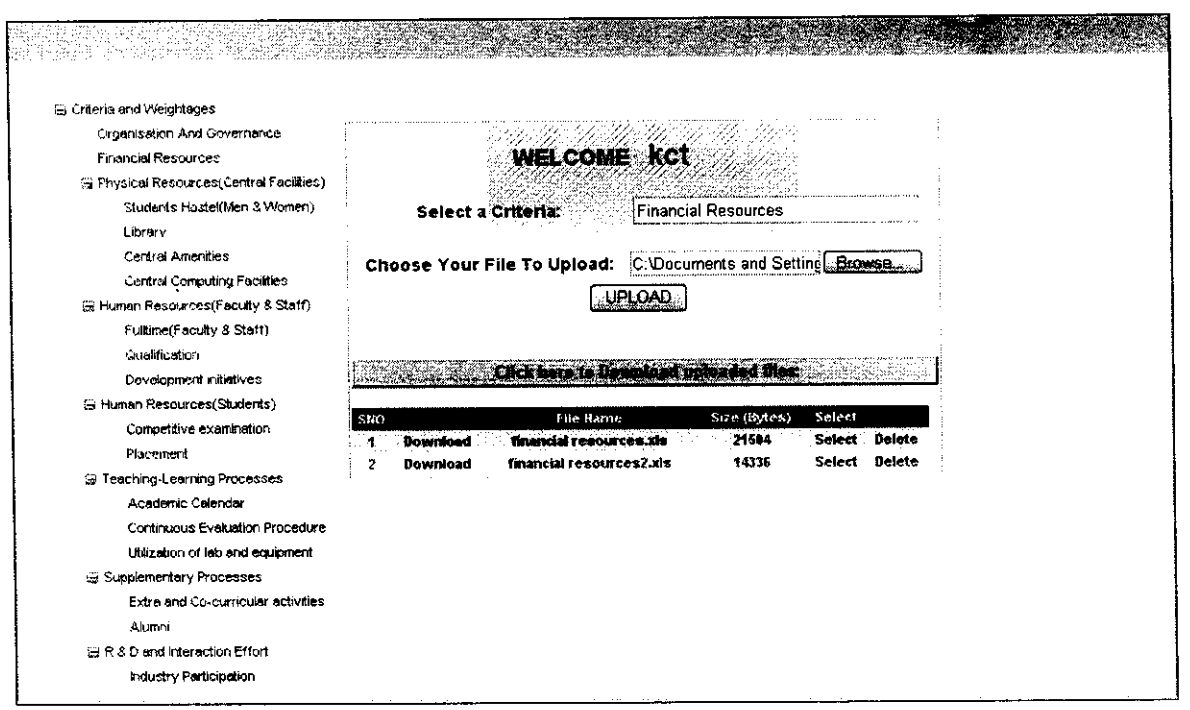

Figure A.13

Evaluator home page

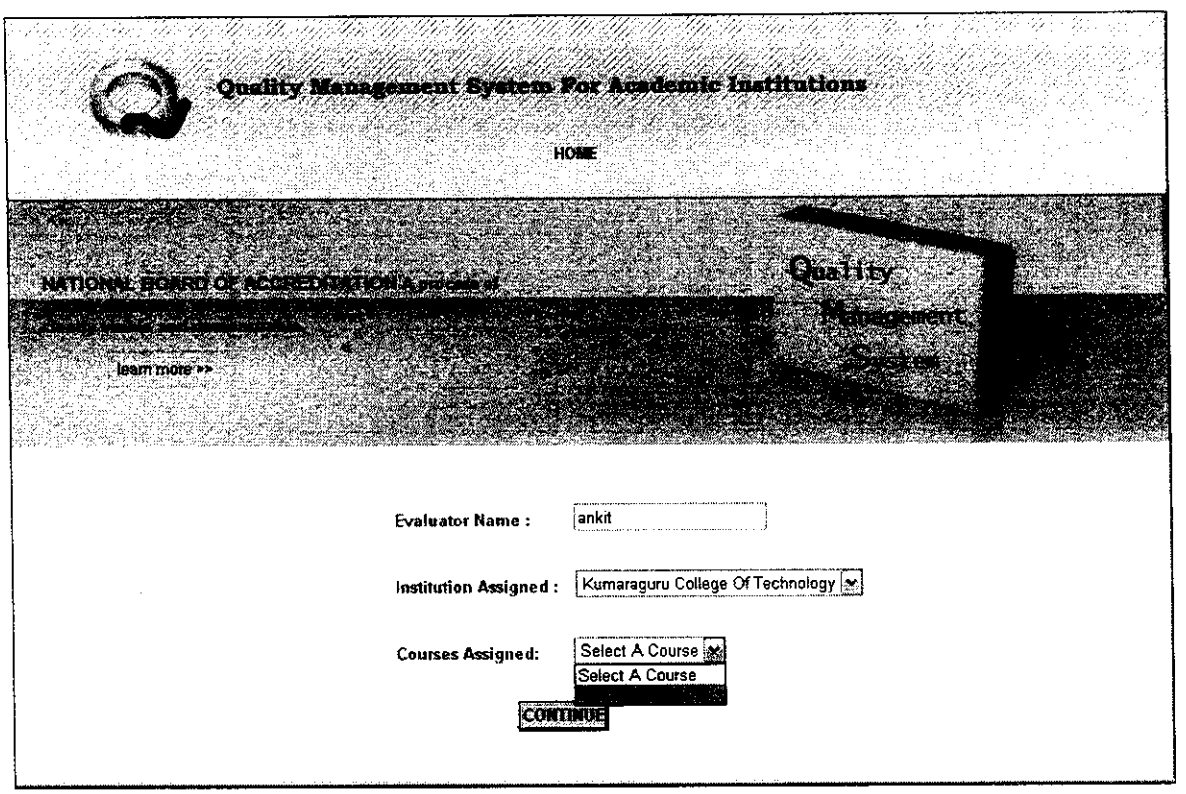

Figure A.14

