

EXAM CELL AUTOMATION SYSTEM

Submitted by

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Under the guidance of

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Submitted in partial fulfilment of requirement for qualifying B.Sc.-(IT) Semester-
VI Examination

University of Mumbai



**Thakur College of Science and Commerce,
Thakur Village, Kandivali (E),
Mumbai-400101**



Thakur Educational Trust's (Regd.)
Thakur College of Science & Commerce
(NAAC Re-Accredited Grade 'A' [CGPA-3.10] & ISO 9001:2008 Certified)



University of Mumbai



Project certificate for B.Sc. I.T students

This is to certify that the project entitled “**Exam Cell Automation System**”. Undertaken at the “Thakur College of Science and Commerce” by **Ms. Rachana Patel** Seat no. _____ **Ms. Anjali Mane** Seat no. _____ and **Ms. Priya Chauhan** Seat no. _____ in partial fulfilment of B.Sc. I.T degree (Semester VI) Examination had not been submitted for my other examination and does not form part of any other course undergone by the candidate.

It is further certified that she has completed all required phases of the project.

Signature of External Examiner

Signature of Internal Examiner

Signature of Project Guide

Signature of Head of Department

College Seal

Preface

As Part of our B.Sc. (IT) curriculum and in order to gain practical knowledge we are required to make an Exam Cell Automation System. The basic objection behind doing this project is to use our knowledge of programming to develop a working software website.

In this project we have created a website which helps a user maintain journals for his research. It helps him to take down notes, set reminders/goals, it also lets him stay updated with advancements in his research topic.

Doing this project helped us to enhance our knowledge regarding development of a website, it helped us better understand the development process. It let us develop and hone our team building and leadership skills.

ACKNOWLEDGEMENT

Achievement is finding out what you would be doing rather than what you have to do. It is not until you undertake such a project that you realize how much effort and hard work it really is, what are your capabilities and how well you can present yourself or goodwill of others. It gives me immense to pleasure to present this report towards the fulfillment of our project. It has been rightly said that we are built on the shoulders of others. For everything we have achieved, the credit goes to all those who helped me to complete this project successfully.

A special vote of thanks to our faculty, who is our project guide and also our Head of Department Dr. Santosh Singh for the sincerest, useful and encouraging contribution throughout the project span, without him we couldn't start and complete the project on time.

Finally, I would like to thank the Information Technology Department who has directly or indirectly helped us in the completion of the project.

We are also thankful to our friends who have helped us to accomplish this task. Special thanks to our seniors who have always turned up with suggestions where ever we were stuck.

Without their encouragement, motivation and support this project would have not been possible

Rachana Patel

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1)INTRODUCTION

The current exam cell activity includes a lot of manual calculations and is mostly paper based. A lot problem is faced by students due to the manual implementation of the exam cell system. Faculty can enter the marks of every student into their respective mark sheet using the system's GUI.

Sometimes there is mistake in entry of marks which takes a long process to get corrected. It so happens that if a student is failing in a particular subject then the student has mainly two options that is student is sure that he has written well in the exam and there is some mistake in his exam paper correction then he/she can fill the form of revaluation.

At the same time the student has to fill the AT/KT form. Then it so happens that if the student passes the revaluation then to he/she has to give the AT/KT exam because the details are not updated properly. This leads to major problems for the student.

The hall tickets are issued mostly 2 or 3 days before the exam. The students have to come to the college to collect the hall tickets, this leads to the student time consuming process during the study time. There are various loop holes in the current system of Exam Cell.

By automating this system, the examination coordinators can easily conduct registration of the students and the generation of the result systematically. The system is an efficient, decisive resource for institutions and students.

It will help at different levels for bringing reliability, efficiency, scalability, transparency and robust solutions. By automating the college system, the results can be declared in a flexible manner and most importantly it would be error free and student registration, filling of online exam form revaluation forms for the respective subjects, filling of KT form generation of hall tickets and respective results etc.

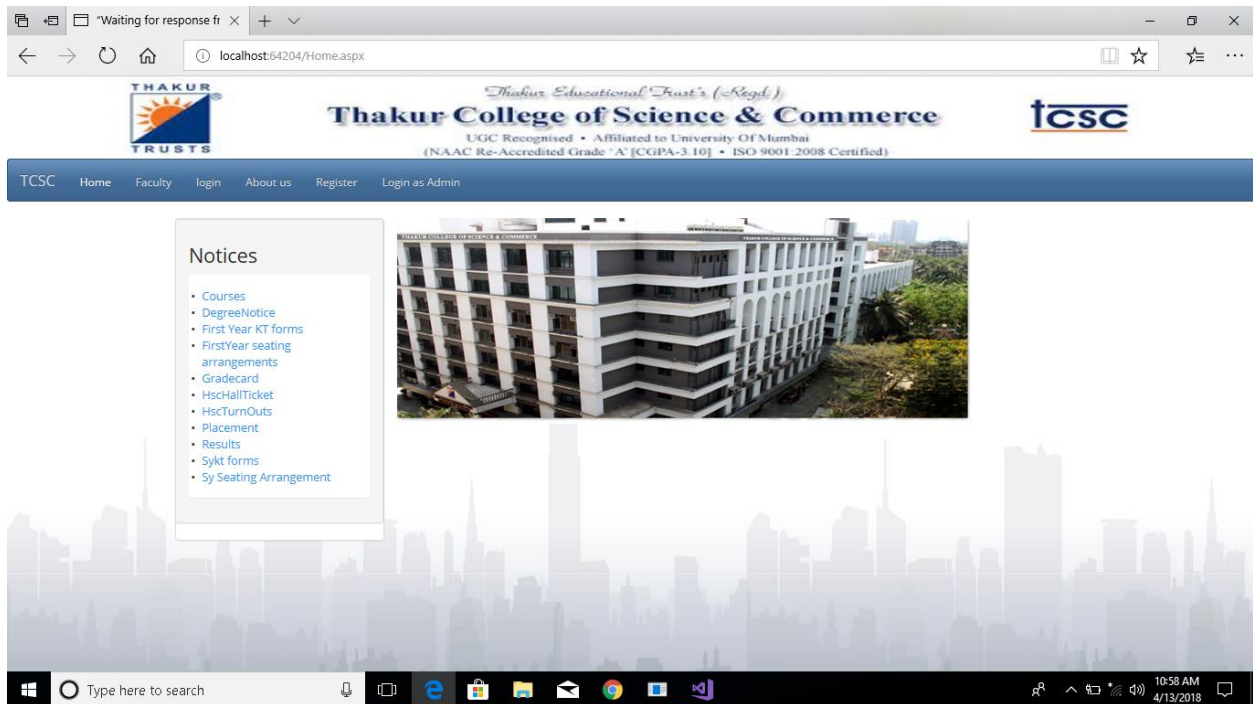
Also, the students will able to check their marks for every practical, oral, theory exam. So, an attempt has been made to make it easy for the department.

The project aims to bring in a centralized system that will ensure the activities in the context of an examination that can be effectively managed. This system allows students to enroll themselves into the system by registering their names or by sharing details to admin. This is done by providing their personal and all the necessary details like Name, email, examination, semester, etc

The final product would constitute a computerized module aimed at replicating offline exam cell process. The system is a new concept which came into existence because of the large amount of data being on paper and it made analysis of results a tedious task, apart from the unmanageable amount of data that is generated in an institution from various departments

This system comprises of 6 Modules:

Description:



Student Register:

To register student, have to just provide their Personal Details like Name, Class, Phone No, etc., to the enroll himself into the System.

Hall ticket:

The hall ticket is generated according to the class and the semester.

Mark sheet Generation:

System allows admin to generate mark sheet of examination for every student.

AT/KT

The AT/KT Form is made easily available to the students

Admin Login:

Admin can view who has enrolled into the system and can see all the new enrollment on his login.

Student Login:

Students can use their credentials provided by him to login into the system.

Utility of Application:

This Software will help an individual in various way: -

The screenshot shows a web browser window displaying the registration page of Thakur College of Science & Commerce (TCSC). The browser's address bar shows the URL `localhost:64204/Registration.aspx`. The page header includes the Thakur Educational Trust's logo, the college name, and accreditation details. A navigation bar contains links for TCSC, Home, Faculty, login, About us, Register, and Login as Admin. The main content area features a 'Registration' form with fields for UID, First Name, Last Name, Mobile no, Email-Id, Password, and Date Of Birth, followed by a 'Submit' button. The background of the page shows a city skyline.

- 1.This system allows only the registered students to login into the system which prevents unauthorized access.
- 2.The students can view their hall ticket by just clicking on the Particular Button.
- 3.Faster exam registration.
- 4.Easy result generation.
- 5.Better convenience for students.

1.1 OBJECTIVE OF THE PROJECT

STUDENT REGISTRATION

The system allows the student to register themselves into the System. By registering it allows the students to view their academic progress, growth of themselves. This will be helpful for the students to enhance their studies properly in a specific direction. The registering process is very simple process. The student just has to share its normal and minimum details with the admin. The student details are processed and kept safe.

STUDENT HALL TICKET

The provided details are then entered by admin into the system to create their hall tickets and also creates login id and password for them. Every student will have its own unique id and password. The uniqueness helps in the system to avoid the redundancy in the data and only the student has the to it and not to any person. Hall ticket generation process becomes smooth and efficient and smooth. The student gets the hall ticket readily by just entering its details. The student is not needed to come to the college to collect their hall tickets all the way to the college.

MARK SHEET GENERATION

Admin is also responsible for generation of mark sheets for every registered student. There will be total 6 semesters where each semester contains maximum 5 subjects. Admin can enter the marks of every student into their respective mark sheet using the system's GUI or via Database entry. Every student mark sheet will be created and printed separately. Thus, on a whole it serves as a complete automated software who handles every tedious and complex process handled during the examination times by the exam cell of a college. Admin is also responsible for generation of mark sheets for every registered student. The registered student mark sheets are generated by the admin. The addition of marks and the final approval of the marks are done by the student. The student has easy access to their mark sheets. The provision is also there that sometimes if the misplaces the mark sheets by some permission letters the mark sheets could be retrieved easily. Every student mark sheet will be created and printed separately. There will be no error present in the mark sheets. It would be generated automatically.

INTERMEDIARY BETWEEN TEACHERS AND STUDENTS

The automation system is like an intermediary between staff and students, thus easing the activities of each regarding examination. It is a system that will make the exam cell process much organized. It would require certain crucial data to be pre-existing, which definitely suggest a dependency on certain other systems, especially ones concerning data acquisition. Like in this case it is Automated Admission system. The solution, however, will manage a great deal of menial work

REDUCE PAPERWORK

This keeps paperwork to its minimum, leading to ease of accountability, reducing confusions and increase in work rate and efficiency. The project will address firstly, access to various users including standards, teacher, exam cell staff and admin. Then customization based on requirement of college. And finally, automated result analysis and ancillary services.

1.2 SCOPE OF THE PROJECT

All the exam related work for the students can be done using this system. This project will reduce the manual load of the department for keeping records. The records will be available in the database. It will provide faster and easier access for updating records as the paper work will replace. All the student related database can be retrieved at any time by the authorized personnel. Students will receive their Mark sheet and Hall tickets at just one click which would be very helpful for the students rather than waiting for a long time for the mark sheet arrival in the college and then the mark sheet has to be signed by the exam cell authorities. The authority signature of the exam coordinator and the Head of the department of the course. This projects scope is limited for Bachelor of Science in Information Technology Department. It will provide Unique Identity and Password. The success of the system will help us to make use in different departments and later different colleges. It will save students time for them to go to colleges to collect results and hall tickets.

The system utilizes user authentication, displaying only information necessary for an individual's duties. Additionally, each sub-system has authentication allowing authorized users to create or update information in that subsystem. All data is thoroughly reviewed and validated on the server before actual record alteration occurs. In addition to a staff user interface, the system plans for student user interface, allowing students to access information All data is stored securely on SQL servers managed by the college administrator and ensures highest possible level of security. The system features a logging system to track all users' access and ensure conformity to data access guidelines and is expected to increase the efficiency of the college's record management thereby decreasing the work hours needed to access and deliver student records to users. Our project focuses on presenting information in an easy and intelligible manner which provides facilities like online registration and profile creation of student's thus reducing paper work and automating the record generation process in an educational. Our project enhances the upgradability of the existing system and makes it convenient for the staff to manage records

1.2PROBLEM DEFINITION

Manual systems put pressure on people to be correct in all details of their work at all times, the problem being that people aren't perfect, however much each of us wishes we were. With manual systems the level of service is dependent on individuals and this puts a requirement on management to run training continuously for staff to keep them motivated and to ensure they are following the correct procedures. It can be all too easy to accidentally switch details and end up with inconsistency in data entry or in hand written orders. This has the effect of not only causing problems with customer service but also making information unable be used for reporting or finding trends with data discovery. Reporting and checking that data is robust can be timely and expensive. This is often an area where significant money can be saved by automation.

It takes more effort and physical space to keep track of paper documents, to find information and to keep details secure. When mistakes are made or changes or corrections are needed, often a manual transaction must be completely redone rather than just updated. With manual or partially automated systems information often has to be written down and copied or entered more than once. Systemization can reduce the amount of duplication of data entry.

Another impact of manual systems is on Customer service. Customer queries can be difficult to respond to as information is stored in different places and may even require that you find the right person before being able to respond. This is no good if they are out to lunch or only work part time.

1.Inconsistency in data entry, room for errors, miss keying information.

Data inconsistency occur between files when similar data is kept in different formats in two different files, or when matching of data must be done between files. As a result of the data inconsistency, these files duplicate some data compromising data integrity.

2.Large ongoing staff training cost.

One of the biggest potential problems with employee training is the cost of the process. If you handle the training internally, it costs money because you have to pay one of your employees for training instead of doing productive work. If you use an outside trainer, you have to pay him for his time. You could send your employees to a seminar or training conference in another location, which also can represent a substantial cost for the company.

3.System is dependent on good individuals.

Keeping track of projects, meetings, tasks and conversations without appropriate tools and technologies can be a nightmare. You can either stand tall or spend your life endlessly chasing details, missing appointments, suffer poor business execution and lose information buried in emails that everyone on the team can benefit from.

4.Reduction in sharing information and customer services.

Keeping track of projects, meetings, tasks and conversations without appropriate tools and technologies can be a nightmare. You can either stand tall or spend your life endlessly chasing details, missing appointments, suffer poor business execution and lose information buried in emails that everyone on the team can benefit from.

5.Time consuming and costly to produce reports.

The process takes a lot of time in generation of the reports.

6.Lack of security.

A lack of security is another common disadvantage to manual accounting. Companies may be unable to prevent employees from reviewing sensitive data in paper ledgers and journals. Files copied and stored on a computer may also be less secure. This may allow employees to abuse financial information through fraud or embezzlement. Disgruntled employees may also irreparably damage the information and destroy important financial records.

7.Duplication of data entry.

There are few things more annoying than having to enter important business data twice. However, that annoyance can turn into a serious problem when data is entered erroneously. Manual errors lead to bad data, and bad data can lead to expensive mistakes.

