

Use of Information Communication Technology (ICT) in Education Services

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Abstract – *The use of technology, ICT tools etc is growing as the world is going ahead. so it has become extremely necessary to keep everything in touch with computers. With advancement in science & technology, the new working phenomenon has arisen. The whole world is come under the cover. It is the Information Communication technology who has bounded the world under the cover. In our country, mostly in the city an area various online systems are being used for various purposes i.e. everything is computerized to save is time & efforts. It also saves our paperwork. Most of the organizations such as Hospitals, Railways, Airways, Companies, Colleges, etc. have developed & moved forward due to this computerization. The Agriculture and the education departments are two elements where the ICT can play the very important role in the development of the country. Still, In Maximum Computer institutions, they are not using the digital tool for warehousing of data. Hence, all the work related to it is done manually i.e. through paperwork or documentation.*

Key Words: Technology, ICT, Appliance, Warehousing, Institution, Digital, Development, computerized.

1. INTRODUCTION

In this century all the technology is coming under the one roof that is Digitalization. The use of technology, E-Communication, E-commerce is increasing. But it is facing the various Aspects of the region like, Increasing the same type of institution making a competition in the institutions, Only basic knowledge, Increasing use of digital tools, Online activities and Cybercrimes etc. This appliance is made for manage the activities in the computer institution except teaching. IT has connected the world globally and is now changing our lifestyle and social consciousness dynamically [1]. It is a very tedious job to keep all the records & other related transactions through the registers. It consumes a lot of time & man-hours for storing, accessing & maintaining this

information. Agriculture and rural sector have also been greatly influenced by IT in the present era, but the share of IT in agriculture is only 1.7 percent [1]. There are many institutions in which are still maintaining the student's and employee's data manually in registers. It is first priority in such institutions that to maintain the data digitally on the computers.

The aim of this paper is to provide an appliance for "Computer Institute" which provides the organization a procedural approach for storing all its data and records into a single database. All the students' details and staff details are stored and can be modified easily and very efficiently. The transactions done by the school are also kept into the table and can be used whenever they need. C#.net is utilized for front-end operations & to maintain the database, Microsoft Access is used. By using this tool the entire institution's process and work will come under the one roof. We have designed and developed an appliance of computer institute to provide a digital platform for enrolling the candidate in an institute, submit various applications, fees structures, course detailing, staff information etc and more. It will work as the digital service provider in the managing of an institution of information technology. The graphical user interface is used for look the better and quality of appliance.

1.1 Existing System

With tremendous increase in technology, information technology is a fast developing field. Technology which is in vogue today might become redundant tomorrow. That scenario helps to manage IT solutions for business and institutions. This Project is related to 'Computer Institute Management System'. By using 'Computer Institute Management System' software an administrator can Insert, Update and Delete the teachers and students record in this System. The project consists of number of forms, each of which is related to some other. There are separate forms for representing the details of the student and teachers associated with the Institute. The project focuses on

the information about staff, students, fees, exam, subjects, etc.

1.2 Limitations in Present System

There are certain limitations in system, which areas follow:-

- 1) To maintain records of every task like record of staff, student, fees, and staff pay ship report, exam, courses etc. manually is unaffordable.
- 2) To Search the records of student, staff, course from registers is critical process.
- 3) Retrieval of information and searching any old record is critical process.
- 4) In the current system, time is wasted for searching any old records of student, staff.
- 5) Most chances of losing information in the manual files and it requires lot of manpower.

1.3 Proposed system

The demanded tool is related to all the workings in a computer institution. The tool will handle all entries, details, fees, and salaries etc structural data of the institution. To remove the complexities, errors and difficulties the proposed system is developed. These difficulties can takes place at the time of managing the jobs at institution.

Today the digitalization is directly comes with computerization, so the students are coming under the one roof to learn about digitalization and computerization. There is quantity of students which comes to enquire about these courses is increased. few of them registered. Manage all the workings and payments and all another database of the students and employees is very tough job to do in an institution. Since these works does manually thus it takes more time and there are chances of errors such as wrong fee details, wrong student registration etc.

So to reduce these faults “Computer Institute Management System” has been developed. The proposed system “Computer Institute Management System” deals with all the activities done by any computer institute. So this project is developed for all those institutes who are dealing with enquiry, registration, course details, and fee details processes. The developed system is more comfortable with expectations and workings in a computer institution to manage these activities.

1.4 Advantages of Proposed System:-

- ✚ The burden of the manually done activities will Become easy.
- ✚ The user can view the data and performance Analysis can be done.
- ✚ Data retrieval is done quickly.
- ✚ Easy to modify data.
- ✚ Changes in any record will automatically make Changes in the related records.
- ✚ Saves Time.
- ✚ System should be window based, user-friendly and efficient.
- ✚ Appropriate master tables must be present to record relevant data.
- ✚ Security features must exit in the system.
- ✚ Its main advantages of proposed system due to computerization of records maintenance.
- ✚ It can avoid to more paperwork because more data is stored digitally in computer.
- ✚ Due to the appropriate software tools used for computerization,
- ✚ Avoid time consumption in maintenance records. Accuracy can be maintained.

2. Feasibility Study:

Primary investigation of the system determines the feasibility of the system. Therefore the system will be prepared as expected for working in an institution. It also depends on the following kind for adding new modules, features and work with the current running system. If there are many resources and time then it helps to make a system as expected. There are aspects in the feasibility study portion of the preliminary investigation:

- ❖ Technical Feasibility
- ❖ Economical Feasibility
- ❖ Operation Feasibility

2.1 Technical Feasibility:

In the feasibility study, the institution or organization has to determine that what type of technologies will use to build the considered system. Here in this application used the technologies like Visual Studio 2010 and Sql Server 2008. These are free software that would be downloaded from web. Visual Studio 2010 – it is tool or technology.