Marks allocated to uploaded documents

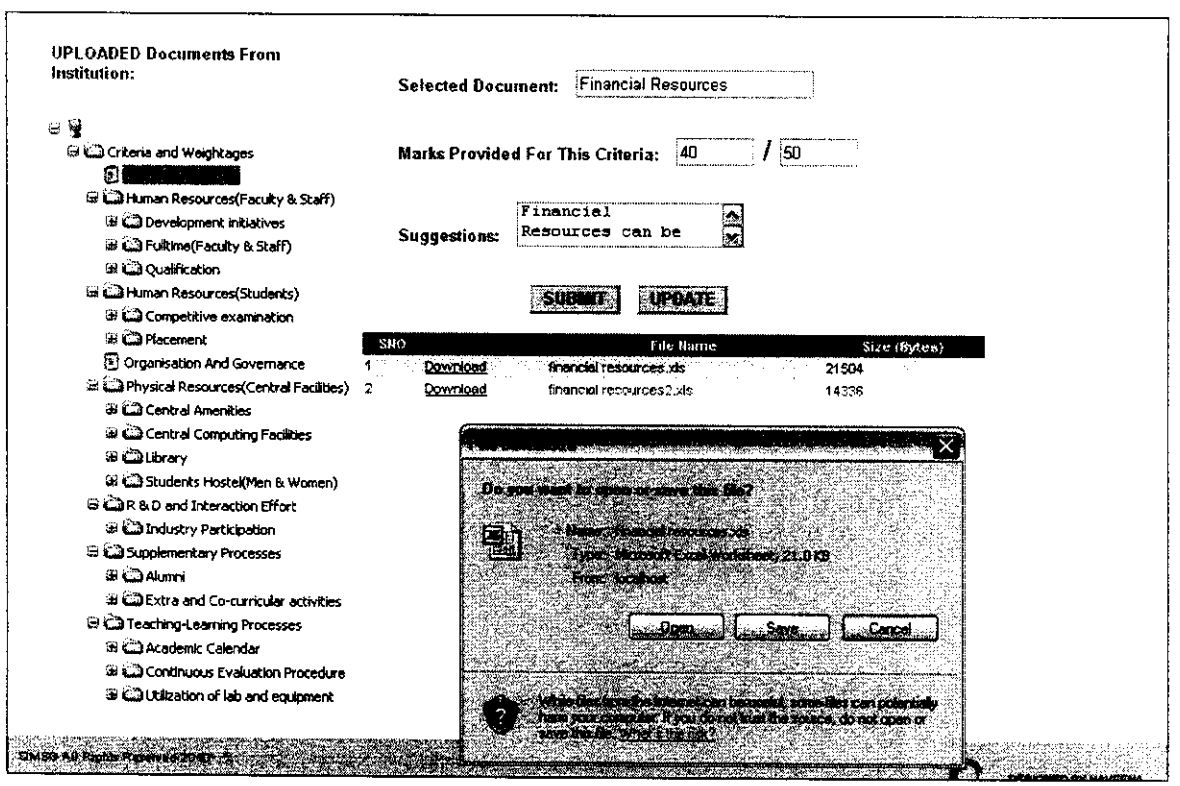

Figure A.15

Report to view each institution result and suggestions