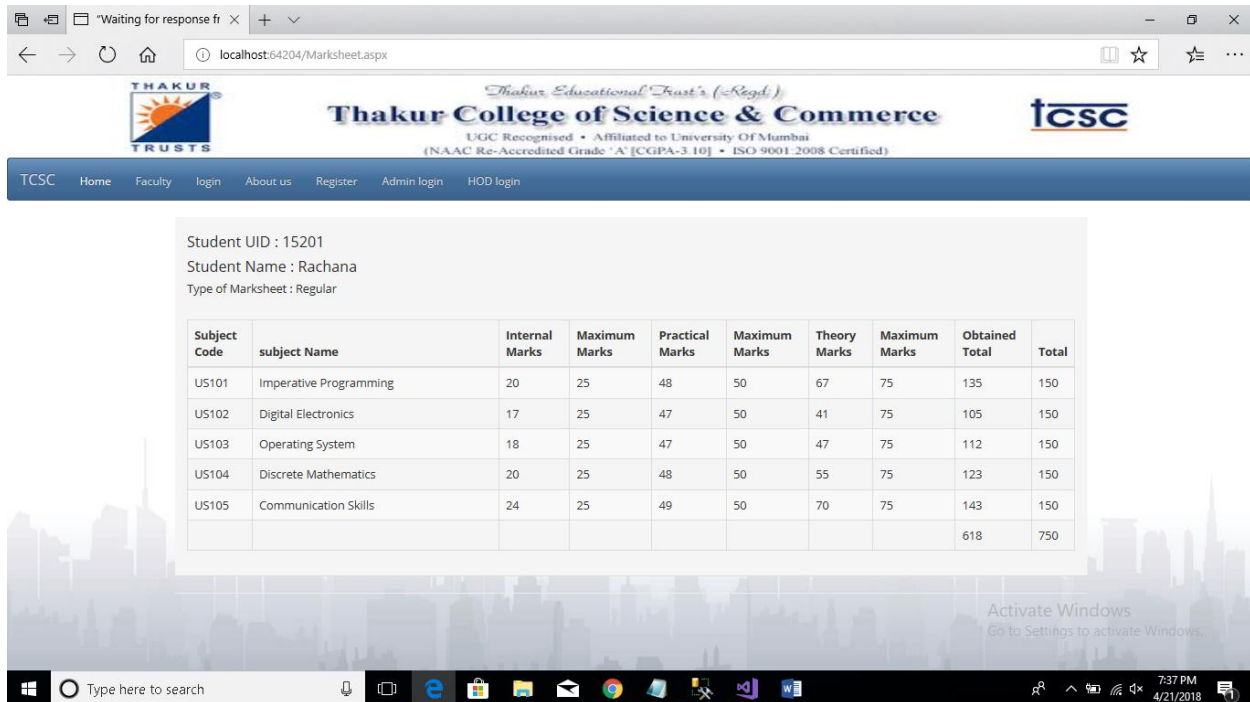
9.Slow and Inefficient

Existing System is very slow and inefficient. Report generation is also not an easy task in the current situation. Mark sheets generation and report generation take a lot of time investment. Inefficiencies are created which create a lot of rework and whole process need to be redone which is not an easy task.

1.4USER REQUIREMENTS

a) FUNCTIONAL REQUIREMENTS

1. Mark sheets



Student UID : 15201
Student Name : Rachana
Type of Marksheet : Regular

Subject Code	subject Name	Internal Marks	Maximum Marks	Practical Marks	Maximum Marks	Theory Marks	Maximum Marks	Obtained Total	Total
US101	Imperative Programming	20	25	48	50	67	75	135	150
US102	Digital Electronics	17	25	47	50	41	75	105	150
US103	Operating System	18	25	47	50	47	75	112	150
US104	Discrete Mathematics	20	25	48	50	55	75	123	150
US105	Communication Skills	24	25	49	50	70	75	143	150
								618	750

Proposed system calculates the percentage and grades automatically and not manually which eliminates the chance of any mistakes or errors. In addition to this, it provides various different functions for ease to the Head of Department, Faculty Members and the Students. All the details are stored in the database so it can be easily retrieved by exam cell for checking or uploading the details. Mark sheets would be generated. It would be made available to the students. The delay in the mark sheet would not be there. The errors would not be there as it would be generated.

2.Hall Ticket

The screenshot shows a web browser window displaying the Thakur College of Science & Commerce Hall Ticket system. The browser address bar shows 'localhost:64204/FyHT.aspx'. The page header includes the college logo, name, and accreditation details (UGC Recognised, Affiliated to University Of Mumbai, NAAC Re-Accredited Grade 'A' [CGIPA-3.10], ISO 9001:2008 Certified). Below the header is a navigation bar with links: TCSC, Home, Faculty, login, About us, Register, Admin login, HOD login.

Student UID : 15201
Student Name : Rachana

Subject Code	subject Name	Exam Time	Course Name	Exam Date	Teacher Signature
US101	Imperative Programming	11:30:00-2:30:00	FYBSC IT SEM 1	15 / 2 / 2018	
US102	Digital Electronics	11:30:00-2:30:00	FYBSC IT SEM 1	16 / 2 / 2018	
US103	Operating System	11:30:00-2:30:00	FYBSC IT SEM 1	17 / 2 / 2018	
US104	Discrete Mathematics	11:30:00-2:30:00	FYBSC IT SEM 1	18 / 2 / 2018	
US105	Communication Skills	11:30:00-2:30:00	FYBSC IT SEM 1	19 / 2 / 2018	

Activate Windows
Go to Settings to activate Windows.

Windows taskbar at the bottom shows the search bar, taskbar icons, and system tray with the time 7:38 PM on 4/21/2018.

Hall Ticket is an important aspect in the exam cell automation system. The students are giving the exams must have a hall ticket. Hall ticket ensures that the correct student is giving the exam. It helps to eradicate the unfair means which have been sometimes used by the students. The hall tickets would be generated. The students work gets easy by not travelling all the way to the college for the hall ticket. It gets readily available to the students without any delay.

3.Marks distribution

Internal Examination – 25 marks (Minimum passing 10 marks)

Practical Examination – 50 marks (Minimum passing 20 marks)

External Examination – 75 marks (Minimum passing 30 marks)

4.Students having AT/KT

The screenshot displays a web browser window with the URL `localhost:64204/Atkt.aspx`. The page header features the Thakur Educational Trust's logo, the college name "Thakur College of Science & Commerce", and the TCSC logo. Below the header is a navigation menu with links: TCSC, Home, Faculty, login, About us, Register, Admin login, and HOD login. The main content area contains a "KT Form" with the following fields: Name, Class, Semester, No.Of Subjects, Subjects, and No. of Attempt. The background of the page shows a city skyline. The Windows taskbar at the bottom indicates the time is 7:39 PM on 4/21/2018.

Waiting for response fr × + -

localhost:64204/Atkt.aspx

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tcsc

TCSC Home Faculty login About us Register Admin login HOD login

KT Form

Name

Class

Semester

No.Of Subjects

Subjects

No. of Attempt

Activate Windows
Go to Settings to activate Windows.

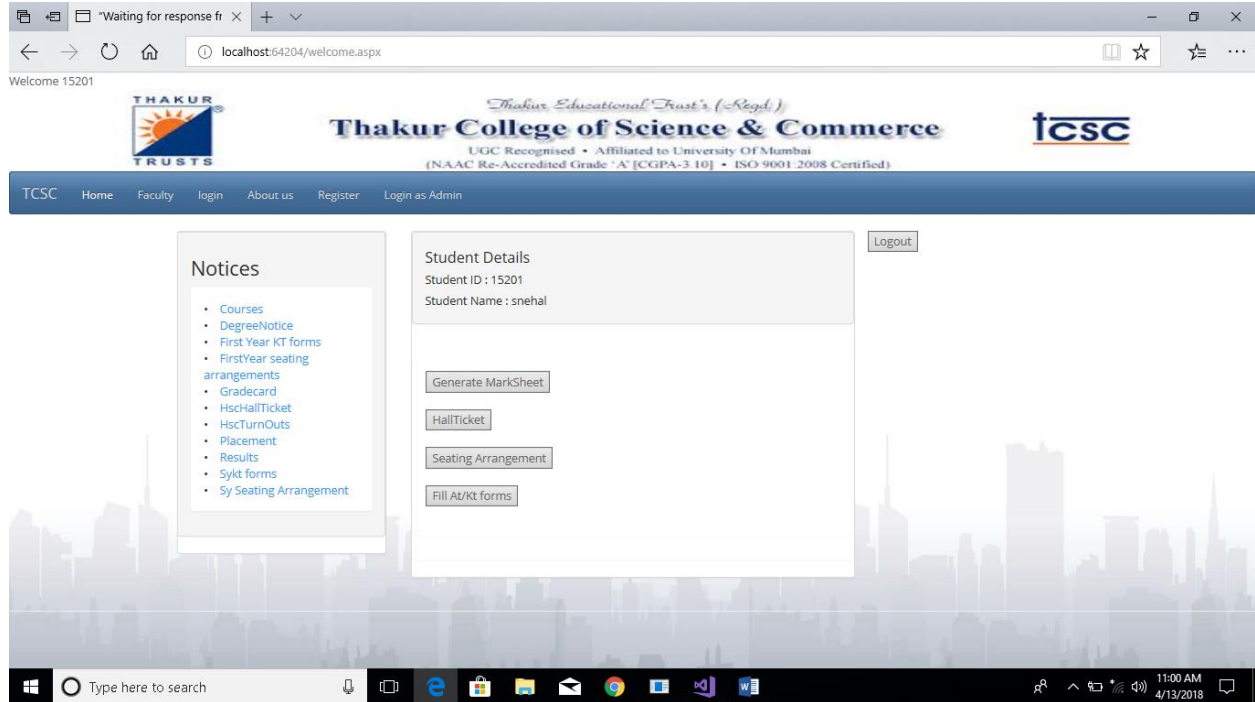
Type here to search

7:39 PM 4/21/2018

The HOD get to know about the no. of students getting AT/KT. The particular subject teacher gets to know about the no. of students having AT/KT in their subjects. The HOD gets the detailed information about the class-wise and subject-wise students having AT/KT.

b) USERS OF THE SYSTEM

1.Students



Basic Information

Students enter basic information which is directly stored in database. This information includes details like first name, last name, Mobile no. Email Id, Password, DOB. That is registering in the system.

Mark sheet

The students can easily avail Mark sheet on one click. As everything will be available online. The students are not required to wait for long time to make avail their Mark-Sheet.

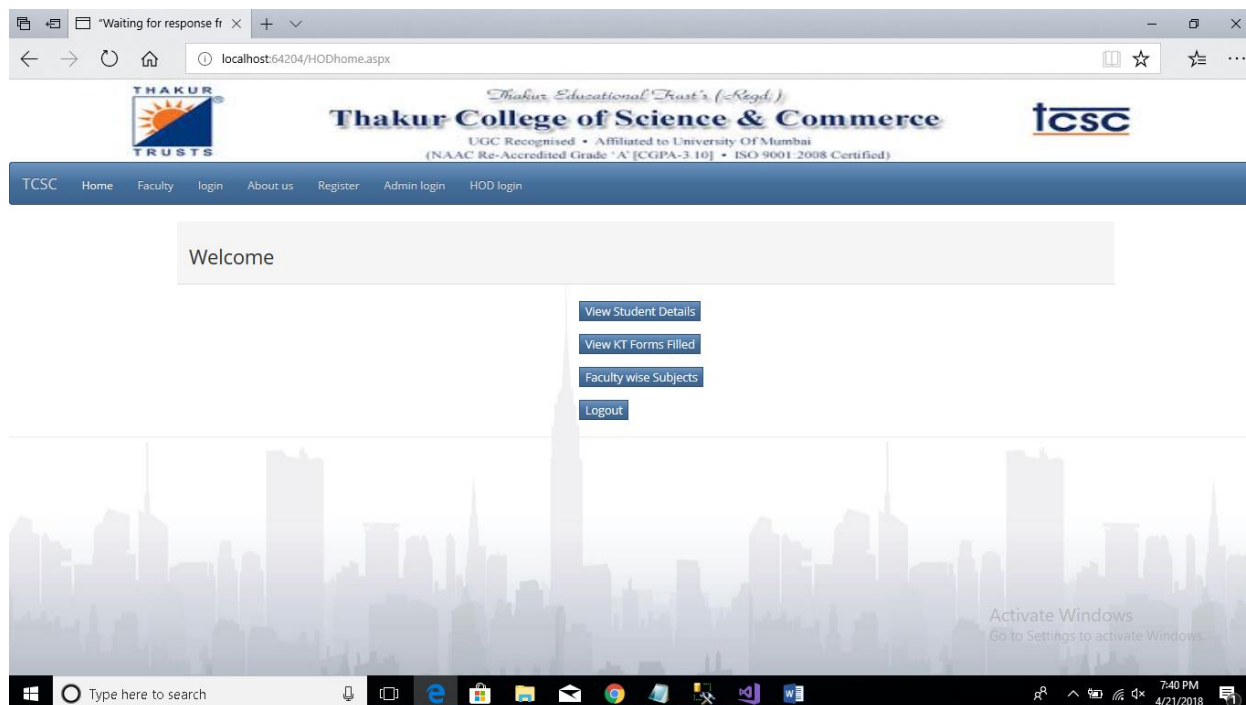
Hall ticket

Hall Tickets will be available online to students, which will be generated by the admin.

AT/KT Forms

After the student's logs in into the system he can also fill the AT/KT form if they have the KT in any of the exams.

2.HOD



Student information

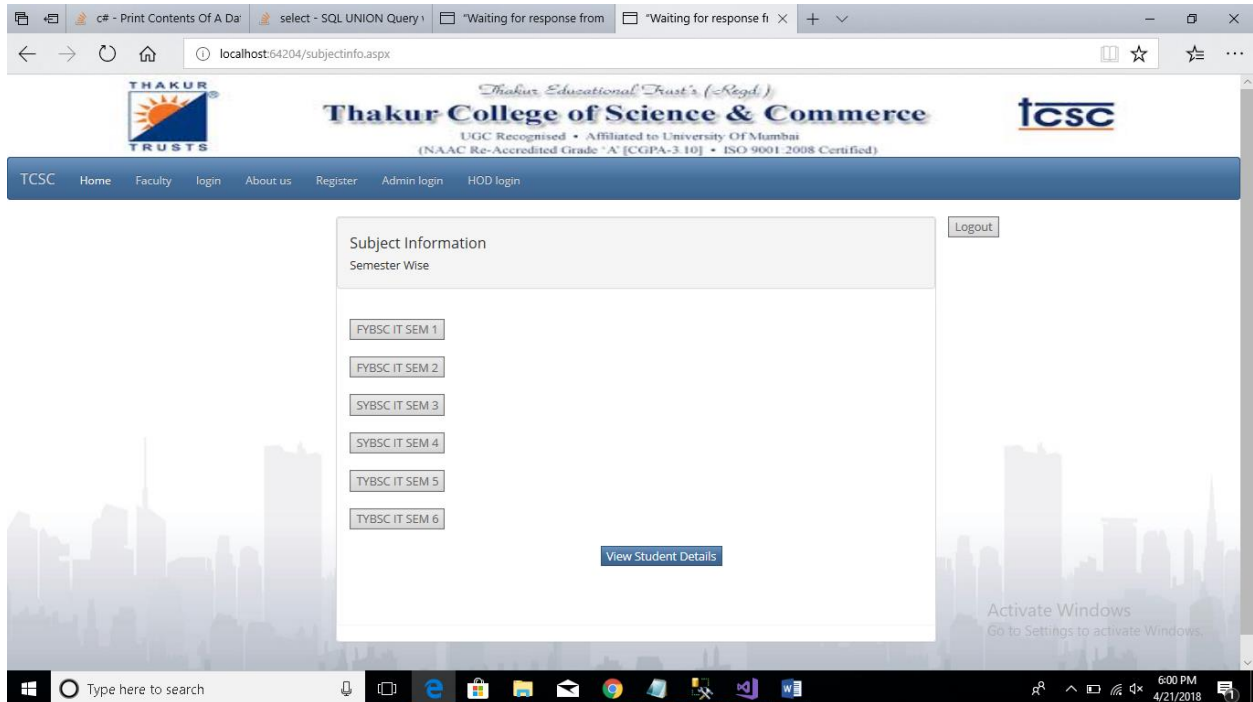
All the information stored in database and the one entered by the students will be available to the HOD.

Faculty information

Faculty information such as first name, last name, Email-id, Mobile No., Password etc. will be available to HOD. HOD also decides about the grace marks to given to students on the basis of overall evaluation of the answer sheets.

