A

Minor Project Report

on

ONLINE EXAMINATION SYSTEM

Submitted in Partial Fulfillment of
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of

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in

Computer Engineering

to

North Maharashtra University, Jalgaon

Submitted by

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SSBT's COLLEGE OF ENGINEERING AND TECHNOLOGY, BAMBHORI, JALGAON - 425 001 (MS)

DEPARTMENT OF COMPUTER ENGINEERING

CERTIFICATE

This is to certify that the minor project entitled *Online Examination System*, submitted by

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in partial fulfillment of the Third Year of *Bachelor of Engineering* in *Computer Engineering* has been satisfactorily carried out under my guidance as per the requirement of North Maharashtra University, Jalgaon.

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Abstract

The descriptive exam system consists of checking of answer sheets and attending theory exam online. The system consists of candidate login and admin login. The whole system will be controlled by the admin. After registration candidate gets exam information related to his interest. In this system, the candidate can apply for the exam, he receives his exam card through E-mail and he attends the exam and when the result should have to be declared, this decides by the administrator. The administrator arranges the exam schedule and result declaration. He also arranges the exam question papers and answer papers. The system checks paper manually also, if the exam paper checker gives wrong marks to candidate the system gives alert to him. The demo exam is also provided; the sample question and answers are also provided for the help of the candidate.

This Examination interface aims at providing facility to conduct online examination world wide.It saves time as it allows number of students to give the exam a time and displays the results as the test gets over, so there is no need to wait for the result. It is automatically generated by the server. It also thereby helps in saving resources- both human and natural. User can register, log in and give the test with his specific id, and can see the results as well. This application uses HTML,JSP as front-end and Our-SQL as back-end on the Apache Server Framework and supports HTTP protocol with English Language.

Chapter 1

Introduction

In This Chapter,Discuss about the general things related with the Online Examination System. Over the years, there have been various automated examination systems that have been developed with one or more limitations.

In section 1.1 discuss Introduction to CBT.Objectives are explain in section 1.2 and Areas Of Application are explain in section 1.3.

1.1 Introduction to CBT

Computer Based System(CBT)is very popular techique in current situation. The paper and pen (manual) method of writing examination, which has been in existence for decades, may not be appealing for use because of the problems usually experienced including examination venue capacity constraints, lack of comfort for examination candidates, delay in the release of results, examination malpractices, cost implication of printing examination materials and human error. This brings about the need for automation of the examination system. Over the years, there have been various automated examination systems that have been developed with one or more limitations. Some of these limitations include lack of scalability, near-realibility, lack of robustness, lack of flexible timing functionality to automatically log-off candidates upon expiration of allotted time as a challenge (Ipaye, 2009); malpractice due to questions not randomly generated (Ayo et al, 2007); not well secured application domain in terms of data security and integrity (Levy & Ramim, 2007); most existing computer based test (CBT) systems are deployed as stand-alone applications that run on distributed networks making access to such applications restricted to the networked geographical domain and are only suited for the application environment only (Huszti & Petho, 2008).

1.2 Objectives

This concept of Online Examination System fulfils the following requirements:

- It provides a less expensive as well as an effective method of performing examinations.
- It provides best facilities for the students to answer the question only with a single click.
- It saves time as well as money.
- It lessens the students and teachers frustration.

1.3 Areas Of Application

- Across the globe:
  This project finds it application in conducting examination over the globe.
- Students needs:
  It saves time as well as money. It lessens students frustration.

1.4 Summary

In This Chapter,Describe the general things related with the Online Examination System,Objectives,Areas Of Application.This brings about the need for automation of the examination system. Over the years, there have been various automated examination systems that have been developed with one or more limitations. In next Chapter,Discuss about System Analysis.

Chapter 2

System Analysis

In previous chapter,Discuss about the general things related with the Online Examination System,Objectives,Areas Of Application.

In this Chapter,Discuss about System Analysis. In section 2.1 discuss the Existing system.Proposed system are explain in section 2.2 In section 2.3 discuss the Objectives of the proposed system.Feasibility study are explain in section 2.4

2.1 Existing system

The Existing system of conducting examination process is manual. It has so many problems. So we introduce a new system, which is fully computerized. Existing system is a large man power process and is difficult to implement. Working of existing system is given below: - Student Registration is the first process . As the part of the registration, the student has to enter his name, address etc into the registration form. After the registration, make the question papers and it will give to the prospective student. The question papers contain total mark, subject, duration, question paper etc. A group of person does evaluation of answer sheet. After the evaluation of the Answer sheet , the result is published. And also make the mark list.

2.2 Proposed system

The main objective of the online examination system is that it helps companies/institutions to conduct exams to any number of candidates at a time, in an automated manner. It reduces the time consumption and workload that exist in the current system of examination. It also helps in storing the record of each examination and the results are also stored in the system. This makes the searching of the records easier than the existing system.