2.2 Operational Feasibility:

An application make not only economic and technical sense, it must also make operational sense.

2.2.1 Operational Feasibility:

Operations Issues	Support Issues
➤ What tools are needed to support operations?	➤ What document will users be given?
➤ What skills will operators need to be trained in?	➤ What training will give to users?
➤ What processes need to be created and/or updated?	➤ How change requests will be manage?
➤ What documentation does an operation need?	➤ How to maintain after delivery of a system?

Very often you will need to improve the existing operations, maintenance, and support infrastructure to support the operation of the new application that you intend to develop. To determine what the impact will be you will need to understand both the current operations and support infrastructure of your organization and the operations and support characteristics of your new application. To operate this application Gas Agency system that the user no needs to require any technical knowledge that we are used to develop this project is. Asp.net, C#.net. That the application providing rich user interface by user can do the operation in flexible manner.

2.3 Economical Feasibility:

It is directly proportional to the advantages or output which we are getting from the software as the costing of the project for development. Sometimes the system created the same as the existing system so it is not compatible for feasibility to developing the system. The new system is proposed for development of the system with extra benefits and expected outcome. It is

the process of development time of the system. The security must be the great feature of the proposed system. We are using high-level security for the system. Here we don't need any additional equipment except the memory of required capacity. There is no need of pay for the maintenance of the system because the system is using the client machine as the server and client for that system.

3. Methodologies Adopted

3.1 Process Model-Software Engineering

3.1.1 Iterative Process:-

The basic idea behind this method is to develop a system through repeated cycles (iterative) and in smaller portions at a time (incremental), allowing software developers to take advantages of the versions of the system which is learned when we are developing the system. For learning more about the system is get by use of the system. It is also learned when the development of system. The developer of the system plays the role of the tester for that system. The development stage takes place when we are decided to build a system. An iterative life cycle is a good tool for creating the system. It holds the system stages until the system goes to the final stage and implementation. At the iteration, the designing and some Updation are prepared and new features are added.

- Planning
- Requirement
- Analysis and Design
- Deployment

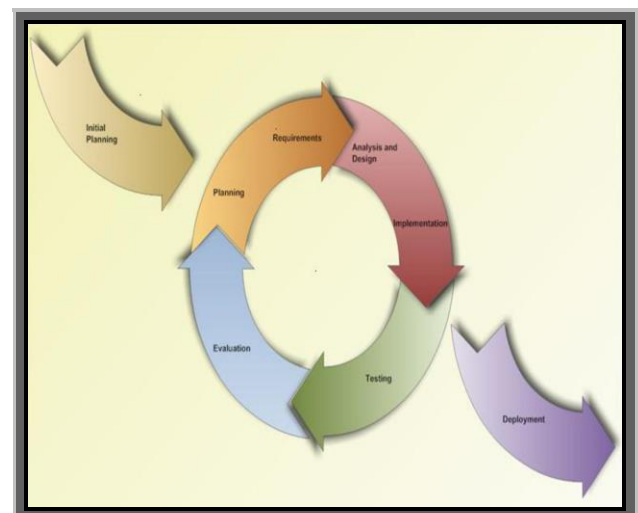


Fig 1:- Iterative Process Cycle

4. System Requirements

4.1 Hardware Requirements:-

Content	Description
HDD	10 GB Min
	40 GB Recommended
RAM	512 GB Min
	1 GB Recommended

4.1 Software Requirements:-

Content	Description
OS	Windows XP or Higher Operating System
Database	MS-Access 2007
Technologies	ASP.NET with C#.NET
IDE	Ms-Visual Studio .Net 2010