It also gives information about the number of students that appeared in the exam, the number that cleared the exam and how many failed to do so. It also lets them know about the AT/KT forms filled by the students. HOD is the one who decides on the passing marks for the students

3.Faculty



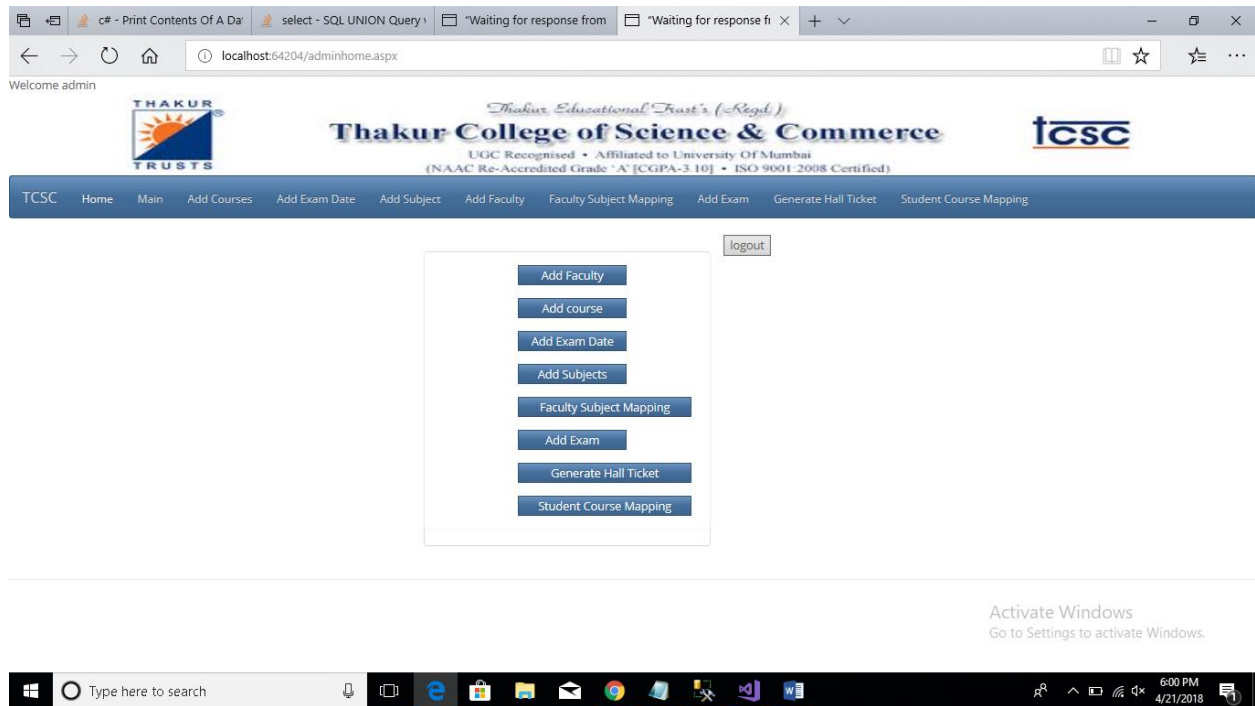
Entering Marks

The marks scored by students during the unit test, practical's, and semester exams are entered by teachers in database.

Student information

All the information stored in database and the one entered by the students will be available to the Faculty. It also gives information about the number of students that appeared in the exam, the number that cleared the exam and how many failed to do so. It also lets them know about the AT/KT forms filled by the students.

4. Admin



Database

All the database related work and information is managed and stored and maintained by the Students.

User information

The information about all the users using this software will be readily available to the Admin.

Data entry, update, delete.

Admin is the one who will be able to do all the updating and deletion of the important files in the database.

Add course

The admin will be adding the course in the system. This provision is only with the admin of the system.

Add Faculty

The admin is having the provision of adding the faculty members. Whenever a new faculty member joins the department the admin adds the members with its basic information.

Add Subject

The admin is having the provision to add the subjects of the courses that have been added before by the faculty itself. And with the description of the following Subjects

Add Exam

The exam details that is to be conducted is added by the admin. It also adds the type of exam, the date of the exam that is to be conducted. It also adds the total Marks of the exam and the minimum passing marks for the students.

Faculty-Subject-Mapping

After the faculty is added to the system that is after the faculty joins the particular course the faculty is assigned the subject for which he/she will be conducting the exams, entering Marks and teaching the Subject. The faculty will have access to only that particular Subject that they are assigned.

Student-Course-Mapping

Student Course Mapping is done by the admin. This helps in generating Mark-sheet of a particular Student. It confirms the course of the student which makes it easier to get the details and other information.

Hall-Ticket-Student-Mapping

It Maps the Hall-Ticket of a particular Student. Depending Upon the course of the student and Student Id. It helps in generation of Marksheet.

Add Exam Date

The admin adds the date and time of the exam, on which date the particular theory exam will be conducted and at what time.

ADVANTAGES OVER CURRENT SYSTEMS

Easy Accessibility

The system generates copies which help students preview their results, unit test marks, practical marks, and project marks. It generates hall tickets for students which give them easy access and saves their time for collecting it

Computer operator control

Computer operator control is available so rate of errors will be less. Storing and retrieving of information is simple. So, work can be done connect time and also good in speed. Manual Work is replaced by the computer system. The confusion and load of work that increases due to the manual work is totally eradicated.

Very less paper work

The proposed system requires very less paper work. All the data is entered into the capture immediately and reports can be generated by the help of computers. So that work will become very easy because there is no need to keep data on more papers. The maintenance of the records becomes very much efficient and it helps in cost saving of financial input. Many bundles of sheet generation work get less by storing all the information in the database.

Reports are easily generated

Reports like seating arrangements can be easily generated in this proposed system by that user can generate the report as per the requirement and their wish for the duration of month or the day.

User Friendly

This system is user friendly for the retrieval and storing of the data. And it is fast to store the data. It is maintained efficiently. The graphical user interface is implemented in this proposed system. It is more efficient than existing system.

B) NON-FUNCTIONAL REQUIREMENTS

In systems engineering and requirements engineering, a non-functional requirement (NFR) is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors. They are contrasted with functional requirements that define specific behavior or functions. The plan for implementing functional requirements is detailed in the system design. The plan for implementing non-functional requirements is detailed in the system architecture, because they are usually Architecturally Significant Requirements

Broadly, functional requirements define what a system is supposed to do and non-functional requirements define how a system is supposed to be. Functional requirements are usually in the form of "system shall do <requirement>", an individual action or part of the system, perhaps explicitly in the sense of a mathematical function a black box description input, output, process and control functional model or IPO Model. In contrast, non-functional requirements are in the form of "system shall be <requirement>", an overall property of the system as a whole or of a particular aspect and not a specific function. The system's overall properties commonly mark the difference between whether the development project has succeeded or failed.

Non-functional requirements are often called "quality attributes" of a system. Other terms for non-functional requirements are "qualities", "quality goals", "quality of service requirements", "constraints" and "non-behavioral requirements". Informally these are sometimes called the "utilities", from attributes like stability and portability.

Performance Requirements

Response time: The maximum response time for the submission of a job will be 1 minute.

Capacity: The maximum number of jobs schedulable is limited only by the capacity of the nodes to fulfill the jobs' deadlines; there is no upper limit inherent as such.

Deadline sensitivity: Assuming submitted statistics for jobs are accurate, the system scheduler will ensure that all jobs are completed with a 10% error allowance.

Cost sensitivity: Under all circumstances, the maximum cost payable as submitted by the user will be the maximum cost charged to the user.

Safety Requirements

Information transmission should be securely transmitted to server without any changes in information.

Security Requirements

The main security concern is for users account hence proper login mechanism should be used to avoid hacking. The user registration is way to spam check for increasing the security. Hence, security is provided from unwanted use of recognition software.

Software Quality Attributes

Availability: If the internet service gets disrupted while sending information to the server, the information can be sent again for verification.

Reliability: As the system provides the right tools for discussion, problem solving it must be made sure that the system is reliable in its operations and for securing the sensitive details.

Usability: As the system is easy to handle and navigates in the most expected way with no delays. In that case the system program reacts accordingly and transverses quickly between its states.

1.5 THEORETICAL BACKGROUND

PLATFORM REQUIRED

SUPPORTIVE OPERATIVE SYSTEM

The supportive Operating System for client includes: **Windows**.

SOFTWARE

1.WINDOWS 10

Windows 10 is a personal computer operating system developed and released by Microsoft as part of the Windows NT family of operating systems. It was released on July 29, 2015. It is the first version of Windows that receives ongoing feature updates. Devices in enterprise environments can receive these updates at a slower pace or use long-term support milestones that only receive critical updates, such as security patches, over their ten-year lifespan of extended support.

Windows 10 introduces what Microsoft described as "universal apps"; expanding on Metro-style apps, these apps can be designed to run across multiple Microsoft product families with nearly identical code—including PCs, tablets, smartphones, embedded systems, Xbox One, Surface Hub and Mixed Reality. The Windows user interface was revised to handle transitions between a mouse-oriented interface and a touchscreen-optimized interface based on available input devices—particularly on 2-in-1 PCs; both interfaces include an updated Start menu which incorporates elements of Windows 7's traditional Start menu with the tiles of Windows 8. The first release of Windows 10 also introduces a virtual desktop system, a window and desktop management feature called Task View, the Microsoft Edge web browser, support for fingerprint and face recognition login, new security features for enterprise environments, and DirectX 12 and WDDM 2.0 to improve the operating system's graphics capabilities for games.

2.ASP.NET

ASP.NET is an open source server-side web application framework designed for web development to produce dynamic web pages. It was developed by Microsoft to allow programmers to build dynamic web sites, web applications and web services.

1.5.1 Characteristics of ASP.NET

a) Code behind model

Microsoft recommends dealing with dynamic program code by using the code behind model, which places this code in a separate file or in a specially designed script tag.

b) Directives

A directive is a special instruction on how ASP.NET should process the page.

c)Rendering technique

.NET uses a "visited composites" rendering technique. During User controls are encapsulations of sections of page sections that are registered and used as controls in ASP.NET. Compilation, the template (.aspx) file is compiled into initialization code that builds a control tree (the composite) representing the original template. Literal text goes into instances of the Literal control class, and server controls are represented by instances of a specific control class. The initialization code is combined with user-written code (usually by the assembly of multiple partial classes) and results in a class specific for the page. The page doubles as the root of the control tree.

d) State management

ASP.NET applications are hosted by a Web server and are accessed using the stateless HTTP protocol. As such, if an application uses stateful interaction, it has to implement state management on its own. ASP.NET provides various functions for state management. Conceptually, Microsoft treats "state" as GUI state. Problems may arise if an application must track "data state"; for example, a finite-state machine that may be in a transient state between requests (lazy evaluation) or takes a long time to initialize. State management in ASP.NET pages with authentication can make Web scraping difficult or impossible.

e) SQL Server mode

State variables are stored in a database, allowing session variables to be persisted across ASP.NET process shutdowns. The main advantage of this mode is that it allows the application to balance load on a server cluster, sharing sessions between servers. This is the slowest method of session state management in ASP.NET. ASP.NET session state enables you to store and retrieve values for a user as the user navigates ASP.NET pages in a Web application. HTTP is a stateless protocol. This means that a Web server treats each HTTP request for a page as an independent request. The server retains no knowledge of variable values that were used during previous requests. ASP.NET session state identifies requests from the same browser during a limited time window as a session and provides a way to persist variable values for the duration of that session. By default, ASP.NET session state is enabled for all ASP.NET application.

3.C#

Design goals

The ECMA standard lists these design goals for C#:

1. The language is intended to be a simple, modern, general-purpose, object-oriented programming language.
2. The language, and implementations thereof, should provide support for software engineering principles such as strong type checking, array bounds checking, detection of attempts to use uninitialized variables, and automatic garbage collection. Software robustness, durability, and programmer productivity are important.
3. The language is intended for use in developing software components suitable for deployment in distributed environments.

4. Portability is very important for source code and programmers, especially those already familiar with C and C++.
5. Support for internationalization is very important.
6. C# is intended to be suitable for writing applications for both hosted and embedded systems, ranging from the very large that use sophisticated operating systems, down to the very small having dedicated functions.
7. Although C# applications are intended to be economical with regard to memory and processing power requirements, the language was not intended to compete directly on performance and size with C or assembly language.

4.Bootstrap

Bootstrap is modular and consists of a series of Less stylesheets that implement the various components of the toolkit. These stylesheets are generally compiled into a bundle and included in web pages, but individual components can be included or removed. Bootstrap provides a number of configuration variables that control things such as color and padding of various components.

Since Bootstrap 2, the Bootstrap documentation has included a customization wizard which generates a customized version of Bootstrap based on the requested components and various settings.

As of Bootstrap 4, Sass is used instead of Less for the stylesheets.

Each Bootstrap component consists of an HTML structure, CSS declarations, and in some cases accompanying JavaScript code.

Grid system and responsive design comes standard with an 1170-pixel wide grid layout. Alternatively, the developer can use a variable-width layout. For both cases, the toolkit has four variations to make use of different resolutions and types of devices: mobile phones, portrait and landscape, tablets and PCs with low and high resolution. Each variation adjusts the width of the columns.

HARDWARE

1. RAM: RAM should be above 2GB.
2. PROCESSOR: 32/64-bit processors are supported. Intel i3 Processor or Higher

2. SYSTEM ANALYSIS

2.1 Detailed Lifecycle of Project

Phase 1: Project Initiation

This is the start of the project, and the goal of this phase is to define the project at a broad level. This phase usually begins with a business case. This is when you will research whether the project is feasible and if it should be undertaken. If feasibility testing needs to be done, this is the stage of the project in which that will be completed.

Important stakeholders will do their due diligence to help decide if the project is a “go.” If it is given the green light, you will need to create a project charter or a project initiation document (PID) that outlines the purpose and requirements of the project. It should include business needs, stakeholders, and the business case

Phase 2: Project Planning

This phase is key to successful project management and focuses on developing a roadmap that everyone will follow. This phase typically begins with setting goals. Two of the more popular methods for setting goals are S.M.A.R.T. and CLEAR:

S.M.A.R.T. Goals – This method helps ensure that the goals have been thoroughly vetted. It also provides a way to clearly understand the implications of the goal-setting process.

Specific – To set specific goals, answer the following questions: who, what, where, when, which, and why.

Measurable – Create criteria that you can use to measure the success of a goal.

Attainable – Identify the most important goals and what it will take to achieve them.

Realistic – You should be willing and able to work toward a particular goal.

Timely – Create a timeframe to achieve the goal.

C.L.E.A.R. Goals – A newer method for setting goals that takes into consideration the environment of today’s fast-paced businesses.

Collaborative – The goal should encourage employees to work together.

Limited – They should be limited in scope and time to keep it manageable.

Emotional – Goals should tap into the passion of employees and be something they can form an emotional connection to. This can optimize the quality of work.

Appreciable – Break larger goals into smaller tasks that can be quickly achieved.

Refinable – As new situations arise, be flexible and refine goals as needed.

During this phase, the scope of the project is defined and a project management plan is developed. It involves identifying the cost, quality, available resources, and a realistic timetable. The project plans also include establishing baselines or performance measures. These are generated using the scope, schedule and cost of a project. A baseline is essential to determine if a project is on track.

At this time, roles and responsibilities are clearly defined, so everyone involved knows what they are accountable for.

Phase 3: Project Execution

This is the phase where deliverables are developed and completed. This often feels like the meat of the project since a lot is happening during this time, like status reports and meetings, development updates, and performance reports. A “kick-off” meeting usually marks the start of the Project Execution phase where the teams involved are informed of their responsibilities.