2.3 Objectives of the proposed system

The main purpose of the system is to efficiently evaluate the candidate thoroughly through a fully automated system that not only saves a lot of time but also gives fast results. It is a cost-effective and popular means of mass- evaluation system. The administrator of the system prepares the tests and questions for each exam. The candidates can login through the client computers with their register number given to them and can take the exam. The questions are shuffled in a random order so that possibilities for getting questions in the same order for the students who are sitting near, is very less. A timer will monitor the time and after the time limit the system itself submit the test. If it is before time, candidates can submit it to view their result. The result analysis is very easy as it is done by the system. So it saves a lot of time since no manual correction is needed in the system. No restriction is there that the invigilator has to be present when the students take the test.

2.4 Feasibility study

Feasibility is a measure of how beneficial the development of the information system will be to an organization. This is done by investigating the existing system in the area under investigation or generally ideas about a new system. It is a test of a system proposal according to its workability, impact on the organization, ability to meet user needs, and effective use of resources.
Three key considerations are involved in the feasibility analysis: economic, technical, and legal.

2.4.1 Economic feasibility

Economic analysis is the most frequently used method for evaluating the effectiveness of a proposed system. It is more commonly known as cost benefit analysis, the procedure to determine the benefits and saving that are expected from a candidate system and compare them with costs. If the benefits outweigh costs then a decision is made to design and implement the system. Otherwise make alterations in the proposed system. The innovation of the new system has much influence on the economical side of the company. Manuel system is highly cost driven due to the high labor costs. So if a company registers with the Online Examination site, they can automate their day-to-day activities. Thus the system is economically feasible.

2.4.2 Technical feasibility

In examining Technical feasibility of the system, more importance is given to the hardware interaction part of the system. The assessments of technical feasibility centers on the existing system and to what extent it can support the proposed addition. This was based on an outline design of system requirements in turns of inputs, files, programs, procedures, and staff. It involves financial considerations to accommodate technical enhancements. Online Examination being a web based application, it uses .Net framework, 800MHZ computer, 20 GB Hard disk.

2.4.3 Legal feasibility

People are inherently resistant to change, and computers have been known to facilitate change. An estimate should be made about the reaction of the user staff towards the development of a computerized system. Computer installations have something to do with turnover, transfers and changes in job status. The introduction of a candidate system requires special effort to educate, sell and train the staff for conducting the business. The system is designed such that even a computer ignorant person can interact with the system freely. So the system requires not much effort to train and educate people, the system is that much legally feasible.

2.5 Summary

In This Chapter,describe about System Analysis,the Existing system,Proposed system,the proposed system and Feasibility study.The introduction of a candidate system requires special effort to educate, sell and train the staff for conducting the business. In next Chapter,Discuss about the Software Requirement Specification.

Chapter 3

Software Requirement Specification

In previous Chapter,Discuss about System Analysis,the Existing system,Proposed system,the proposed system and Feasibility study.

In this Chapter,Discuss about the Software Requirement Specification. In section 3.1 discuss the Specific Requirements.External Interface Requirements are explain in section 3.2 In section 3.3 discuss the Hardware Requirements.Software Requirements are explain in section 3.4

3.1 Specific Requirements

Since the Administrator and the student/user are the main target group of our software, we will only concern about some important functions for the admin and the user.

- Administrator:-
    1. The administrator is the one who manipulates and maintains the system. He can enter into the system by entering login name and password
    2. That is, he is responsible for creating exams that include subject selection and assigning scores etc.
    3. Again, he can add questions to the database
    4. Add new user to the database and issue a valid ID for the user.
    5. He is also responsible for sending the result to the email id provided by the user at the start of his registration.
- Students/Users:-
    1. Can do the member registration

2. After the registration , he will be issued with valid ID by the Administrator. The user can log into the system with this ID .
3. Then after clicking the start button the exam starts and timer also starts .In this manner, the user can take up the test and on clicking the submit button , he will get the result of that section immediately.
4. He must get the test result to his email id provided at the start of the registration
5. During the exam, he is allowed to go to the prevoious questions using a previous button. At the end system displays the initial web page.

3.2 External Interface Requirements

It include the following interfaces

- User Interfaces:-
  The interface must be easy to understand. The user interface includes
  1. Screen formats/organization:
     The introductory screen will be the first to be displayed which will allow the users to do the member registration.
  2. Window format/organization:
     When the user chooses some other option, then the information pertaining to that choice will be displayed in a new window which ensures multiple windows to be visible on the screen and the users can switch between them.
  3. Data format:
     The data entered by the users will be alpha numeric.
  4. End messages:
     When there are some exceptions raising error like entering invalid details, then error messages will be displayed prompting the users to re-enter the details.
- Hardware Interfaces:-
  1. Server side hardware :
     - Hardware recommended by all the software needed.
     - Communication hardware to serve client requests
  2. Client side hardware :
     - Hardware recommended by respective clients operating system and web browser.

- Communication hardware to communicate the server.

- Software Interfaces:-

  1. Server side software
     - Web server software, Apache Tomcat
     - Server side scripting tools: JSP,HTML
     - Database tools: SQL server 2005.
     - Compatible operating system: Windows 7
  2. Client side software
     Web browser supporting JavaScript,refer Browser Compatibility.