5. Modules

5.1. Work Breakdown Structure:-

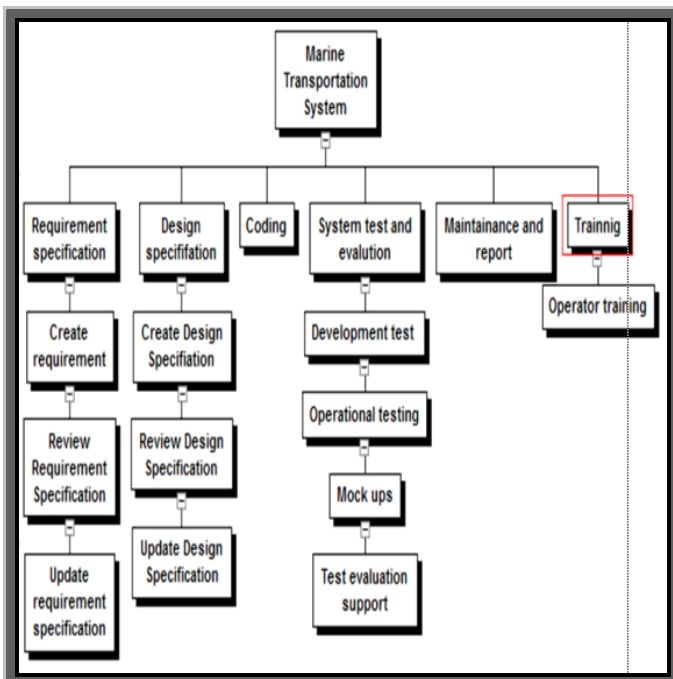


Fig 2:- Work breakdown Structure for development

5.2 Context Level Diagram:-

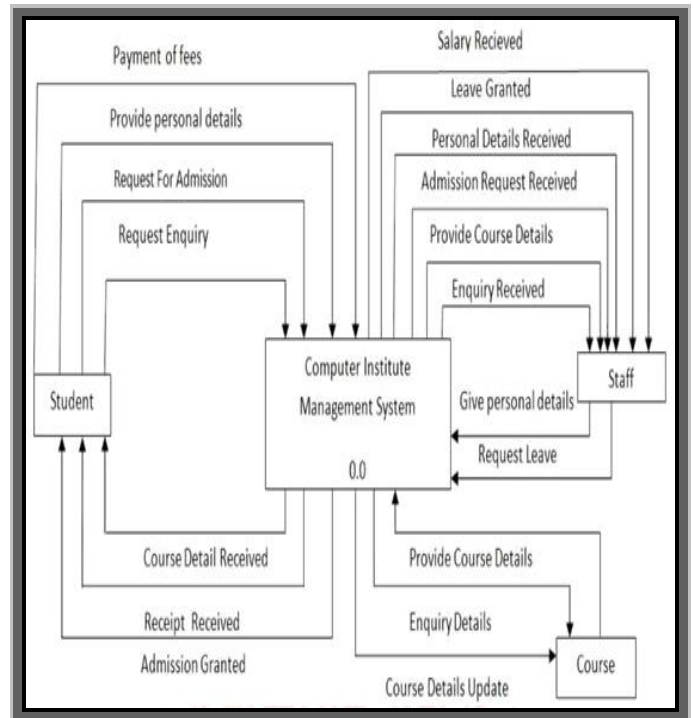


Fig 3:- Context Level Diagram

5.3 DFD Level 1:-

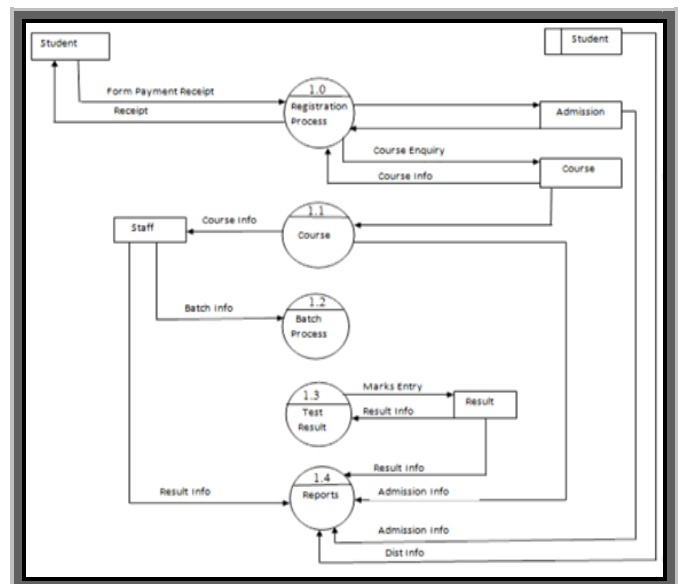


Fig 4:- DFD Level 1

5.4 Use Case Diagram:-

- ❖ Use case diagrams model the functionality of a system using actors and use cases.
- ❖ Use cases are services or functions provided by the system to its users.

Basic Use Case Diagram Symbols and Notations:

System

- Draw your system's boundaries using a rectangle that contains use cases.
- Place actors outside the system's boundaries.

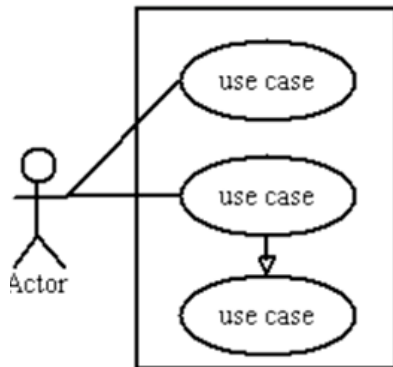
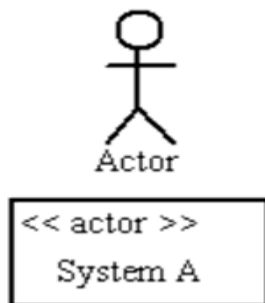


Fig 5(a):- Actor

- Actors are the users of a system.
- When one system is the actor of another system, label the actor system with the actor stereotype.



6. Relationships

- Illustrate relationships between an actor and a use case with a simple line.
- For relationships among use cases, use arrows labelled either "Uses" or "extends".
- A "uses" relationship indicates that one use case is needed by another in order to perform a task.
- An "extends" relationship indicates alternative options under a certain use case.