Tasks completed during the Execution Phase include:

- Develop team
- Assign resources
- Execute project management plans
- Procurement management if needed
- PM directs and manages project execution
- Set up tracking systems
- Task assignments are executed
- Status meetings
- Update project schedule
- Modify project plans as needed

Phase 4: Project Performance/Monitoring

This is all about measuring project progression and performance and ensuring that everything happening aligns with the project management plan. Project managers will use key performance indicators (KPIs) to determine if the project is on track. A PM will typically pick two to five of these KPIs to measure project performance:

Project Objectives: Measuring if a project is on schedule and budget is an indication if the project will meet stakeholder objectives.

Quality Deliverables: This determines if specific task deliverables are being met.

Effort and Cost Tracking: PMs will account for the effort and cost of resources to see if the budget is on track. This type of tracking informs if a project will meet its completion date based on current performance.

Project Performance: This monitors changes in the project. It takes into consideration the amount and types of issues that arise and how quickly they are addressed. These can occur from unforeseen hurdles and scope changes.

Phase 5: Project Closure

This phase represents the completed project. Contractors hired to work specifically on the project are terminated at this time. Valuable team members are recognized. Some PMs even organize small work events for people who participated in the project to thank them for their efforts. Once a project is complete, a PM will often hold a meeting – sometimes referred to as a “post mortem” – to evaluate what went well in a project and identify project failures. This is especially helpful to understand lessons learned so that improvements can be made for future projects.

Once the project is complete, PMs still have a few tasks to complete. They will need to create a project punch list of things that didn’t get accomplished during the project and work with team members to complete them. Perform a final project budget and prepare a final project report. Finally, they will need to collect all project documents and deliverables and store them in a single place.

2.2 DESIGN

CONTEXT DIAGRAM

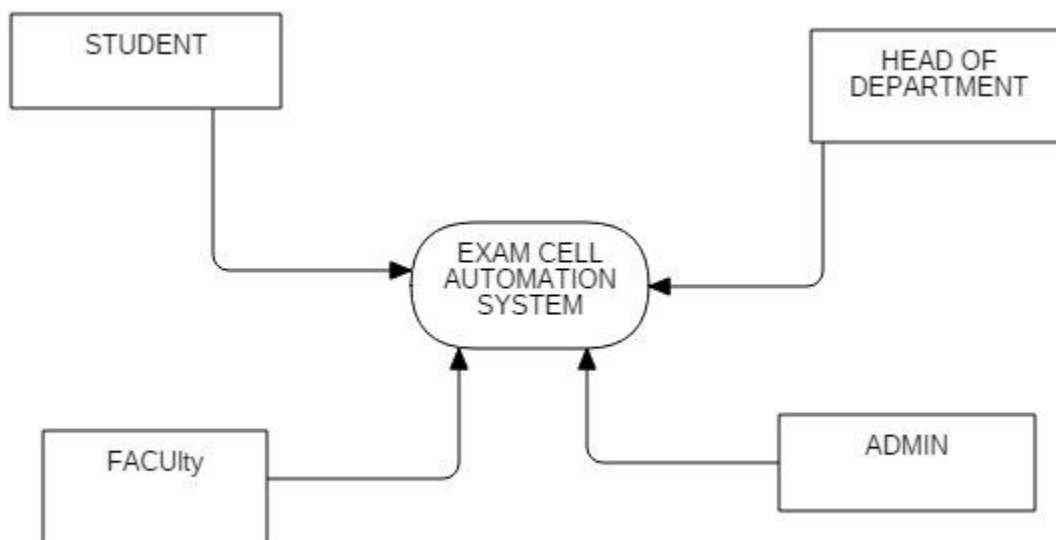
The Context Diagram shows the system under consideration as a single high-level process and then shows the relationship that the system has with other external entities (systems, organizational groups, external data stores, etc.).

Another name for a Context Diagram is a Context-Level Data-Flow Diagram or a Level-0 Data Flow Diagram. Since a Context Diagram is a specialized version of Data-Flow Diagram, understanding a bit about Data-Flow Diagrams can be helpful.

A Data-Flow Diagram (DFD) is a graphical visualization of the movement of data through an information system. DFDs are one of the three essential components of the structured-systems analysis and design method (SSADM). A DFD is process centric and depicts 4 main components.

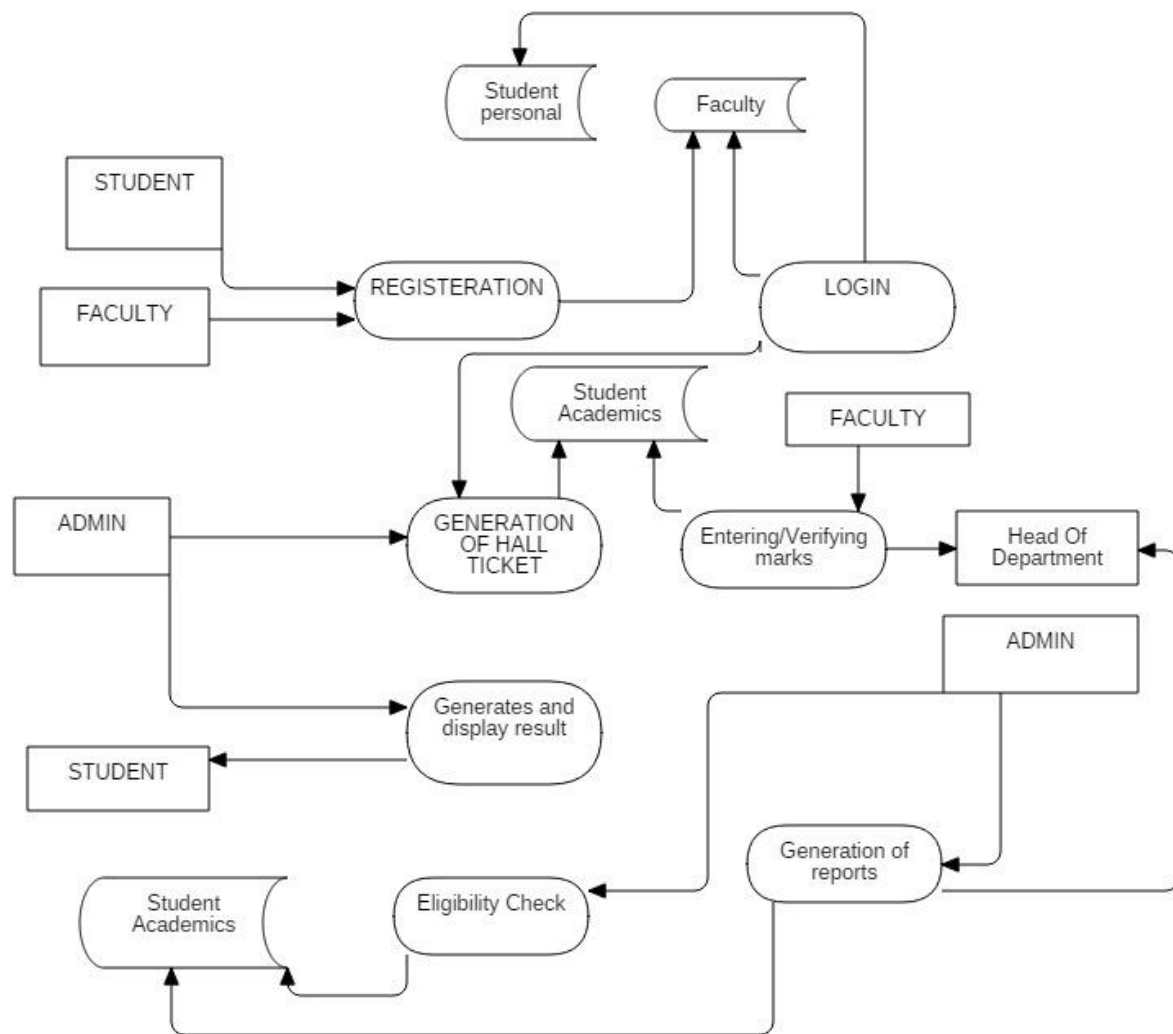
- 1.Processes (circle)
- 2.External Entities (rectangle)
- 3.Data Stores (two horizontal, parallel lines or sometimes and ellipse)
- 4.Data Flows (curved or straight line with arrowhead indicating flow direction)

CONTEXT DIAGRAM



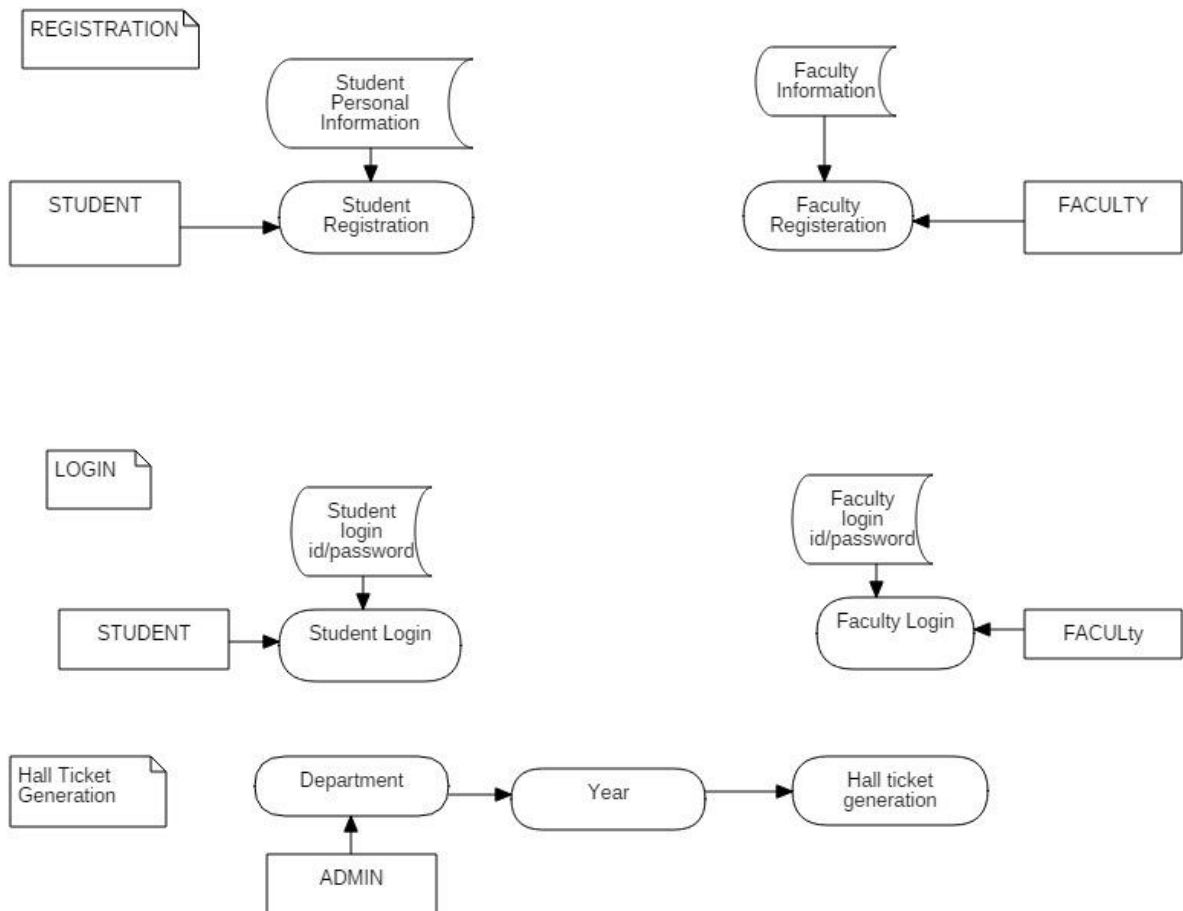
(figure1)

LEVEL 1 DFD



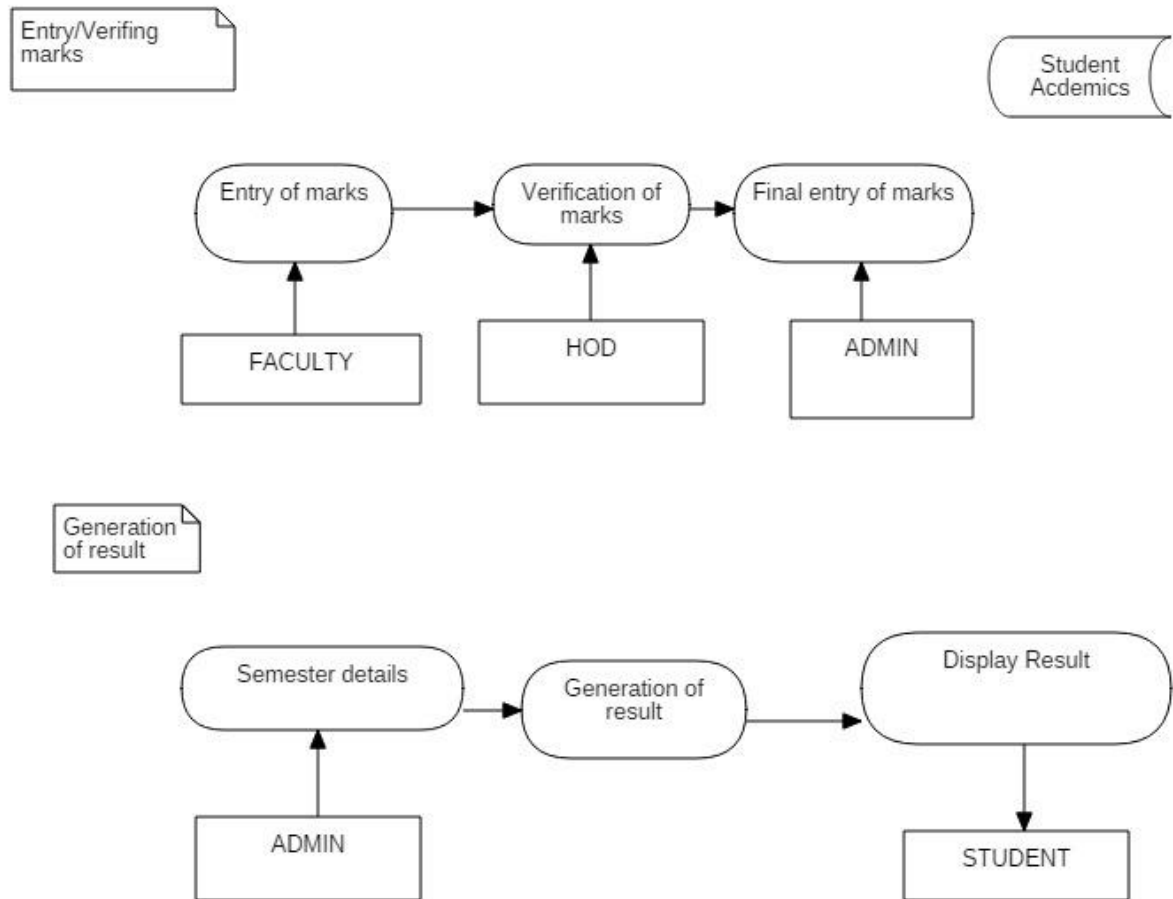
(figure 2)

DFD 1.1



(figure 3)