3.3 Hardware Requirements

There are few Hardware requirement are as follows :

Table 3.1: Hardware Requirements

Processor	Pentium IV
Ram	256 mb
HDD	2 gb
Key board	normal
Mouse	normal

3.4 Software Requirements

There are few Software requirement are as follows :

Table 3.2: Software Requirements

Operating System	Windows 7
Front End	HTML,JSP
Back End	MySql
Server	Apache Tomcat 5.5
Browser	Mozilla Firefox

3.5 Summary

In this Chapter,Describe about the Software Requirement Specification,the Specific Requirements,External Interface Requirement,Hardware Requirements And Software Requirements. In next Chapter,Discuss about the System Design.

Chapter 4

System Design

In previous Chapter,Discuss about the Software Requirement Specification,the Specific Requirements,External Interface Requirement,Hardware Requirements And Software Requirements.

In this Chapter,Discuss about the System Design.In section 4.1 discuss the Indroduction of Diagrams. In section 4.2 discuss the E-R Diagram.UML Diagram are explain in section 4.3.

4.1 Indroduction of Diagrams

System design creates a model of data and or information that is represented at a high level of abstraction. The structure of data has always been an important part of software design. The data design activity translates these elements of requirement model into data structure at the software component level. In actuality, the design of data begins during the creation of the analysis model. The database modeling involves Normalization of the database structure so as to avoid data redundancy. The different levels of normalization are first level, second level and third level. Normally normalization up to 3rd level is followed. But in certain cases we normalize up to fourth level is called Boyce code normal form.

4.2 E-R Diagram

The user with minimum knowledge about computer can be able operate the system easily. Online massage has been provided to help the user to take necessary, correct action while using the system. Various validation techniques have been used to implement accuracy of data in all formats of input. The system has produced all the report required by the management.