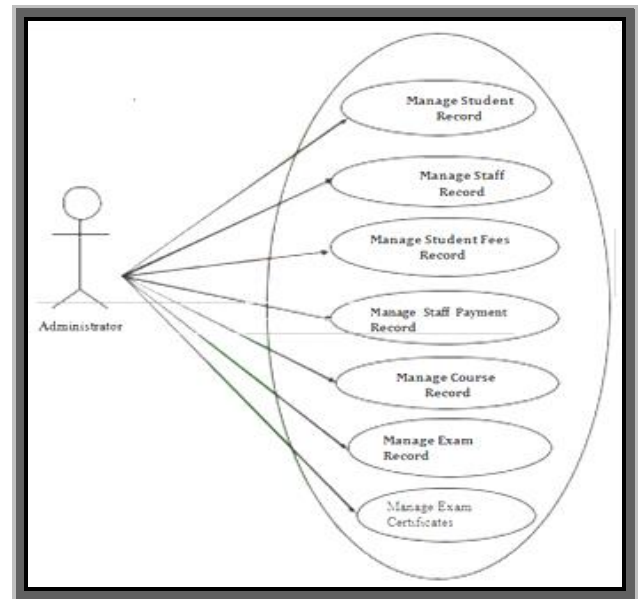


Fig 6(a):- Use case for whole system

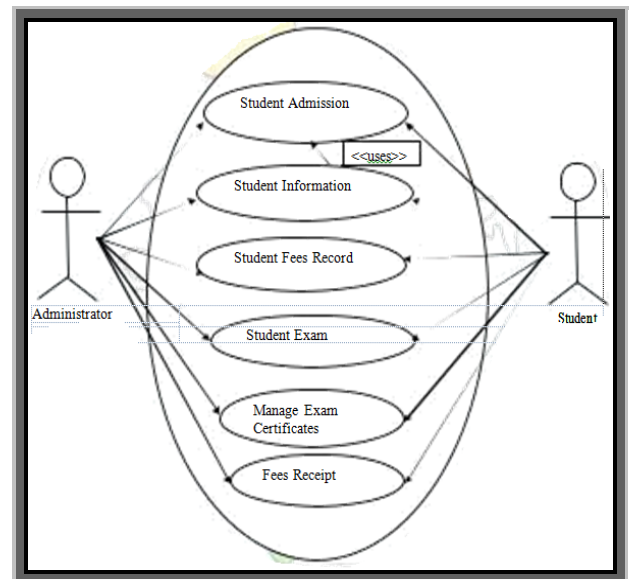


Fig 6(b):- Use case for Student Enrollment

7. Activity Diagrams:-

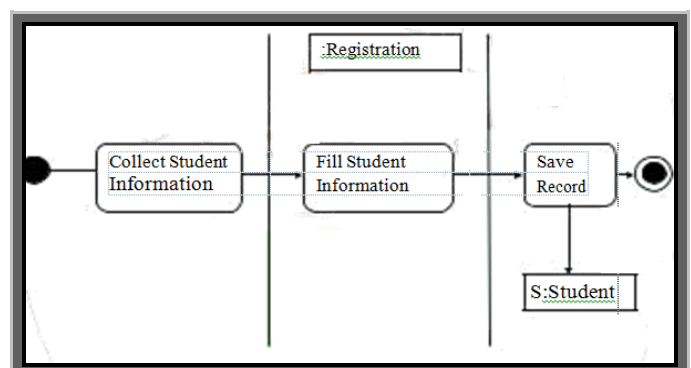


Fig 7:- Activity Diagram for creating student record



Fig 7(a):- Start



Fig 7(b):- End

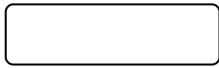


Fig 7(c):- Activity

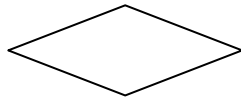


Fig 7(d):- Condition

Student
Student_Id Student_Name Student_Address Contact DOB Course_Name
add() update() delete() display()

Fig 7(e)

Tutor
Tutor_Name Tutor_Address Contact Gender Subject_Name Salary
add() update() delete() display()

Fig 7(f)

Product Master
Product Id Product Name Company Id Product Description
add() modify() delete() view()

Fig 7(g)

Course	Fee
Course_Id	Student_Id
Course_Name	Student_Name
Duration	Course
Tutor_Name	Received
	Balance
	Date
add()	add()
update()	update()
delete()	delete()
display()	display()

Fig 7(h)

Fee Receipt	Salary Receipt
Rec_No	Rec_No
Date	Date
Student_Name	Name
Course_Name	Designation
Total_Fee	Payment
Fee_Paid	Salary
add()	add()
delete()	delete()
search()	display()

Fig 7(i)