DFD 1.2

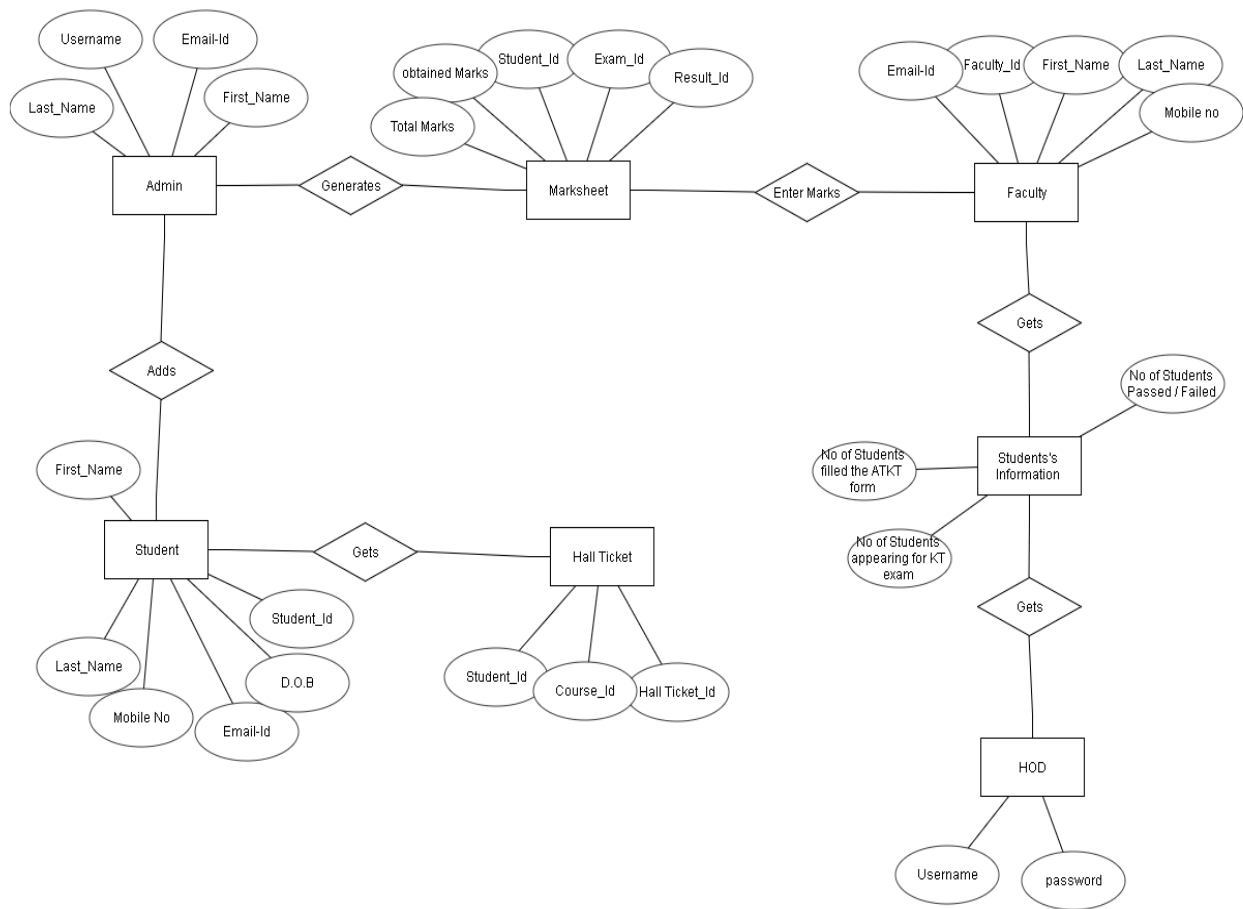


(figure1.2)

2.4 ENTITY RELATIONSHIP DIAGRAM

An entity relationship diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is a component of data. In other words, ER diagrams illustrate the logical structure of databases.

At first glance an entity relationship diagram looks very much like a flowchart. It is the specialized symbols, and the meanings of those symbols, that make it unique.



(figure 2.4)

2.5 USECASEDIAGRAM

A use case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well.

Use case diagrams depict:

Use cases. A use case describes a sequence of actions that provide something of measurable value to an actor and is drawn as a horizontal ellipse.

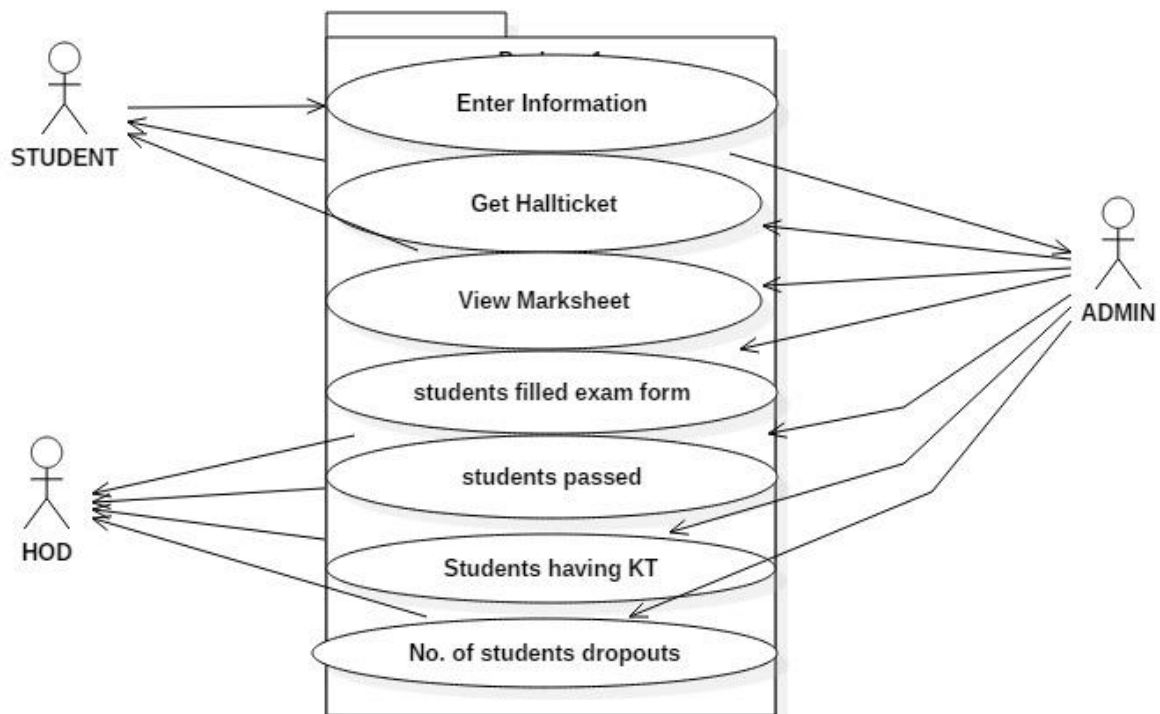
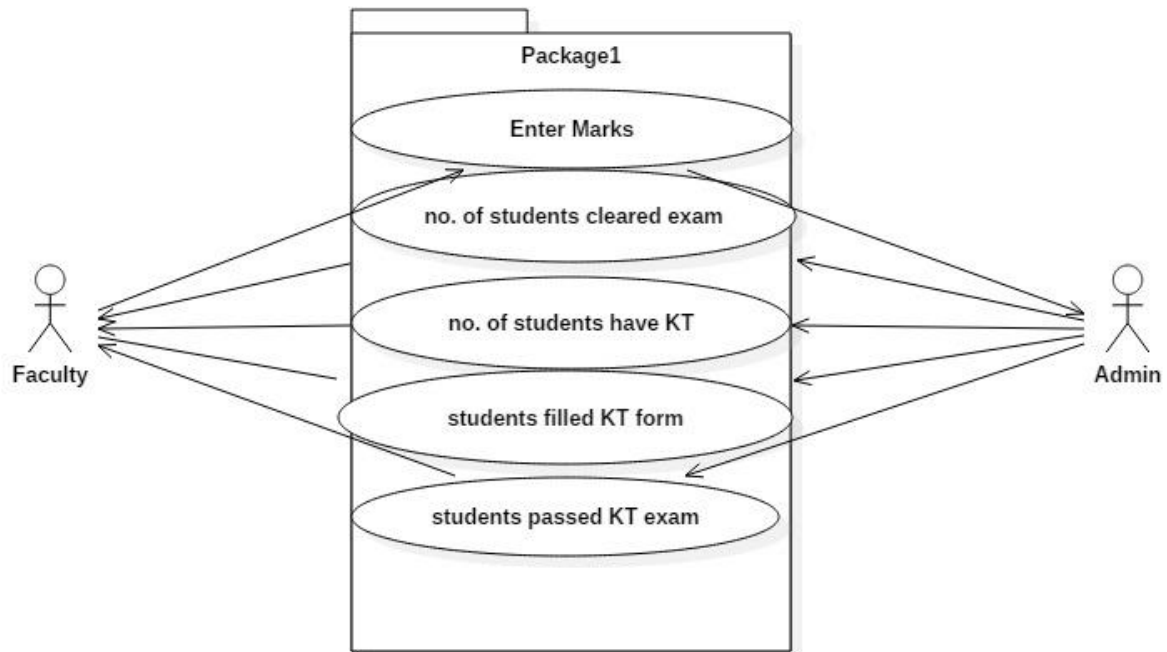
Actors. An actor is a person, organization, or external system that plays a role in one or more interactions with your system. Actors are drawn as stick figures.

Associations. Associations between actors and use cases are indicated in use case diagrams by solid lines. An association exists whenever an actor is involved with an interaction described by a use case. Associations are modelled as lines connecting use cases and actors to one another, with an optional arrowhead on one end of the line. The arrowhead is often used to indicating the direction of the initial invocation of the relationship or to indicate the primary actor within the use case. The arrowheads are typically confused with data flow and as a result I avoid their use.

System boundary boxes (optional). You can draw a rectangle around the use cases, called the system boundary box, to indicates the scope of your system. Anything within the box represents functionality that is in scope and anything outside the box is not. System boundary boxes are rarely used, although on occasion I have used them to identify which use cases will be delivered in each major release of a system.

Packages (optional). Packages are UML constructs that enable you to organize model elements (such as use cases) into groups. Packages are depicted as file folders and can be used on any of the UML diagrams, including both use case diagrams and class diagrams. I use packages only when my diagrams become unwieldy, which generally implies they cannot be printed on a single page, to organize a large diagram into smaller ones.

Use Case Diagram: -



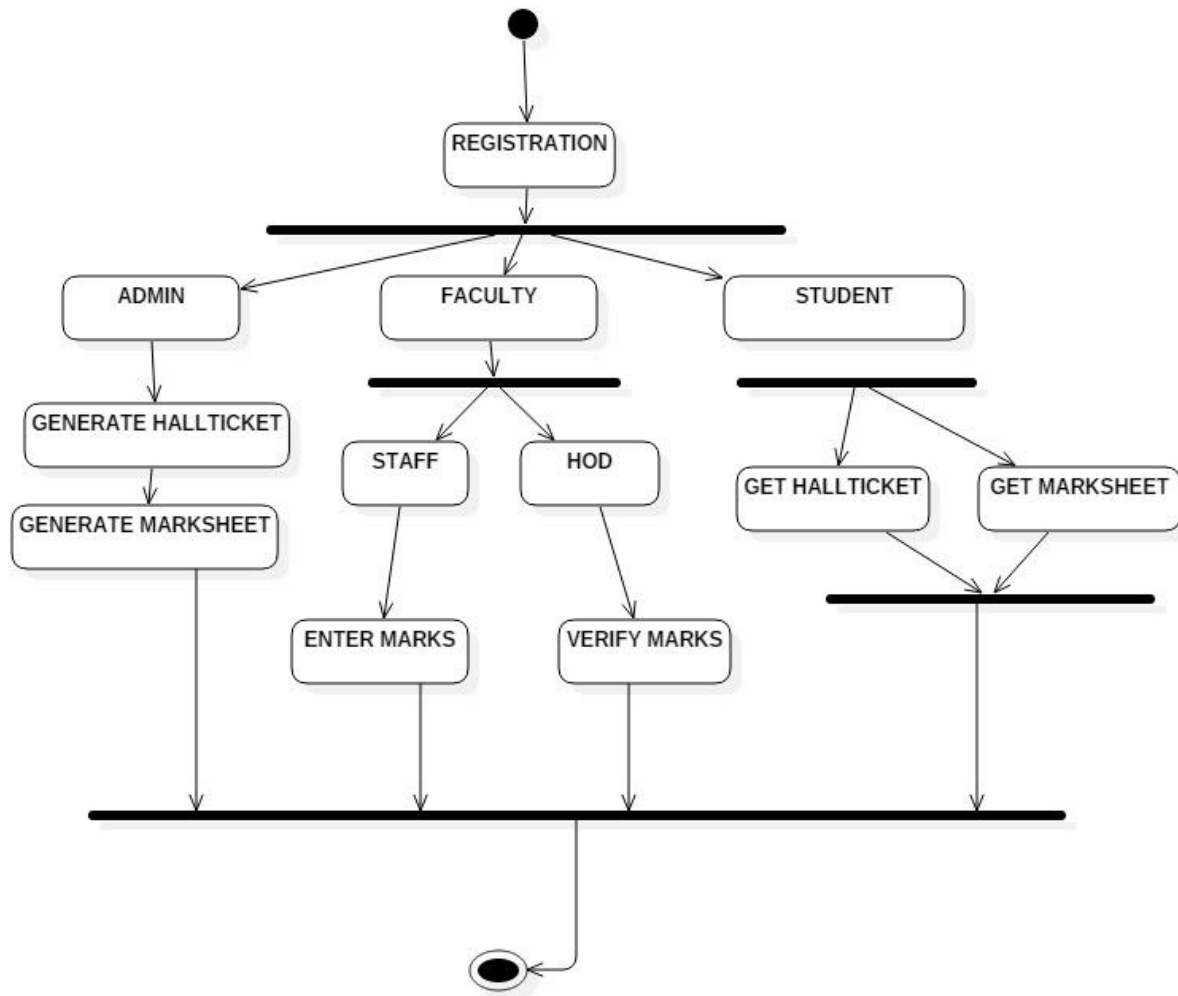
(figure 2.5)

Table Use case report

Title	Exam cell automation system
Description	Exam cell Automation system is website which automates a number of exam process. Each user has its own account with which he/she can easily perform their tasks. The faculty can maintain the details of the student marks in more organized way Students can get their hall tickets and view their mark sheets. The workload of the admin reduces.
Primary Actor	Admin, Faculty members, Head of Department, Students,
Pre-condition	Must have a login id to get access to the website
Post-condition	Students will get the hall tickets Students will get to view the mark sheets.
Main	Generation of hall tickets Generation of Mark sheet
Success scenario	Fetching marks details from the faculty members and generating mark sheets.
Frequency of use	Anytime, mainly during examination
System Requirement	Web Browser