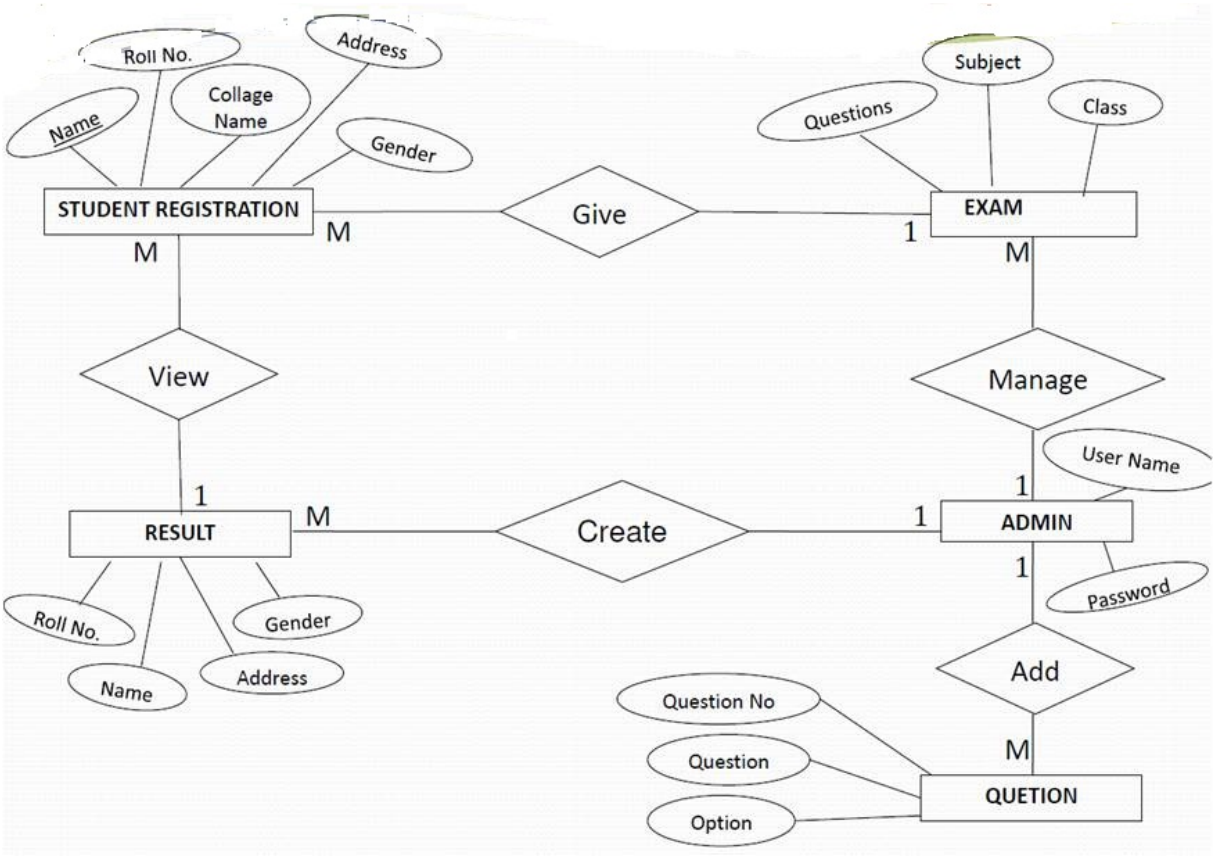

Figure 4.1: E-R Diagram for Online Examination System

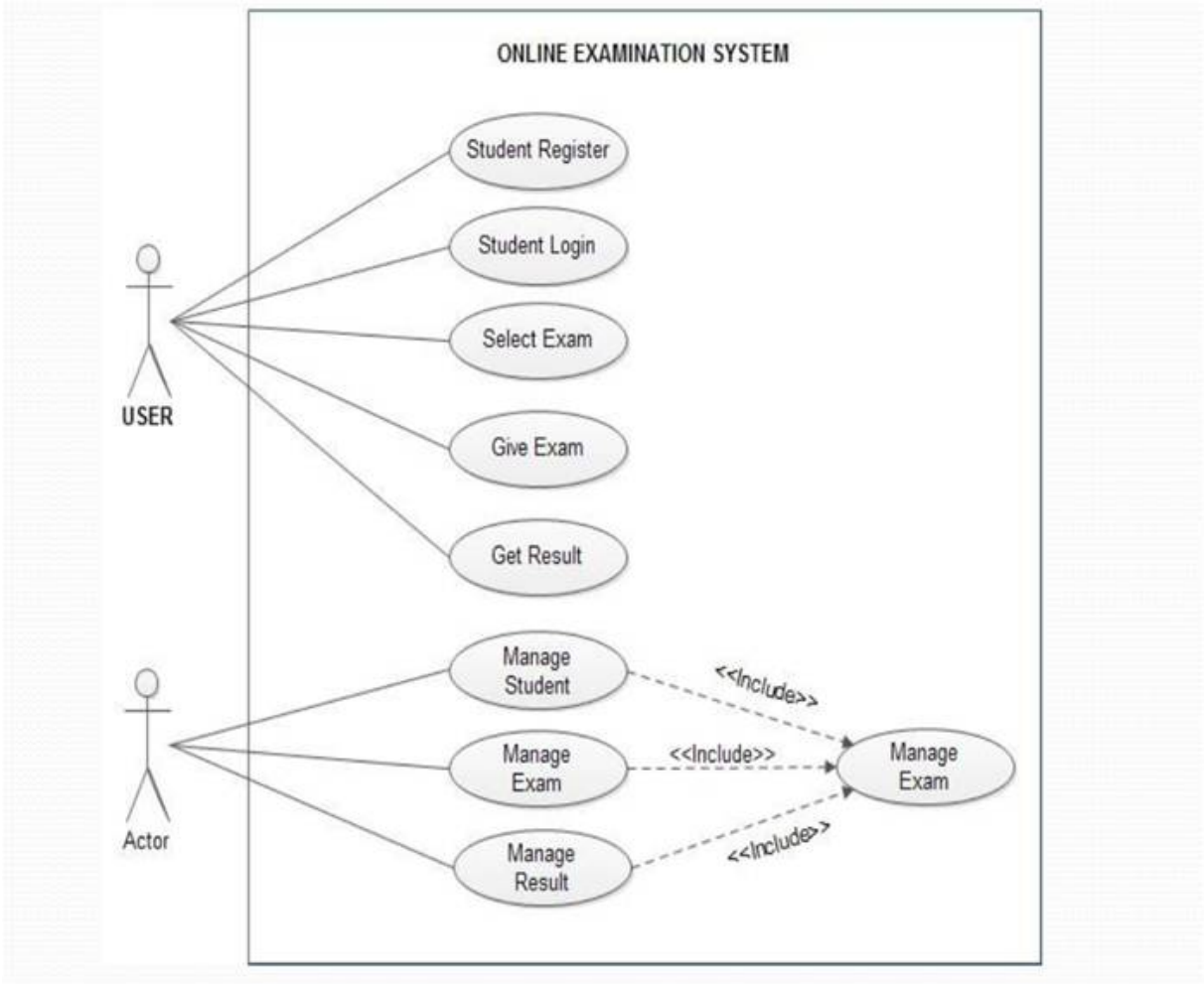

Figure 4.2: Use Case Diagram for Online Examination System

4.3 UML Diagrams

The different levels of normalization are first level, second level and third level. Normally normalization up to 3rd level is followed. But in certain cases we normalize up to fourth level is called Boyce code normal form. In this project we have normalized up to second level.