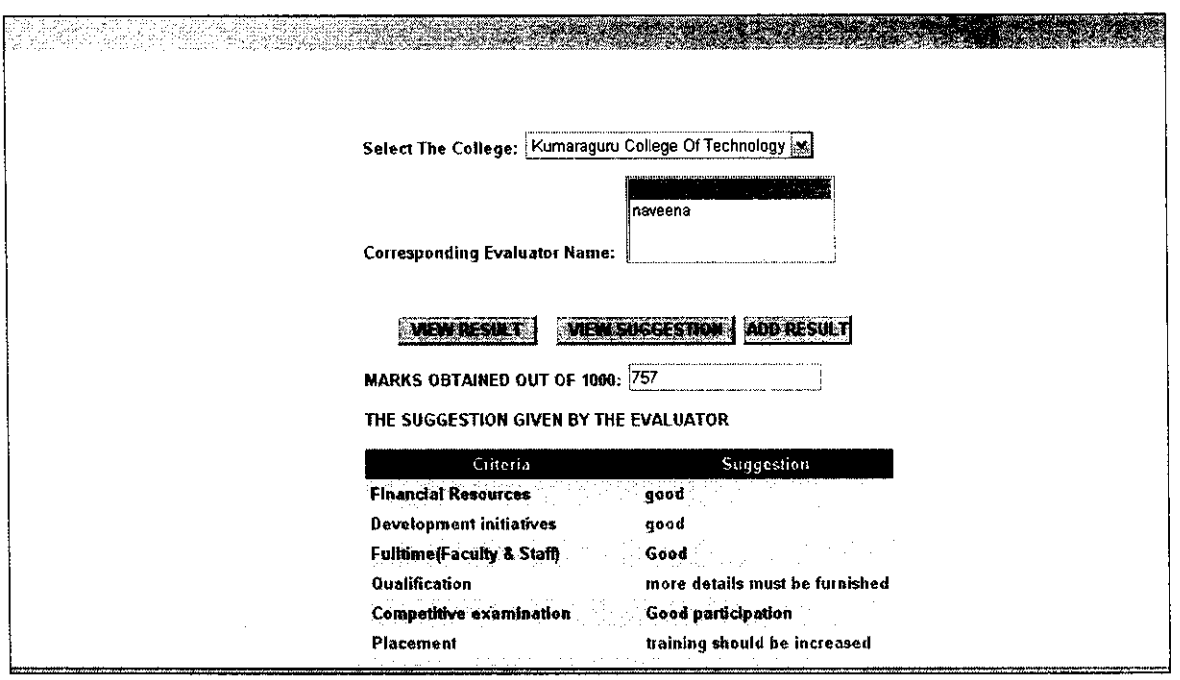

Figure A.16

Marks obtained by each college for 1000

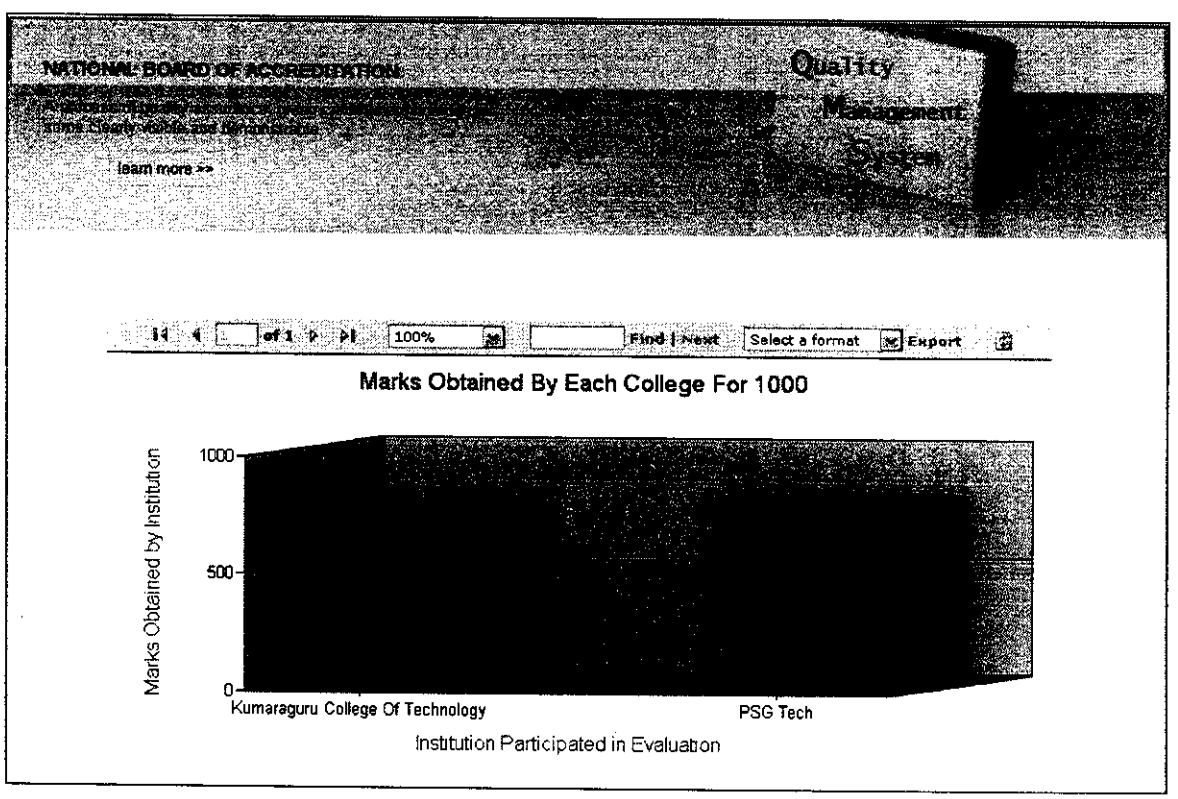

Figure A.17