8. Collaboration Diagrams

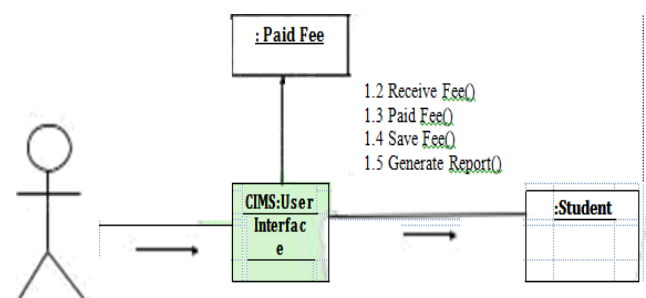


Fig 8(a) Student Fees Structure

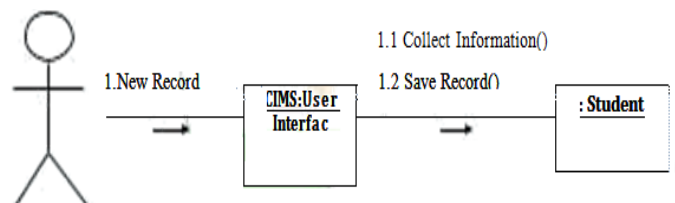
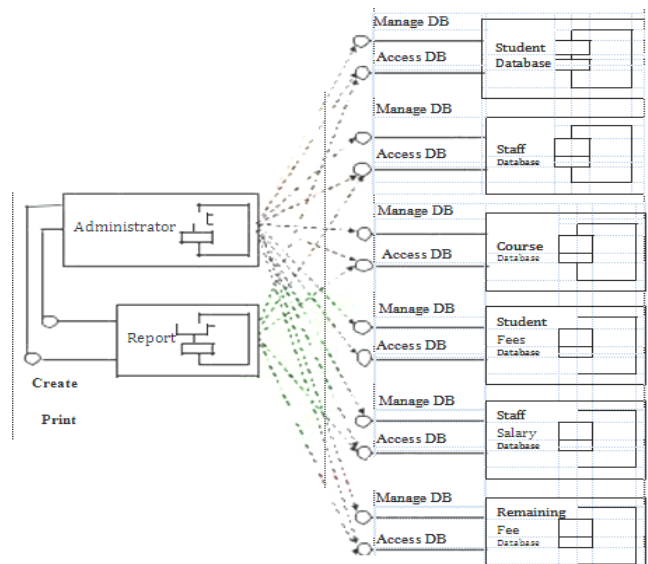


Fig 8(b) Student Entry Structure

9. System Design

9.1 Component Design:-



9.2 Package Diagram:-

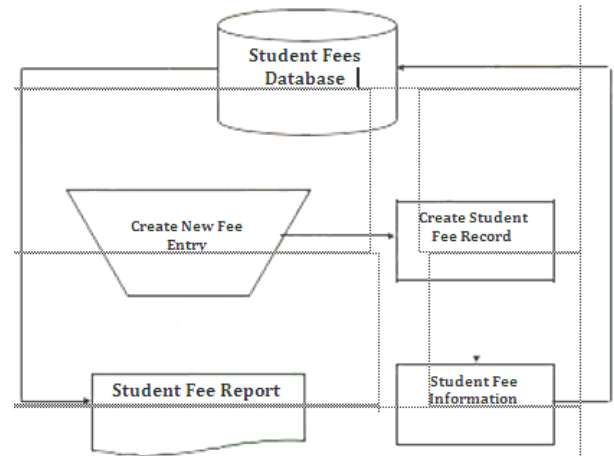
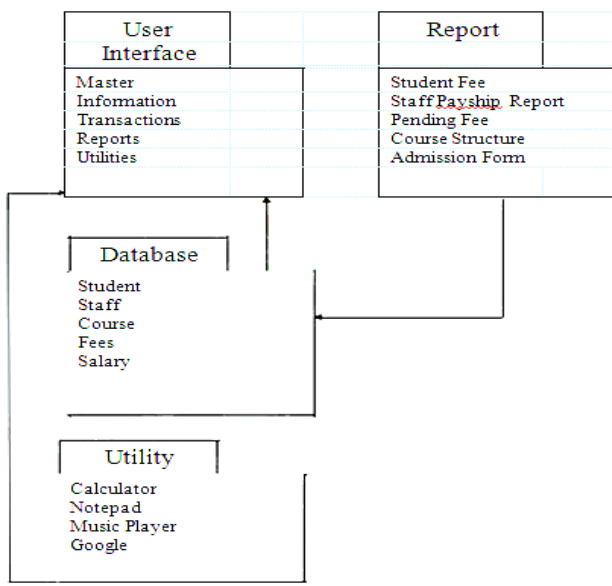
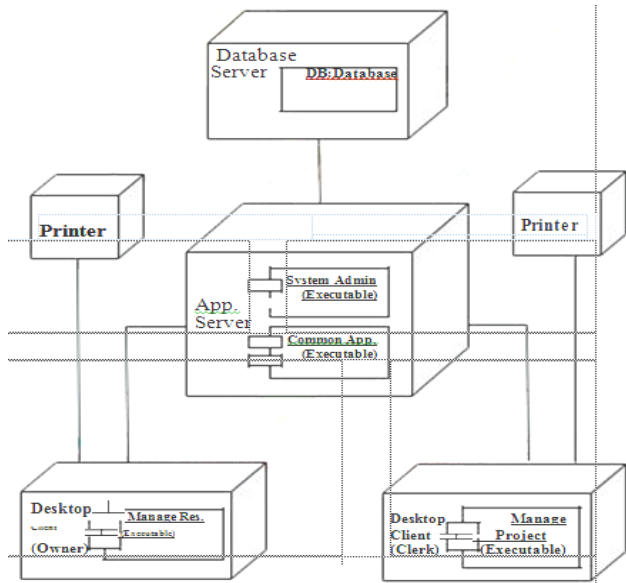
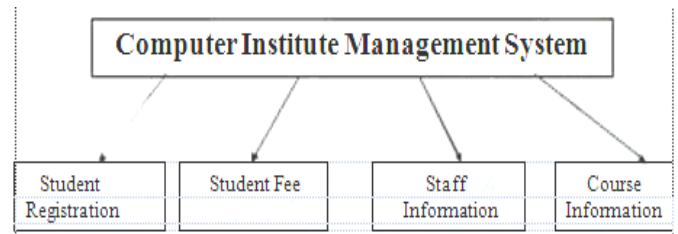