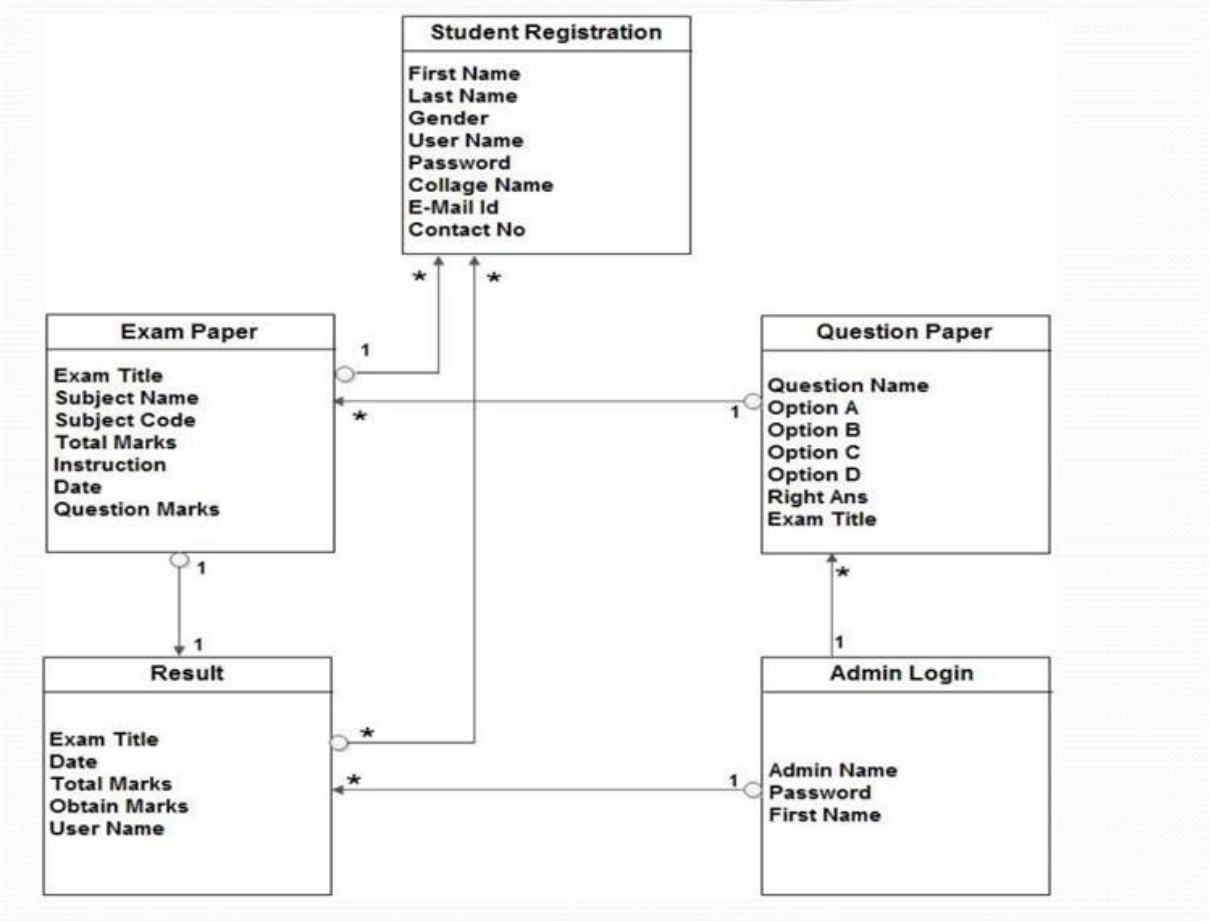

Figure 4.3: Class Diagram for Online Examination System

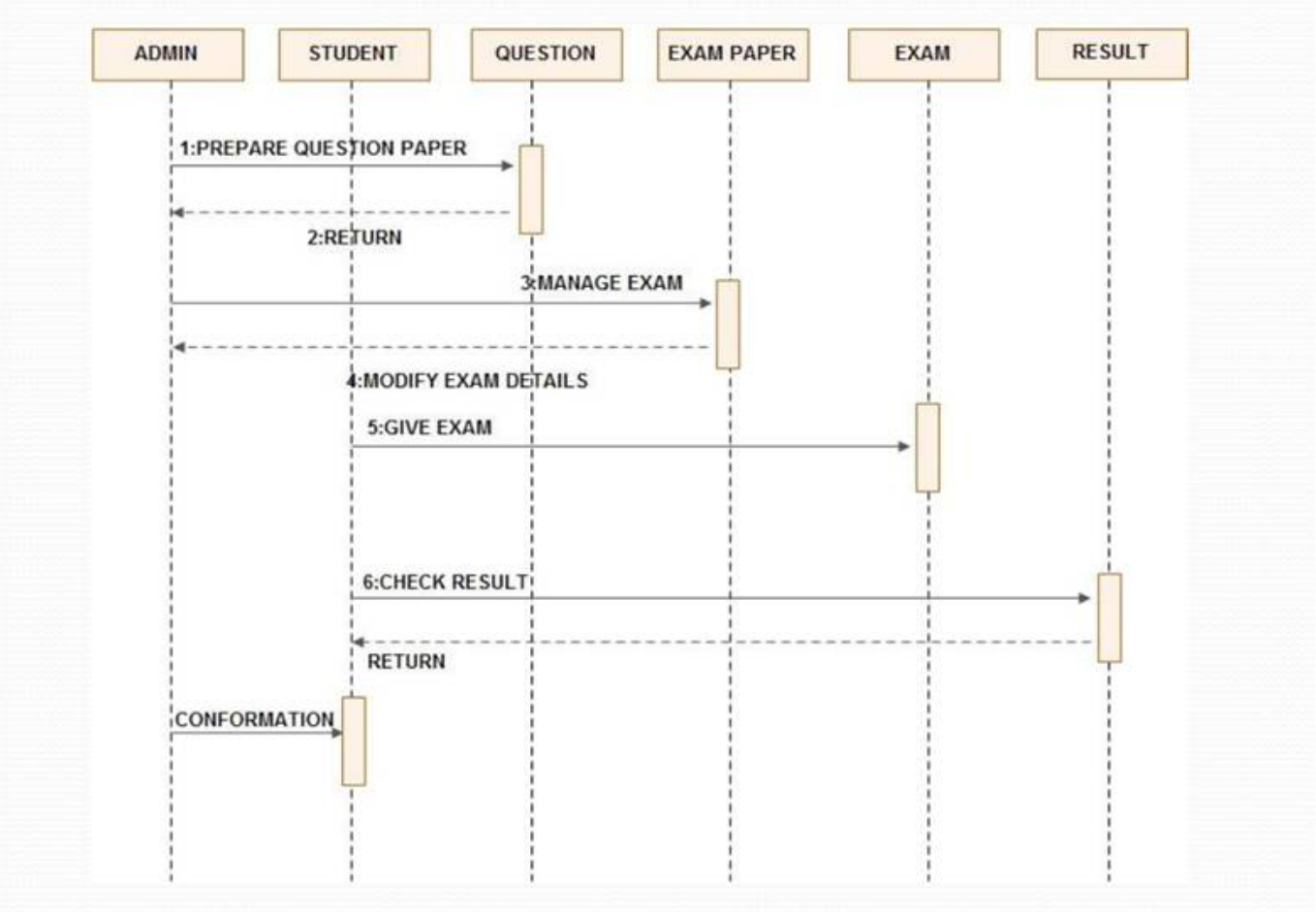

Figure 4.4: Sequence Diagram for Online Examination System

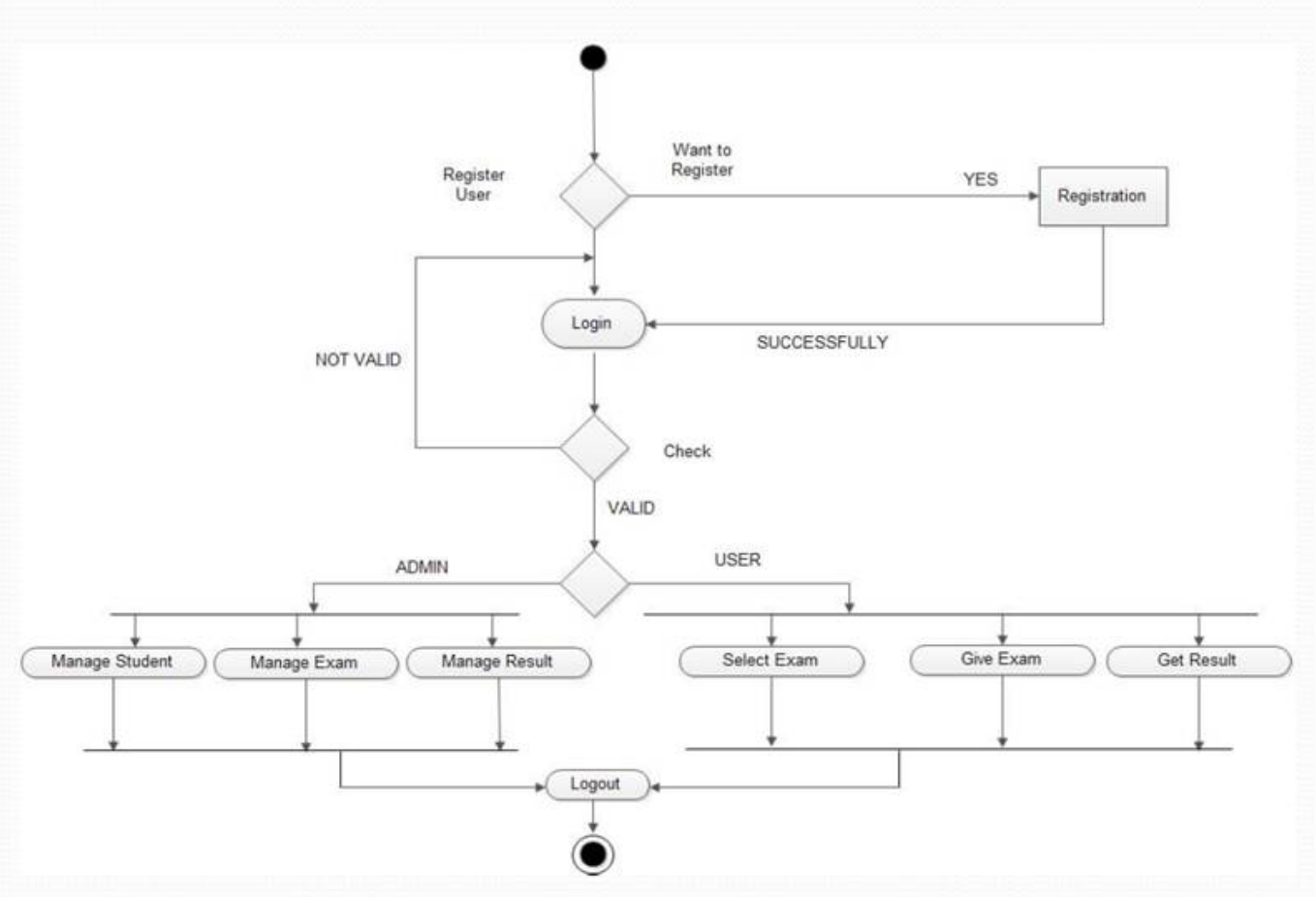

Figure 4.5: State Diagram for Online Examination System

4.4 Summary

In this Chapter,Discuss about the System Design,E-R Diagram and UML Diagram. Online massage has been provided to help the user to take necessary, correct action while using the system. In next Chapter,Discuss about Implementation.

Chapter 5

Implementation

In previous Chapter,Discuss about the System Design also describe the needed E-R Diagram and UML Diagram.

In this Chapter,Discuss about the System Implementation.It involves careful planning, investigation of the current system and its constraints on implementation, design of methods to achieve the change over, an evaluation, of change over methods.

5.1 Introdction to Implementation Stages

Implementation is the stage in the project where the theoretical design is turned into a working system and is giving confidence on the new system for the users that it will work efficiently and effectively. It involves careful planning, investigation of the current system and its constraints on implementation, design of methods to achieve the change over, an evaluation, of change over methods. Apart from planning major task of preparing the implementation are education and training of users. The more complex system being implemented, the more involved will be the system analysis and the design effort required just for implementation. An implementation co-ordination committee based on policies of individual organization has been appointed. The implementation process begins with preparing a plan for the implementation of the system. According to this plan, the activities are to be carried out, discussions are made regarding the equipment and resources and the additional equipment has to be acquired to implement the new system.