Marks obtained by each college for given criteria

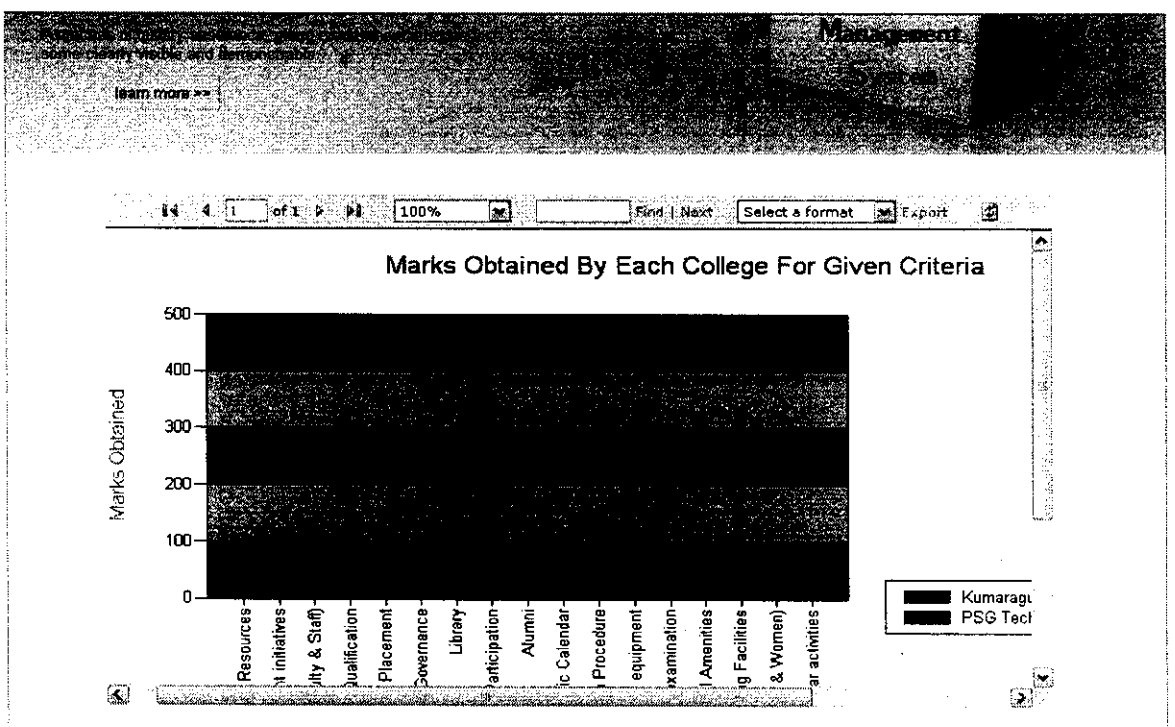

Figure A.18

CHAPTER 8

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