Fig 10(a):- System flowachart for student Fees db

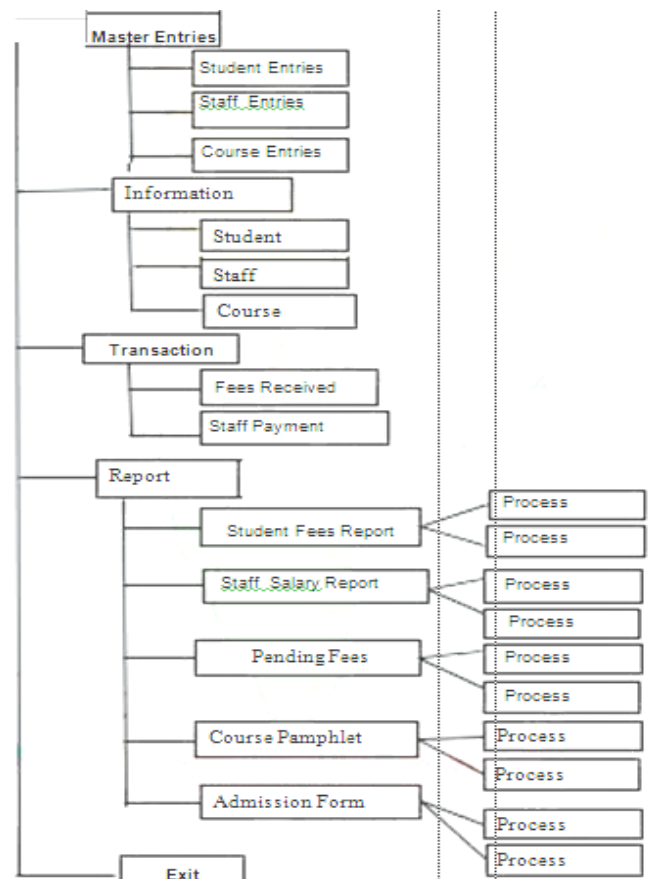
9.2 Deployment Diagram:-



11. Structure Flowchart:-



12. System Coding:-



10. System Flowchart:-

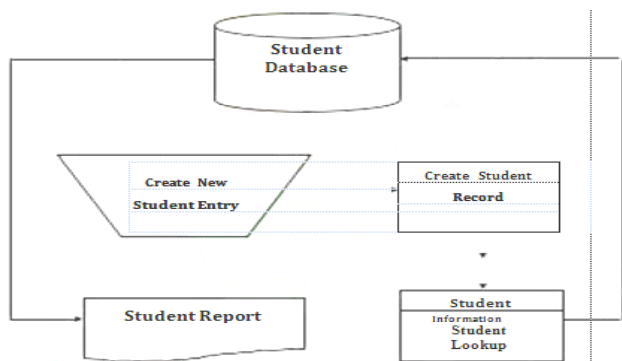


Fig 10(a):- System flowachart for student database

13. Program Description:-

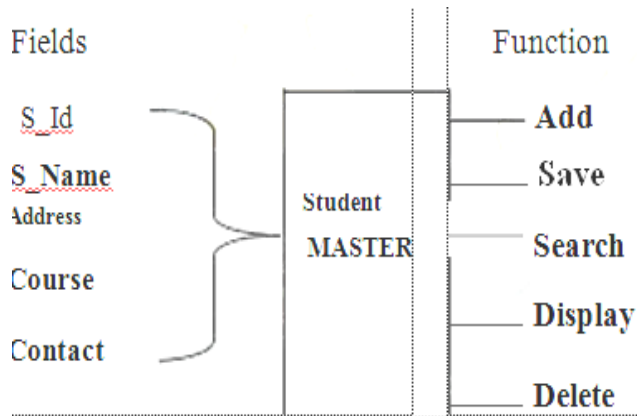


Fig 13(a):- Student Menu



Fig 14(3) New-Student-Registration Form

14. Screen Layout:-



Fig 14(4) New-Course-Registration Form

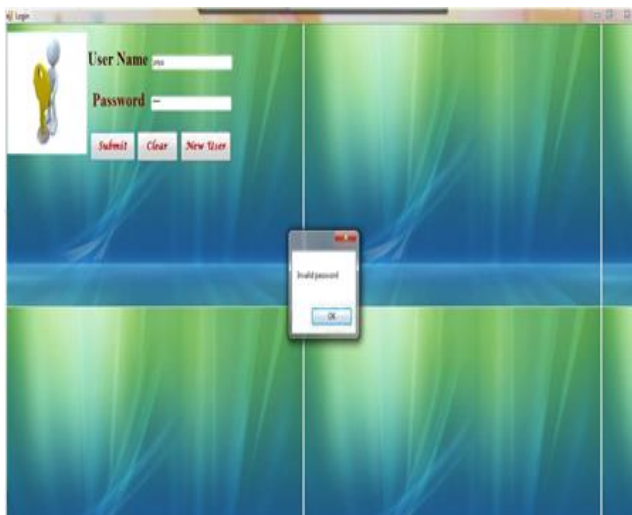


Fig 14(1) Login Screen

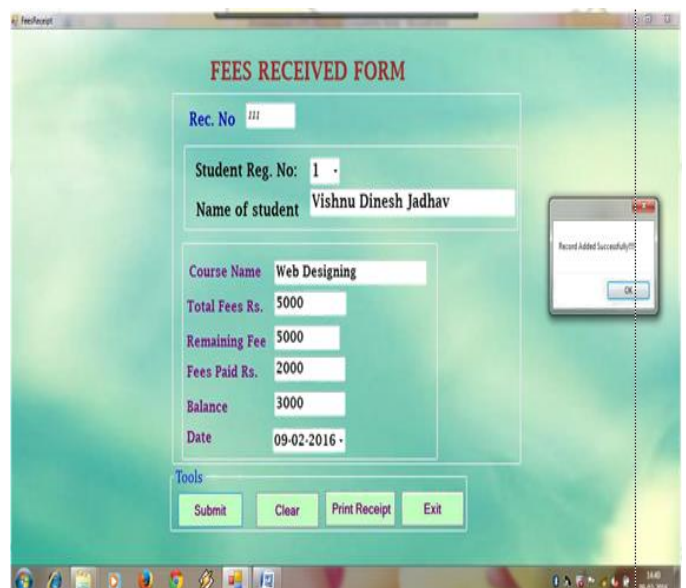
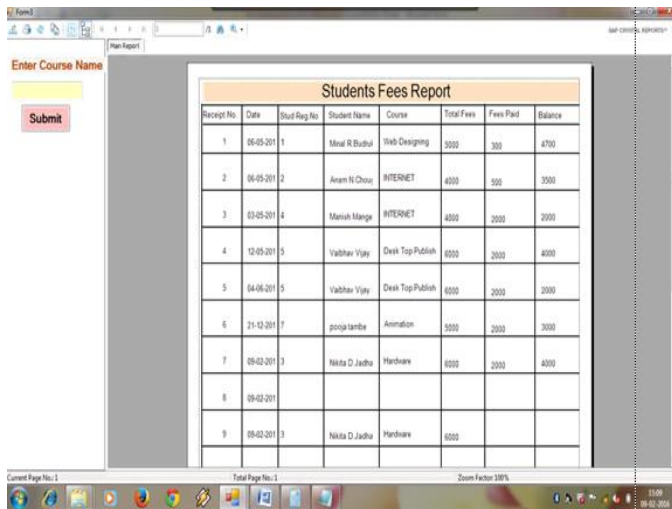


Fig 14(5) Fee Received Form



Fig 14(2) Home-Screen

15. Reports Layout:-



Receipt No.	Date	Stud Reg No.	Student Name	Course	Total Fees	Fees Paid	Balance
1	06-05-2011	1	Musal R Buthal	Web Designing	5000	300	4700
2	06-05-2011	2	Anam N Dsou	INTERNET	4000	500	3500
3	03-05-2011	4	Mamun Mager	INTERNET	4000	2000	2000
4	12-05-2011	5	Vahbar Vijay	Desk Top Publish	6000	2000	4000
5	04-06-2011	5	Vahbar Vijay	Desk Top Publish	6000	2000	3000
6	21-12-2011	7	gogulamba	Animation	5000	2000	3000
7	09-02-2011	3	Nikita D Jadhav	Hardware	6000	2000	4000
8	09-02-2011						
9	09-02-2011	3	Nikita D Jadhav	Hardware	6000		

Fig 15(1) Fees Report

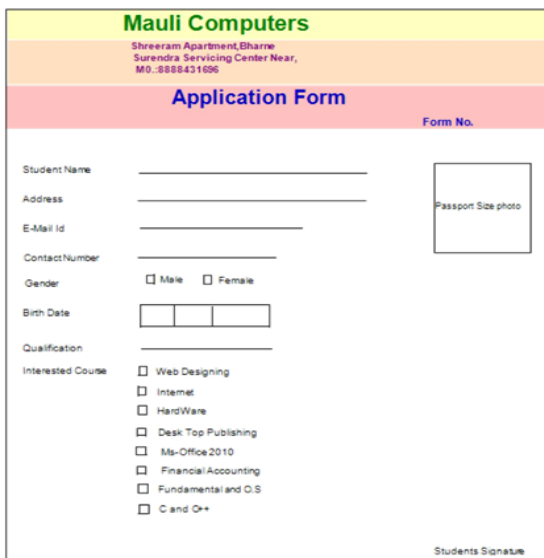


Fig 15(2) Admission Form

16. System Implementation:-

The process of converting the new design into an operational is called Implementation. There are three types of Implementation:

- Implementation of a computer system to replace a manual system. The problems encountered are converting files, training users, and verifying printouts for integrity.
- Absolving the new system to replace the current system. This is usually a difficult conversion. If the implementation isn't planned perfectly then it can invites many problems in a system.

- Implementation of a modified application to replace an existing one using the same computer. This type of conversion is relatively easy to handle, provided there are no major changes in the files.