5.2 Server Implementation

Implementation is the final and important phase. This is the most critical stage in achieving a successful new system and in giving the users confidence that the new system will work is effective. The system can be implemented only after thorough testing. This method also

offers the greatest security since the old system can take over if the errors are found or inability to handle certain type of transactions while using the new system. For the data Storing it is important to create server.Apache Tomcat server is used.

5.3 Summary

The system can be implemented only after thorough testing.It involves careful planning, investigation of the current system and its constraints on implementation, design of methods to achieve the change over, an evaluation, of change over methods. In next Chapter,Discuss about the System Testing.

Chapter 6

Testing

In previous Chapter,Discuss about the System Implementation.System testing is the stage of implementation, which is aimed at ensuring that the system works accurately and efficiently before live operation commences. Testing is vital to the success of the system.

In this Chapter,Discuss about the System Testing.In section 4.1 discuss the Unit Testing.Integration Testing are explain in section 4.2.

6.1 Unit Testing

In unit testing we have to test the programs making up the system. For this reason unit testing is sometimes called as the Program testing. The software units in a system are modules and routines that are assembled and integrated to perform a specific function. Unit testing focuses first on modules, independently of one another, to locate errors. This enables, to detect errors in coding and logic that are contained with in the module alone. Unit testing can be performed from the bottom up, starting with the lowest level modules and proceeding one at a time. Unit testing is done for each module in Online Examination. This ensures that the value we enter match with the data type and within the specified limits.