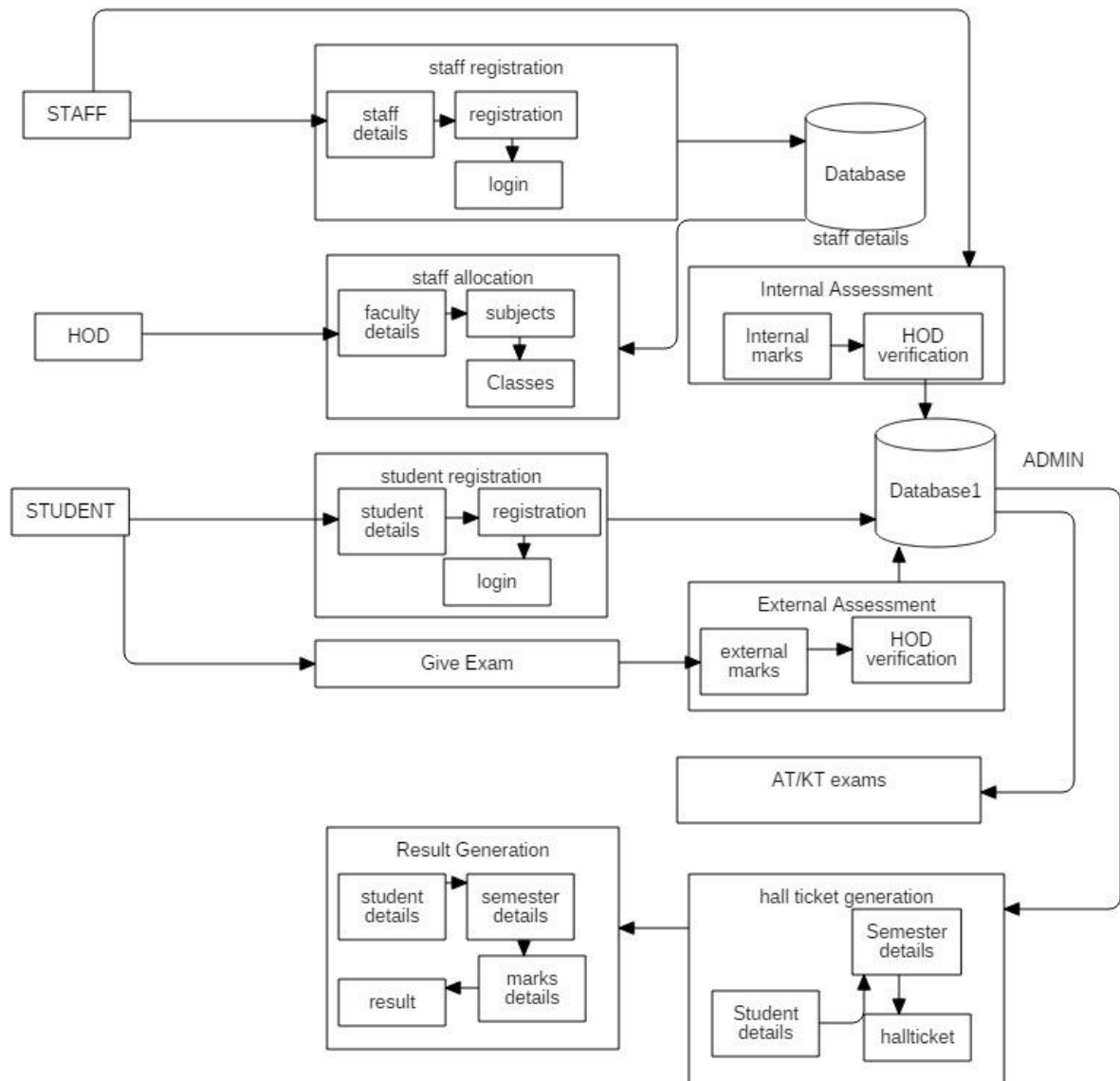
2.6 ACTIVITY DIAGRAM

An activity diagram visually presents a series of actions or flow of control in a system similar to a flowchart or a data flow diagram. Activity diagrams are often used in business process modeling. They can also describe the steps in a use case diagram. Activities modeled can be sequential and concurrent. In both cases an activity diagram will have a beginning and an



(figure 2.6)

2.7 ARCHITECTURE DIAGRAM



(figure 2.7)

3 SYSTEM PLANNING

GANTT CHART

System Planning

Gantt chart

A Gantt chart is a horizontal bar chart developed as a production control tool in 1917 by Henry L. Gantt, an American engineer and social scientist. Frequently used in project management, a Gantt chart provides a graphical illustration of a schedule that helps to plan, coordinate, and track specific tasks in a project.

Gantt charts may be simple versions created on graph paper or more complex automated versions created using project management applications such as Microsoft Project or Excel.

How it is made:

A Gantt chart is constructed with a horizontal axis representing the total time span of the project, broken down into increments (for example, days, weeks, or months) and a vertical axis representing the tasks that make up the project (for example, if the project is outfitting your computer with new software, the major tasks involved might be: conduct research, choose software, install software). Horizontal bars of varying lengths represent the sequences, timing, and time span for each task. Using the same example, you would put "conduct research" at the top of the vertical axis and draw a bar on the graph that represents the amount of time you expect to spend on the research, and then enter the other tasks below the first one and representative bars at the points in time when you expect to undertake them. The bar spans may overlap, as, for example, you may conduct research and choose software during the same time span. As the project progresses, secondary bars, arrowheads, or darkened bars may be added to indicate completed tasks, or the portions of tasks that have been completed. A vertical line is used to represent the report date.

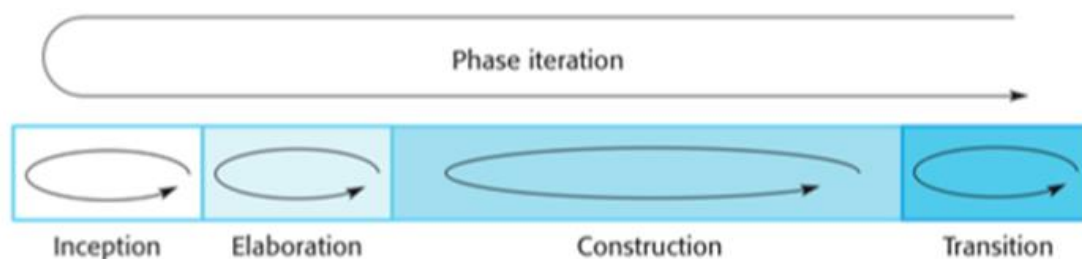
Table 2 Gantt chart for Exam Automation System

Task	Start Date	End Date	November -2017	December- 2017	January- 2018	February- 2018	March- 2018	April- 2018
Initiation	27-11-17	30-11-17						
Planning	7-11-17	7-12-17						
Project Planning	7-11-17	20-11-17						
Resource Planning	21-11-17	27-11-17						
Financial Planning	28-11-17	3-12-17						
Analysis	8-12-17	2-1-18						
Elicitation	8-12-17	14-12-17						
Validation	15-12-17	17-12-17						
Specification	17-12-17	25-12-17						
Verification	26-12-17	2-1-18						
Design	3-1-18	4-2-18						
System Design	3-1-18	15-1-18						
Database Design	16-1-18	27-1-18						
Test Strategy	28-1-18	4-2-18						
Coding	5-2-18	29-2-18						
Login Module	5-2-18	7-2-18						
Hall ticket Module	7-2-18	17-2-18						
Mark sheet Module	17-2-18	23-2-18						
Testing	1-4-18	15-4-18						
Black Box Testing	1-4-18	7-14-18						
White Box Testing	8-4-16	15-4-16						

3.1 PROCESS INVOLVED

MODEL USED

A software process model is a simplified representation of a software process. Each model represents a process from a specific perspective. Iterative development model aims to develop a system through building small portions of all the features, across all components. We build a product which meets the initial scope and release it quickly for customer feedback. An early version with limited features important to establish market and get customer feedback. In each increment, a slice of system features is delivered, passing through the requirements till the deployment.



The phases of iterative development

Iterative Model

Unlike the more traditional waterfall model, which focuses on a stringent step-by-step process of development stages, the iterative model is best thought of as a cyclical process. After an initial planning phase, a small handful of stages are repeated over and over, with each completion of the cycle incrementally improving and iterating on the software. Enhancements can quickly be recognized and implemented throughout each iteration, allowing the next iteration to be at least marginally better than the last.

Planning & Requirements: As with most any development project, the first step is go through an initial planning stage to map out the specification documents, establish software or hardware requirements, and generally prepare for the upcoming stages of the cycle.

Analysis & Design: Once planning is complete, an analysis is performed to nail down the appropriate business logic, database models, and the like that will be required at this stage in the project. The design stage also occurs here, establishing any technical requirements (languages, data layers, services, etc.) that will be utilized in order to meet the needs of the analysis stage.

Implementation: With the planning and analysis out of the way, the actual implementation and coding process can now begin. All planning, specification, and design docs up to this point are coded and implemented into this initial iteration of the project.

Testing: Once this current build iteration has been coded and implemented, the next step is to go through a series of testing procedures to identify and locate any potential bugs or issues that have cropped up.

Evaluation: Once all prior stages have been completed, it is time for a thorough evaluation of development up to this stage. This allows the entire team, as well as clients or other outside parties, to examine where the project is at, where it needs to be, what can or should change, and so on.

The advantage of this model is that there is a working model of the system at a very early stage of development which makes it easier to find functional or design flaws. Finding issues at an early stage of development enables to take corrective measures in a limited budget.

The disadvantage with this SDLC model is that it is applicable only to large and bulky software development projects. This is because it is hard to break a small software system into further small serviceable increments/modules.

Pros

1. Some working functionality can be developed quickly and early in the life cycle.
2. Results are obtained early and periodically.
3. Parallel development can be planned.
4. Progress can be measured.
5. Less costly to change the scope/requirements.
6. Testing and debugging during smaller iteration is easy.
7. Risks are identified and resolved during iteration; and each iteration is an easily managed milestone.
8. With every increment operational product is delivered.
9. Issues, challenges & risks identified from each increment can be utilized/applied to the next increment.
10. It supports changing requirements.

Cons

1. More resources may be required.
2. Although cost of change is lesser but it is not very suitable for changing requirements.
3. More management attention is required.
4. System architecture or design issues may arise because not all requirements are gathered in the beginning of the entire life cycle.
5. Defining increments may require definition of the complete system.
6. Not suitable for smaller projects.
7. Management complexity is more.
8. End of project may not be known which a risk is.

3.2 METHODOLOGY ADOPTED

The students and the faculties will be registered first followed by the collection of information about the students and the respective faculty members along with the admin of the whole system of the exam cell automation system. The system would generate the hall tickets, results and mark sheets for the students. The student would give the regular exams. The marks would be entered by the faculty marks and the final verification of the marks would be done by the Head of Department. The system would detect if the student is eligible or not so it will generate its hall ticket. The system would allow the students to view their results from any remote access, print the hall tickets for which they need not to stand in long queues and follow the tedious process.

The system would allow the faculty members to insert the marks and the HOD of the department gets a full process. The processes will be automated by implementing this system and the workload will be reduced to a great extent. The system would allow the generation of the result.

In this System the input will be the marks of the students of their theory exams, practical exams, internal assessment, external assessment. Grades and pointers would be calculated according to rules, formulae, and the ordinances.

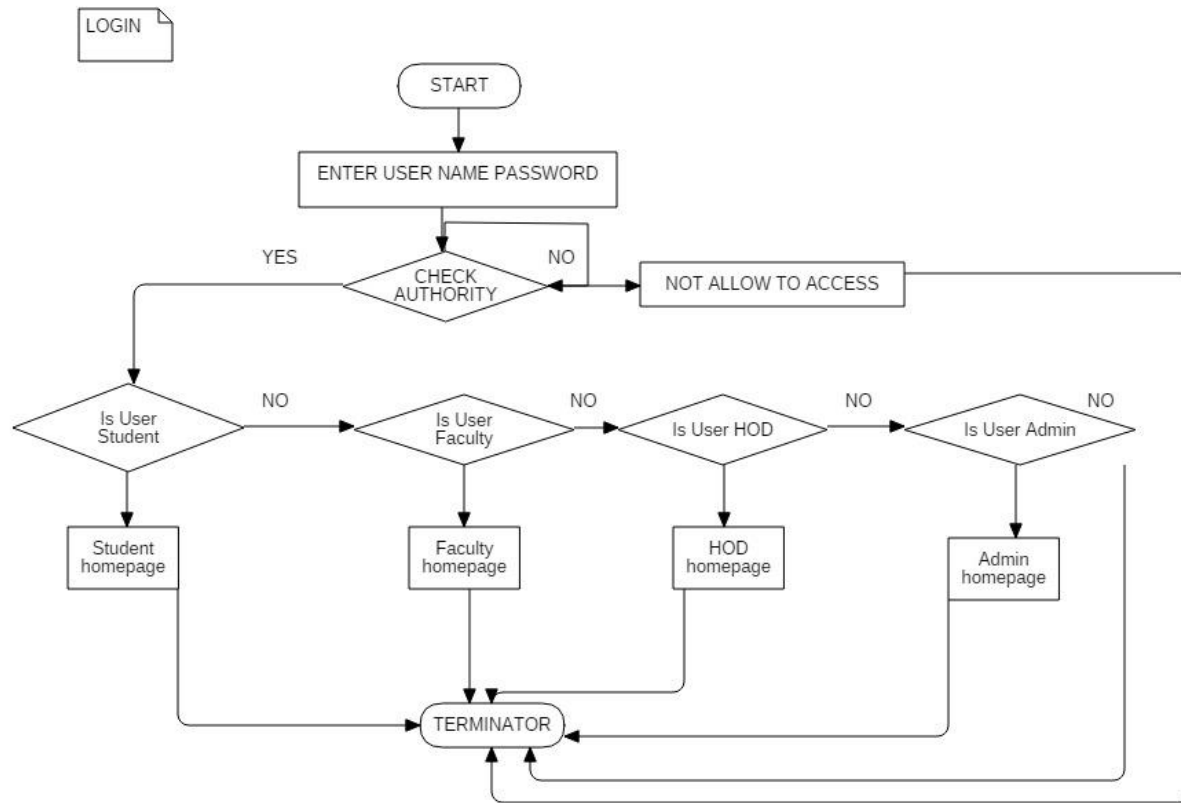
OUR SYSTEM IS DIVIDED INTO VARIOUS MODULES

1.LOGIN MODULE

2.HALL TICKET GENERATION

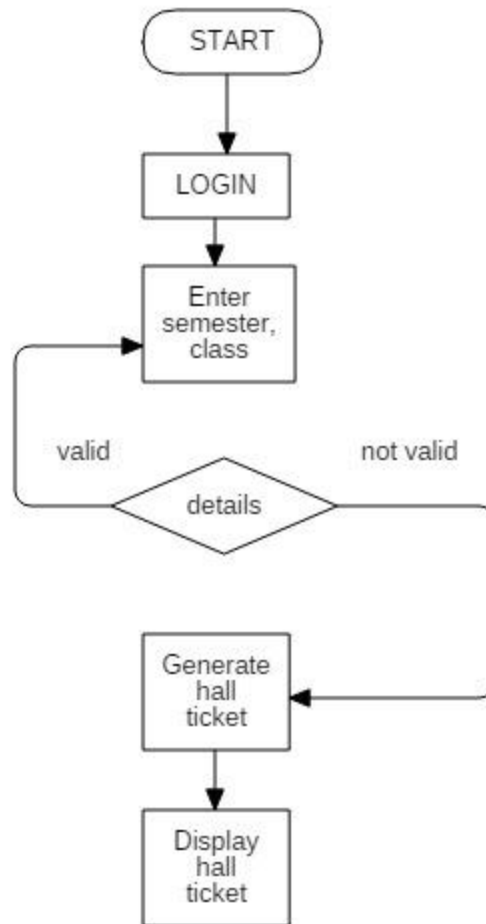
3.EXAM SEATING ARRANGEMENT

4.RESULTS GENERATION

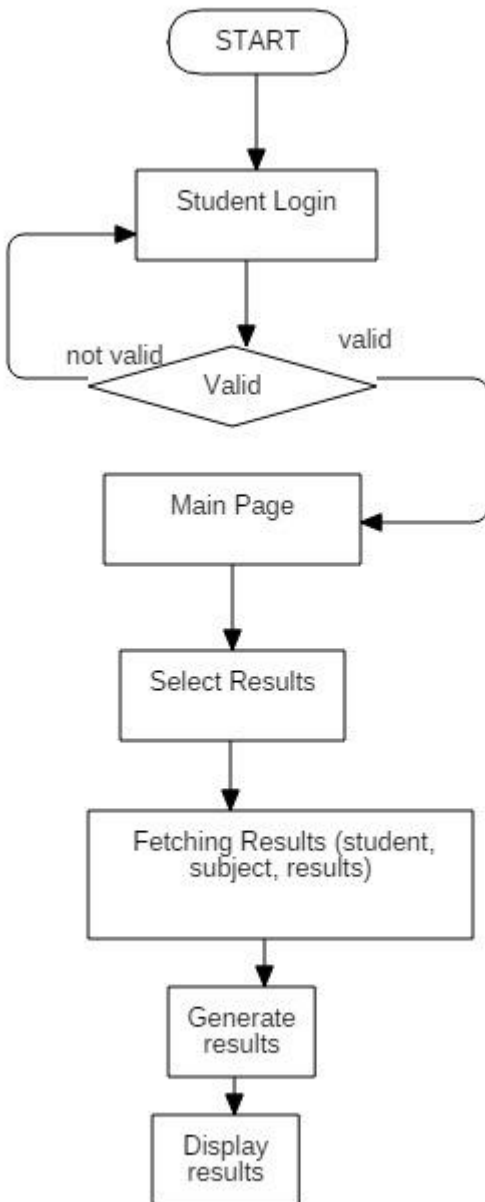


The login module of the system is the initial stage of the system. It will check for the valid registered users. If the username and passwords match, the system would identify the type of the user whether it is a student, faculty, or some other. Based on the verification and validation and the identification process the system would redirect the users to their respective homepages.