Implementation in Generic tool project is done in all modules. In the first module User level identification is done. In this module every user is identified whether they are genuine one or not to access the database and also generates the session for the user. Illegal use of any form is strictly avoided. In the Table creation module, the tables are created with user specified fields and user can create many tables at a time. In the creation of tables, it includes some conditions, constraints and some calculations. The Generic code maintains the user requirements throughout the project. In Updating module user can update or delete or Insert the new record into the database. This is very important module in Generic code project. User has to specify the filed value in the form then the Generic tool automatically gives whole filed values for that particular record. In Reporting module user can get the reports from the database in 2Dimensional or 3Dimensional view.

17. Testing Phases:-

To test or check the quality, representation, working capability, designing, coding, maintenance of the software, the software testing is necessary. The software testing takes care of other elements in the system e.g. Strength of software, proper working of the system, hardware specifications, software specifications, the Integration of a system, Costing of a system, representation of a software and Graphical User Interface etc. We can say the testing is the process of implementation of software with the solving error, test the working. The increasing visibility of software as a system element and attendant costs associated with a software failure are motivating factors for we planned, through testing.

There are basically two types of testing approaches:

- ❖ One is Black-Box Testing – the specified function that a product has been tests can be conducted that demonstrate each function is fully operated.
- ❖ The other is White-Box Testing – knowing the internal workings of the product, tests can be conducted to ensure that the internal operation of the product performs according to required

configuration and integrity between components has been strongly tested.