6.2 Integration Testing

Data can be lost across any interface, one module can have an adverse effect on another, sub functions when combined, may not produce the desired major functions. Integration testing is a systematic testing for conducting tests to uncover errors associated within the interface. The objective is to take unit tested modules and build a program structure. All the modules are combined and tested as a whole. Here correction is difficult because the vast expenses of the entire program complicate the isolation of causes. Thus in the integration testing step, all the errors are corrected for the next testing steps. In Online Examination each module

is integrated and tested. This testing provides the assurance that the application is well integrated functional unit with smooth transition of data.

6.3 Validation Testing

At the culmination of integration testing, software is completely assembled as a package; interfacing errors have been recovered and corrected and a final series of a software tests-validation tests begin. Validation testing can be defined in many ways but a simple definition is that validation succeeds when the software functions in a manner that can be reasonably expected by the customer. In validation testing if user wants to enter the numeric value he can only enter the numeric value not the text value. For e.g.: in phone number field user can only enter numeric value to it. The system is user friendly with user guide and messages to explain further procedures. An attempt has been made to perfect the process by incorporating validation at each level.

6.4 Summary

In this Chapter,Describe about the Unit Testing,Validation Testing and Integration Testing. Testing is vital to the success of the system. Testing is the process of executing a program with the explicit intention of finding errors that is making the program fail. In next Chapter,Discuss about Estimated Cost.