HALL TICKET GENERATION

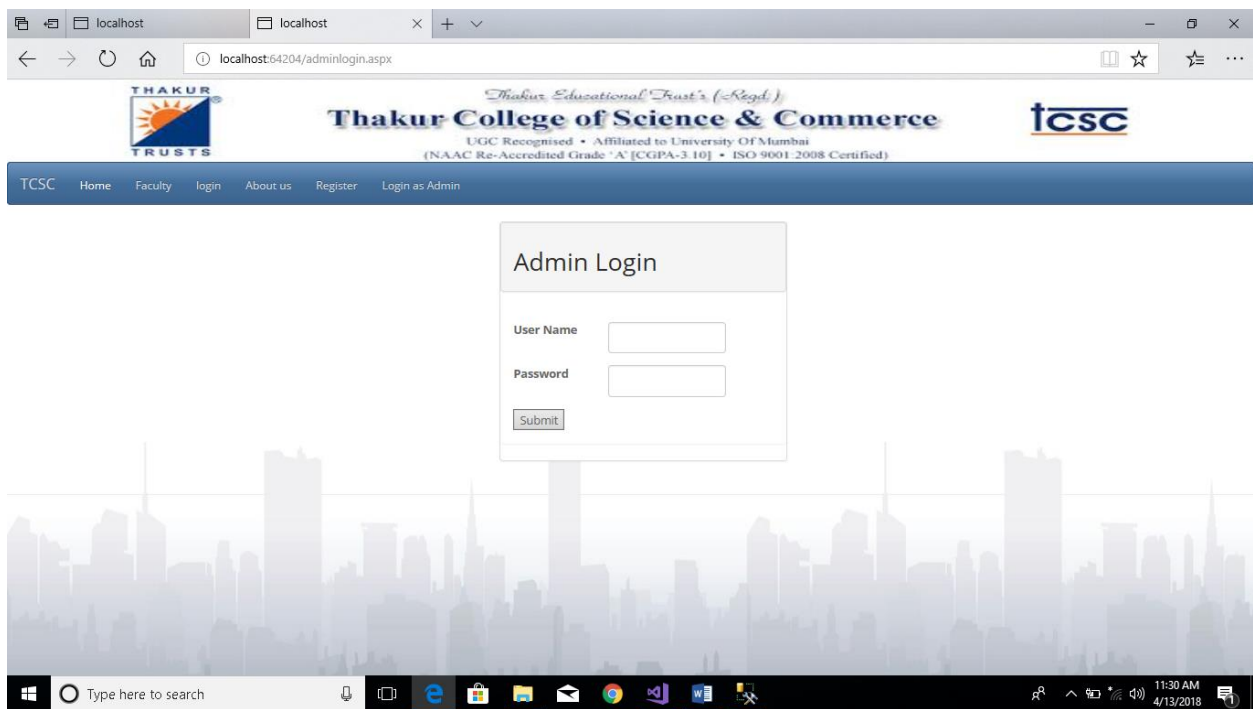
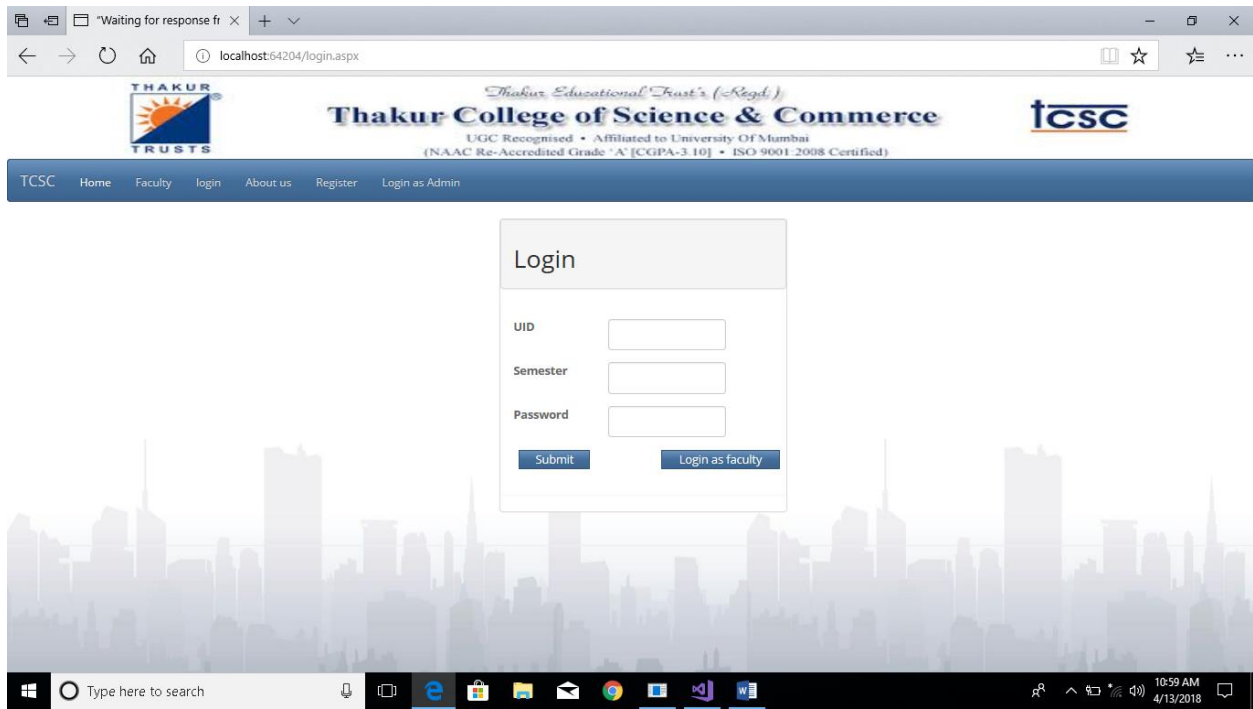


The logged in student after the examination doesn't need to stand in long queues for the collection of the hall tickets. The student need to select the option for the hall tickets where the system would fetch the required details for the particular student, the department, the semester, the which will be filled in a standard hall ticket format along with the calculated percentage.



The logged in student after the examination doesn't need to stand in long queues for the collection of the results. The student need to select the option for the result where the system would fetch the required details for the particular student, the department, the semester, the marks which will be filled in a standard mark sheet format along with the calculated percentage.

4 SYSTEM IMPLEMENTATION



localhost localhost x + -

localhost:64204/addfaculty.aspx

THAKUR TRUSTS *Thakur Educational Trust's (Regd.)*
Thakur College of Science & Commerce
UGC Recognised • Affiliated to University Of Mumbai
(NAAC Re-Accredited Grade 'A' [CGPA-3.10] • ISO 9001:2008 Certified)

tcsc

TCSC Home Main Add Courses Add Subject Add Faculty

Faculty ID	Faculty ID
First Name	FirstName
Last Name	LastName
Email Id	Emailid
Mobile No	Mobile No
Password	Password
UserRoll	UserRoll

Submit

Type here to search

11:31 AM 4/13/2018

localhost localhost x + -

localhost:64204/facultylogin.aspx

THAKUR TRUSTS *Thakur Educational Trust's (Regd.)*
Thakur College of Science & Commerce
UGC Recognised • Affiliated to University Of Mumbai
(NAAC Re-Accredited Grade 'A' [CGPA-3.10] • ISO 9001:2008 Certified)

tcsc

TCSC Home Faculty login About us Register Login as Admin

Faculty Login

Faculty ID	
Password	

Submit

Type here to search

11:32 AM 4/13/2018

ANJALIExamCellAutomation - dbo.FacultyTable1 - Microsoft SQL Server Management Studio

File Edit View Project Debug Query Designer Tools Window Help

Object Explorer

Connect - ANJALI (SQL Server 11.0.2100 - ANJALI) - ANJALI

Databases

System Databases

Database Snapshots

ExamCellAutomation

Database Diagrams

Tables

System Tables

FileTables

dbo.AdminTable

dbo.CoursesTable

dbo.DivisionTable

dbo.ExamTable

dbo.FacultySubmapp

dbo.FacultyTable1

dbo.Result

dbo.StudentCourseM

dbo.StudentHallTicke

dbo.StudentsTable

dbo.SubjectTable

Views

Synonyms

Programmability

Service Broker

Storage

Security

ReportServer

ReportServerTempDB

Security

Server Objects

ANJALIExamCellAut...dbo.FacultyTable1

FacultyId	FirstName	LastName	EmailId	MobileNo	PassWord	UserRoll	AddedOn	AddedBy	UpdatedOn	UpdatedBy
1	Dr.Santosh	singh	sksingh123@g...	9822645636	SK124hod	HOD	2018-04-12	admin	2018-04-12	admin
2	Omkar	singh	omsingh13@g...	8853663265	omi78	Assistant Teacher	2018-04-12	admin	2018-04-12	admin
3	Jyotsna	Anthal	jyot89@gmail.c...	8742530236	Jyotsana637	Assistant Teacher	2018-04-12	admin	2018-04-12	admin
4	Poonam	Jain	jaip58@gmail...	9363673773	poolain22	Assistant Teacher	2018-04-12	admin	2018-04-12	admin
5	Anand	Upadhaya	anand98@gsai...	9953666366	Anand	Assistant Teacher	2018-04-12	admin	2018-04-12	admin
6	Mithilesh	vishwakarma	vishmi25@gsa...	885536637	mithuu	Assistant Teacher	2018-04-12	admin	2018-04-12	admin
7	Sherilyn	Kevin	sherk67@gmail...	9936333467	kevin	Assistant Teacher	2018-04-12	admin	2018-04-12	admin
8	Blessina	Gonsalves	gonsalb73@gm...	9364664646	BlessgolV34	Assistant Teacher	2018-04-12	admin	2018-04-12	admin
9	Abhijeet	Pawaskar	abhikar42@gm...	8753535357	abipawkar5	Assistant Teacher	2018-04-12	admin	2018-04-12	admin
10	suman	yadav	yadavsuman56...	9902743719	sud783	Assistant Teacher	2018-04-12	admin	2018-04-12	admin
11	radhika	desai	radha67@gmail...	9841606341	radhaa22	Assistant Teacher	2018-04-12	admin	2018-04-12	admin
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Ready

Type here to search

11:33 AM 4/13/2018

ANJALIExamCellAutomation - dbo.SubjectTable - Microsoft SQL Server Management Studio

File Edit View Project Debug Query Designer Tools Window Help

Object Explorer

Connect - ANJALI (SQL Server 11.0.2100 - ANJALI) - ANJALI

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dbo.CoursesTable

dbo.DivisionTable

dbo.ExamTable

dbo.FacultySubmapp

dbo.FacultyTable1

dbo.Result

dbo.StudentCourseM

dbo.StudentHallTicke

dbo.StudentsTable

dbo.SubjectTable

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Server Objects

ANJALIExamCellAut...dbo.SubjectTable

SubjectId	CourseId	SubjectName	Description	AddedOn	AddedBy	UpdatedOn	UpdatedBy
1	1	Imperative Pro...	IP	2018-04-12	admin	2018-04-12	admin
2	1	Digital Electroni...	DE	2018-04-12	admin	2018-04-12	admin
3	1	Operating Syste...	OS	2018-04-12	admin	2018-04-12	admin
4	1	Discrete Mathe...	DM	2018-04-12	admin	2018-04-12	admin
5	1	Communication...	CS	2018-04-12	admin	2018-04-12	admin
6	2	Object oriented...	OOP	2018-04-12	admin	2018-04-12	admin
7	2	Microprocessor...	MA	2018-04-12	admin	2018-04-12	admin
8	2	Web Program...	WP	2018-04-12	admin	2018-04-12	admin
9	2	Numerical and ...	NAST	2018-04-12	admin	2018-04-12	admin
10	2	Green Computi...	GC	2018-04-12	admin	2018-04-12	admin
11	3	Python Progra...	PP	2018-04-12	admin	2018-04-12	admin
12	3	Data Structures	DS	2018-04-12	admin	2018-04-12	admin
13	3	Computer Net...	CN	2018-04-12	admin	2018-04-12	admin
14	3	Database Mana...	Dm	2018-04-12	admin	2018-04-12	admin
15	3	Applied Mathe...	AM	2018-04-12	admin	2018-04-12	admin
16	4	Core Java	CJ	2018-04-12	admin	2018-04-12	admin
17	4	Introduction to ...	ES	2018-04-12	admin	2018-04-12	admin
18	4	Computer Ori...	COST	2018-04-12	admin	2018-04-12	admin
19	4	Software Engin...	SE	2018-04-12	admin	2018-04-12	admin
20	4	Computer Grap...	CGA	2018-04-12	admin	2018-04-12	admin
21	5	Network Security	NS	2018-04-12	admin	2018-04-12	admin
22	5	ASP .NET with c#	ASP	2018-04-12	admin	2018-04-12	admin
23	5	Software Testing	ST	2018-04-12	admin	2018-04-12	admin
24	5	Advanced JAVA	AJ	2018-04-12	admin	2018-04-12	admin

Ready

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ANJALIEExamCellAutomation - dbo.CoursesTable - Microsoft SQL Server Management Studio

File Edit View Project Debug Query Designer Tools Window Help

Object Explorer

Connect ANJALI (SQL Server 11.0.2100 - ANJALI) Databases System Databases Database Snapshots ExamCellAutomation Database Diagrams Tables System Tables FileTables dbo.AdminTable dbo.CoursesTable dbo.DivisionTable dbo.ExamTable dbo.FacultySubmappp dbo.FacultyTable1 dbo.Result dbo.StudentCourseM dbo.StudentHallTicke dbo.StudentsTable dbo.SubjectTable Views Synonyms Programmability Service Broker Storage Security ReportServer ReportServerTempDB Security Server Objects

ANJALIExamCellAut... - dbo.CoursesTable ANJALIExamCellAut... - dbo.SubjectTable ANJALIExamCellAut... - dbo.StudentsTable ANJALIExamCellAut... - dbo.FacultyTable1

CourseId	CourseName	Description	AddedOn	AddedBy	UpdatedOn	UpdatedBy
1	FYBSC IT SEM 1	First Year	2018-04-12	admin	2018-04-12	admin
2	FYBSC IT SEM 2	First Year	2018-04-12	admin	2018-04-12	admin
3	SYBSC IT SEM 3	Second Year	2018-04-12	admin	2018-04-12	admin
4	SYBSC IT SEM 4	Second Year	2018-04-12	admin	2018-04-12	admin
5	TYBSC IT SEM 5	Third year	2018-04-12	admin	2018-04-12	admin
6	TYBSC IT SEM 6	Third year	2018-04-12	admin	2018-04-12	admin
NULL	NULL	NULL	NULL	NULL	NULL	NULL

1 of 6 | Cell is Read Only.

Ready

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5) Cost and Benefit analysis

Effort Estimation Using COCOMO Model:

For Any Given Set of Requirement, It Is Essential to Know How Much It Will Cost to Develop the Application Software to Satisfy the Given Requirements and How Much Time It Will Take for The Development. These Estimates Are Needed Before Development Is Initiated. The Primary Reason for Cost and Schedule Estimation Is to Enable the Client Or Developer to Perform A Cost Benefit Analysis and For Project Monitoring and Control.