Chapter 7

Estimated Cost

In previous Chapter,Discuss about Discuss about the Unit Testing,Validation Testing and Integration Testing.

In this Chapter,Discuss about Estimated Cost,It Calculate using COCOMO-II Model.

- Is used once user requirements have been agreed and initial stages of the system design process are underway.
- The estimates produced at this stage are based on the standard formula for algorithmic models, namely:

PM = A * SizeB * M

where

M = PERS * RCPX * RUSE * PDIF * PREX * FCIL * SCED;

A = 2.94 in initial calibration, Size in KLOC,

B varies from 1.1 to 1.24 depending on novelty of the project, development flexibility, risk management approaches and the process maturity.
External input and output:

- Only for registration interface:

    1. For user (student) interface:
       Input: there are 23 inputs.
    2. For faculty interface:
       Input: 17 inputs.

$$UFC = \sum(\text{number of elements of given type}) \times (\text{weight})$$

Figure 7.1: formula for Estimation cost

3. For administrator interface:
   Input: 8 inputs.

- Only for add course interface:

1. Input: 8 inputs
   Output: Store in data base file
   Output: 2 outputs
2. Input: 1 input
   Output: Store in data base file
   Output: 3 outputs

UFC=23*7+17*7+8*7+13*13+8*7+7*7+15*7+7+3*10+48*12

= 1146

M=3*2*1*5*5*5*5

=3750

PM = A * SizeB * M

=1.49*1146$\hat{1}$.2*3750

= 26196247.04 KLOC (1000 Line Of Code)

7.1 Summary

In this way we can calculate cost estimated for The online Examination Project.It is important to calculate estimation for selling the project and gives the project details along with it's price.In next Chapter,Discuss about the Literature Survey.

Chapter 8

Literature Survey

In previous Chapter,Discuss about the Cost estimation of Project.It is important to calculate estimation for selling the project and gives the project details along with it's price.

In this Chapter,Discuss about the Literature Survey. In section 8.1 discuss the Advantages,Disadvantages are discuss in section 8.2 and Applications are explain in section 8.3

8.1 Merits

- Since this software is designed in java, it is Platform independent..
- Successfully handles the problem.
- Reliability gives consistent results.
- System is robust.

8.2 Demerits

- All the questions have to be scrolled once before clicking the finish button.
- A user must have fundamental knowledge as to how to use the application.

8.3 Application

- Use for generate Quick Result of Examination.
- It is user friendly,No need to extra knowleged to handle question.
- Minimize the Examinor Work to make result sheet,It generate automatic after facing Test.

8.4 Summary

In this Chapter,Describe the Advantages,Disadvantages and Applications. Testing is vital to the success of the system.In this Chapter,Discuss about the Future Enhancement in Online Examination System

Chapter 9

Future Enhancement

In previous Chapter,Discuss about The Advantages,Disadvantages and Applications.The system has produced all the report required by the management .

In this Chapter,Discuss about the Future Enhancement in Online Examination System. In comparison with the manual system, the benefit under a computer system considerable in to saving of manpower, working hour and efforts.

Online Examination has been developed and the system was tested with proper data. The system results in regular timing preparation of the required output. In comparison with the manual system, the benefit under a computer system considerable in to saving of manpower, working hour and efforts. It can observe that the information required can be obtained with ease and accuracy in the computerized system. The user with minimum knowledge about computer can be able operate the system easily. Online massage has been provided to help the user to take necessary, correct action while using the system. Various validation techniques have been used to implement accuracy of data in all formats of input. The system has produced all the report required by the management .

9.1 Summary

In this Chapter,Discuss about the Future Enhancement in Online Examination System. This software can be used by any institute as it can be modified easily; additional features can be added without interrupting the normal functioning of the system.

Conclusion

Computerization is needed in this Shrinking world, where centralization is also required with globalization. Conducting online test is a step in this direction to ease the current structure of examination. This way of conducting test on one of the most secure operating system and with highly sophisticated technology is cost effective and save time too.

This way of conducting test not only save time but also lessens students and teachers frustration. It is an easier way of giving examination, any person across the globe can appear for the examination.

Bibliography

[1] Buyya, R., 2009, Cloud computing and emerging IT platforms: Vision, hype, and reality for delivering computing as the 5th utility, Future Generation Computer Systems, Vol. 25, No. 6, June 2009, pp. 599-616.

[2] www.w3schools.com/jsp/introduction/index.

[3] www.vbdotnetinformation.com/html/introduction.

[4] Cliff, D., 2002, Evolution of Market Mechanism through a Continuous Space of Auction-types, Honolulu, HI, USA: IEEE Computer Society, vol. 2, pp. 20292034.

[5] Fayek, M.B.E., Talkhan, A.WE., and El-Masry, L.S., 2009, GAMA (Genetic Algorithm driven Multi-Agents) for e-Commerce Integrative Negotiation, in GECCO09: Proceedings of the 11th Annual Conference on Genetic and Evolutionary Computation. Montreal, Quebec, Canada: ACM, pp. 18451846.