The Project Has Been Developed Considering the COCOMO (Constructive Cost Model) Model Which Computes Software Development Effort as A Function of Program Size and Set Of “Cost Driver” That Include Product, Hardware, Personnel and Project Attribute. Efforts Is Calculated in Terms of Person-Month.

Steps of Analysis:

1. Obtain an Initial Estimate of Development Effort as Follows:

$$E_i = A * (KSLOC)^B$$

Where A & B Are Constants Which Are Determined Depending on The Type of Project. KSLOC Is Thousand Single Lines of Code

2. Determine A Set Of 15 Multiplying Factors From Different Attributes Of The Product Which Are:

Product Attributes: Required Reliability, Product Complexity

Computer Attributes: Execution Time Constraints, Main Storage Constraints, Virtual Machine Volatility, Computer Turn around Time.

Personnel Attributes:

Analyst Capability, Application Experience, Programmer Capability, Virtual Machine Experience, Programming Language Experience.

Product Attributes:

Modern Programming Practices, Use of The Software Tools, Required Development Schedule.

Effort Adjustment Factor(Eaf)

Final Effort Estimate Is Calculated By Multiplying The Initial Estimate With Eaf :

$$E = EAF * E_i (\text{Person-Month})$$

Following Is A Basic COCOMO Model of The System Based on Organic Mode

EAF calculation

Product Attributes	Rating	Rating
Requires Software Reliability	High	1.00
Complexity Of The Product	High	1.00
Hardware Attributes		
Run Time Performance Constrains	High	1.00
Memory Constraints	Normal	1.00
Volatility Of The Virtual Machine Environment	Low	0.87
Personnel Attributes		
	High	1.00
Analyst Capability		
Software Engineer Capability	High	1.17
Application Experience	High	1.00
Programming Language Experience	High	1.00
Product Attributes		
Use Of Software Tools	High	0.91
Application Of Software engineering Methods	High	0.91
Required Development Schedule	Normal	1.00

The Intermediate COCOMO Formula Now Take The Form....

$$E = A_i (KLOC)^{B_i} / EAF$$

Where E Is the Effort Applied in Person-Month, KLOC Is The Estimated Number Of Thousand Of Delivered Lines Of Code For The Project And EAF Is The Factor Calculated Above $A_i=3.2$ And $B_i=1.05$

$$EAF = 1.00 * 1.00 * 1.08 * 1.00 * 1.00 * 0.87 * 1.00 * 1.17 * 1.00 * 1.00 * 0.91 * 0.91 * 1.00 \\ = 0.9103$$

KLOC Calculation:

File	KLOC
Login.aspx	0.050
Home.aspx	0.071
FacultyLogin.aspx	0.045
Registration.aspx	0.083
Welcome.aspx	0.094
SubjectInfo.aspx	0.037
Adminlogin.aspx	0.035
Adminhome.aspx	0.034
AtKT.aspx	0.059
Faculty.aspx	0.090
FacultySubjectMapping.aspx	0.059
AddCourse.aspx	0.030
AddFaculty.aspx	0.050
AddSubjects.aspx	0.034
Sem1.aspx	0.028
Sem2.aspx	0.026
Sem3.aspx	0.026
Sem4.aspx	0.026
Sem5.aspx	0.026
Sem6.aspx	0.026

KLOC= 0.929

KSLOC=E=(3.2)*(0.929)^(1.05)*(0.9103)/(3.2)&(1.05)same

E= 2.70

Effort= 3 person-month

Estimate of Development

From The Above Data, we Have Inferred That The KLOC Is And The Effort Is Person-Month .On The Basis Of This Data , We Can Estimate The Development Time. We have:

$$D = Cb \epsilon Db$$

$$D = (2.5)(3)^{(0.38)}$$

$$D = 3$$

Development Time = 3 Months

Estimation of Development Cost

Total time required to develop the project: 3 Months

Cost per day for developer: ₹ 500

Cost per day for tester: ₹ 250

Number of developers: 3

Total Cost = $3 \times 90 \times 500$

Total Cost for developing = 1,35,000/-

Number of tester: 1

Total cost for testing = $1 \times 250 \times 45 = 11,250/-$

Total cost of project = total cost of developer + total cost of tester

$$= 1,35,000 + 11,250$$

$$= 1,46,250/-$$

Therefore, total cost of developing and testing the project is 1,46,250 rupees

6. SYSTEM TESTING

6.1 Methodology used for Testing

Testing

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test. Software testing can also provide an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation.

Test techniques include, but are not limited to, the process of executing a program or application with the intent of finding software bugs (errors or other defects). Software testing can be stated as the process of validating and verifying that a computer program/application/product:

- **meets the requirements that guided its design and development,**
- **works as expected,**
- **can be implemented with the same characteristics.**

Software testing, depending on the testing method employed, can be implemented at any time in the development process. Traditionally most of the test effort occurs after the requirements have been defined and the coding process has been completed, but in the Agile approaches most of the test effort is on-going. As such, the methodology of the test is governed by the chosen software development methodology.

Different software development models will focus the test effort at different points in the development process. Newer development models, such as Agile, often employ test-driven development and place an increased portion of the testing in the hands of the developer, before it reaches a formal team of testers. In a more traditional model, most of the test execution occurs after the requirements have been defined and the coding process has been completed.

Software testing methods are traditionally divided into: -

- **White box testing**
- **Black box testing**

6.1.1 White-Box testing

White-box testing is when the tester has access to the internal data structures and algorithms including the code that implement these.

Types of White-box-testing

The following types of white-box testing exist:

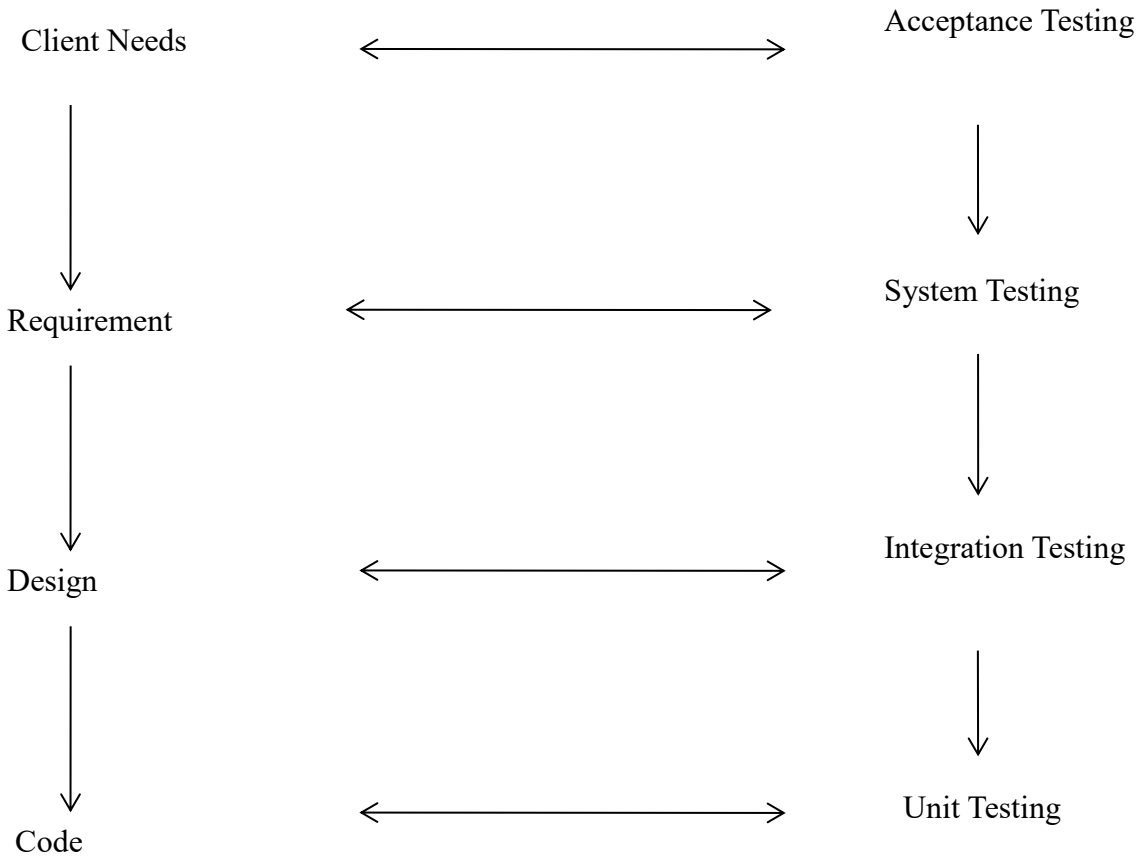
- API testing (application programming interface) - testing of the application using public and private APIs
- Code coverage - creating tests to satisfy some criteria of code coverage (e.g., the test designer can create tests to cause all statements in the program to be executed at least once)
- Fault injection methods - intentionally introducing faults to gauge the efficacy of testing strategies
- Mutation testing methods
- Static testing methods

Test coverage

White box testing methods can also be used to evaluate the completeness of test suite that was created with black-box testing methods. This allows the software team to examine parts of a system that are rarely tested and ensures that the most important function points have been tested.

Two common forms of code coverage are:

- Statement coverage, which reports on number of line executed to complete the test.
- Function coverage, which reports on functions executed.



6.1.2 Black-box Testing

The black-box approach is a testing method in which test data are derived from the specified functional requirements without regard to the final program structure. It is also termed data-driven, input/output driven, or requirements-based testing. Because only the functionality of the software module is of concern, black-box testing also mainly refers to functional testing – a testing method emphasized on executing the functions and examination of their input and output data. The tester treats the software under test as a black box – only the inputs, outputs and specification are visible, and the functionality is determined by observing the outputs to corresponding inputs. In testing, various inputs are exercised and the outputs are compared against specification to validate the correctness. All test cases are derived from the specification. No implementation details of the code are considered.

Test Cases

<u>Sr No</u>	<u>Task</u>	<u>Expected Output</u>	<u>Observed Output</u>	<u>Result</u>
1	Login with password	Activity starts	Activity started	Pass
2	Generate Mark-sheet	Generated	Generated	Pass
3	At/KT forms	Generated	Generated	Pass
4	Hall Ticket	Generated	Generated	Pass
5	Add Faculty	Successfully Added	Successfully Added	Pass
6	Add Subjects	Successfully added	Successfully added	Pass
7	Add Course	Successfully Added	Successfully Added	Pass
8	Faculty Subject Mapping	Successfully Mapped	Successfully Mapped	Pass
9	Student Hall-Ticket Mapping	Successfully Mapped	Successfully Mapped	Pass
10	Student Course Mapping	Successfully Mapped	Successfully Mapped	Pass

7) SYSTEM MAINTENANCE AND REVALUTATION

The results obtained from the evaluation process help the organization to determine whether its information systems are effective and efficient or otherwise. The process of monitoring, evaluating, and modifying of existing information systems to make required or desirable improvements may be termed as System Maintenance.

System maintenance is an ongoing activity, which covers a wide variety of activities, including removing program and design errors, updating documentation and test data and updating user support. For the purpose of convenience, maintenance may be categorized into three classes, namely:

i) Corrective Maintenance:

This type of maintenance implies removing errors in a program, which might have crept in the system due to faulty design or wrong assumptions. Thus, in corrective maintenance, processing or performance failures are repaired.

The proper measures are taken so that there is no error in the system so that the system does not get hampered by the viruses. The system does not contain any malicious code which may create any issues in the further maintenance of the system.

ii) Adaptive Maintenance:

In adaptive maintenance, program functions are changed to enable the information system to satisfy the information needs of the user. This type of maintenance may become necessary because of organizational changes which may include:

- a) Change in the organizational procedures, the university changes the system of grading the system to the examination process the system is very much adaptive to the new changes which occurs due to the system changes in the exam cell process.
- b) Change in organizational objectives, goals, policies, etc.
- c) Change in forms.
- d) Change in information needs of managers.
- e) Change in system controls and security needs, etc.

iii) Perfective Maintenance:

Perfective maintenance means adding new programs or modifying the existing programs to enhance the performance of the information system. This type of maintenance undertaken to respond to user's additional needs which may be due to the changes within or outside of the organization. Outside changes are primarily environmental changes, which may in the absence of system maintenance, render the information system ineffective and inefficient. These environmental changes include:

- a) Changes in governmental policies, laws, etc.,
- b) Economic and competitive conditions, and
- c) New technology.

8.USER OPERATIONAL MANUAL

KEY WORDS

Examination

Exam

Automation

Student

Result

Hall Ticket

H:

Hall Ticket a parchment necessary for appearing for an examination which consists of valid details for the students.

I:

Internal Assessment are the marks obtained by calculating the marks of the students in the internal tests, the teamwork and the attendance record.

K.T.:

K.T. stands for keep term. A student if fails in a particular subject is known as a K.T. where the student doesn't lose a year for a single subject.

U:

UML stands for Unified Modelling Language is a general-purpose modelling language used widely in the field of software engineering through which the design of the system can be understood thoroughly.

Use case is a diagram which defines the interactions between external entities and the system.

SECURITY ASPECTS

The users cannot access without a valid login id and password.

The users have a proper password so that none of the details of the whole exam cell automation process is breached.

ACCESS RIGHTS

The rights are reserved with the project team which includes Ms. Rachana Patel, Ms. Anjali Mane and Ms. Priya Chauhan.

The rights are also reserved with the Guide of the Project and the Head of Department Dr. Santosh Singh.

BACKUP CONTROLS

The project has been kept in every team-mates laptop.

And a hard-drive.

9.LIMITATIONS

The system is created for the department of the IT in the college. It does not perform the activities of the hall ticket generation and mark sheet for the whole college.

The system does not allocate seating arrangements to the students as per the availability of the classes and accordingly to the no. of students.

The project team was unable to resolve the issues.

The System Does not generate the Exam Time-Table Which can also be a module.

We Weren't able to add marks for students who got KT.

FUTURE ENHANCEMENT

- 1.As the technologies are emerging, it is possible to enhance the system and make it adaptable to the desired environment i.e. customize as per the college requirement. For security issues a technology known as the QR code can be implemented. Using which the results, database, could be digitalized saving a lot of space and faster access.
- 2.By internet, automatically timetable has to fetch to the database and that seating should be created according to the particular date and session.
- 3.And as we are creating this only for a particular department later its benefits can be taken by the entire college and different departments.
- 4.As per the requirements of the College, further changes could be implemented in the system making it more reliable, more efficient, and convenient for everybody to use it.
- 5.Seating Arrangement Can Be also added as module to the project as for availing the student's direct arrangement depending upon factors such as no. of students and subject.
- 6.The System can also generate Exam Time-Table for the exam.

CONCLUSION

1.Ultimately the result of the implementation of this project will lead to reduce the work load of the faculty members and the exam cell members.

2.A web-based interface for showing hall name for student is developed, which makes students to see their seat in respective hall easily. Username and password is created for unique user by registering their details in register module.

3.The result would be a fully - fledged Exam Cell Automation System. Apart, from this the students will able to view their results. The faculty members will able to enter the marks for respective subjects for the students and also the external marks of the students

4.The Head of the Department will able to monitor the status of the students as well as marks verification and validation for the students will be done by the Head of the Department. There won't be any need to use multiple systems for different activities.

5.The processes will be covered by this proposed system. This will reduce the tediousness of the manual processes and give a chance for efficient, flexible and automated processes.

10.REFERENCES

BOOKS

- Visual Studio by Bruce Johnsons
- Mastering Visual studio
- Database Management System by A. Silberschatz Korth, S Sudarshan.
- Software engineering by Roger S. Pressman.
- Project Management by Walker Royce.

Websites

- www.w3schools.com
- www.codeproject.com
- <https://stackoverflow.com>
- <https://msdn.microsoft.com>
- <https://www.c-sharpcorner.com>
- www.asp.net-informations.com
- www.YouTube.com