17.1. Testing Strategies:-

Testing is a set of activities that can be planned in advanced and conducted systematically. The low-level test is necessary to verify a part of source code segment which has been implemented perfectly and that validate major system functions against customer requirements as well. The process of Verification and validation is software testing. The working of software functionalities as per the requirements is tested in verification time of system. The several activities to determine whether the system is acting normally as requirements or showing some errors or queries are come in the verification. Validation takes place when the software become completed. It comes for a test that the Working of an entire system is going through the client's flow or displaying wrong outputs.

The main objective of software is testing to uncover errors. To complete the goal some tests are applied on the system e.g Integration, Verification and validation as well as some tests related to the system are derived an implemented. Every stage of testing is able through some testing techniques that help in the design of test cases. With each testing step, the level of abstraction with which software is considered is broadened.

To ensure with the system the testing of the tool is necessary. The testing determines the quality assurance of the system. The umbrella activity may good than using separate phases for testing. This is an activity to be performed in parallel with the software effort and one that consists of its own phases of analysis, design, implementation, execution and maintenance.

17.2. Unit Testing:-

This kind of testing opines a module as a single unit and test the integrity of the module. It refers to testing the interface and communication between the modules. It doesn't go to the statement level. In this testing, the module acts as a black box that accepts inputs and gives the preferred outputs. Outputs for a given set of input combination are pre-calculated and are generated by the module.

17.3. Unit Testing:-

During the software development testing play a very important role in quality assurance. Its basic

function is to detect errors. Global data structures can represent the problems. Integrated testing is methodical testing for the structural program even applying the tests. To uncover errors that are associated with interfacing the objective is to make unit test modules and built a program structure that has been detected by design. The modules are combined advance and then a program is tested in non-incremental integration. Here errors will appear in an endless loop function. While incremental testing contains the development of the program. After the construction of the program, it may be tested in small parts. There errors are corrected. Different incremental integration strategies are top - down integration, bottom - up integration, regression testing.

17.3. Top-Down Integrated Test:-

Modules are integrated by moving downwards through the control hierarchy beginning with main program. The subordinate modules are incorporated into structure in either a breadth first manner or depth first manner. This process is done in five steps:

- The main control module is used as a test driver and steps are substituted or all modules directly to the main program. For the role of test driver the main control module is determined and steps substituted or all modules directly to the main program.
- The elected secondary is replaced by the core module at a time depending on the alignment approach.
- Tests are conducted.
- After the completion of the suite of some tests, another stub is replaced by the actual mod
- Regression testing may be conducted to ensure trha5t new errors have not been introduced.

Electing the subordinate goes on until the program construction is reached. At the topmost level in the hierarchy and encountering the first the top-down integration technique takes place. If major control problems do exists early recognition is essential.

The function of the software will be developed and expressed if depth-first integration is chosen. To supplant the low level module at the starting of top-top-down approach testing the processing at a low

level in the hierarchy should be there to test upper-level steps satisfactorily. It may face some problems. So no data flows upward in the program structure.

17.4. Bottom-up Integrated Test:-

Begins construction and testing with atomic modules. Due to the integration of the modules from the bottom up the secondary processing demands for a module to the preferred level is always be available there. In this process, the need for stub is may remove.

The following steps implements this strategy.

- Low-level modules are combined in to clusters that perform a specific software sub function.
- There is the way through which the test case input, as well as output, will compeer called as a driver.
- Cluster is tested.
- These drivers may remove and shift in the direction upward in the program flow integrate cluster.

Integration moves upward, the need for separate test driver's lesions. If the top levels of program structures are integrated top down, the number of drivers can be reduced substantially and integration of clusters is greatly simplified.

17.5. Regression Testing:-

At the time of adding new module as the incorporation as the changes in software. The regression testing is for test the assurance in the change in the software. It helps to ensure about the introduction of unconsidered doings as additional errors. Regression testing maybe conducted manually by executing a subset of all test cases or using automated capture play back tools enables the software engineer to capture the test case and results for subsequent playback and compression. The kit of regression testing includes the various categories of test cases. A representative sample to tests that will exercise be affected by the change.

17.6. System Testing:-

Here all the pre tested individual modules will be assembled to create the larger system and tests are carried out at system level to make sure that all modules are [5]. It may work in synchronous with each other. This testing methodology helps in making sure that all modules which are running perfectly when

checked individually are also running in cohesion with other modules [6]. For this testing we create test cases to check all modules once and then generated test combinations of test paths throughout the system to make sure that no path are making its way into chaos. Will exercise be affected by the change.

18. Future Enhancements:-

Today "Computer Institute Management System" is working manually. We have made this system is Computerized but it is Windows Based. The computer and its related technologies have become a motivating tool for teaching and learning in schools [2]. Governments and other development agencies should prioritize regular training of the extension personnel on the use of internet [3].

✚ Advantages

- ✓ This system is very advantageous for those people who are working in Computer Institute Management System. Because in this we can store large amount data easily and search any record easily.
- ✓ There is no chances of lost any document. And this system is portable to carry anywhere in CD or in removable disk.

✚ Limitations

- As this is a windows based system we need to interact with the Administrator of the system each time.
- This system can be enhanced in very attractive manner in future:

We can implement this system as Web Based Application. By making a Web site we can launch this website worldwide. So that there will be no need to interact with the administrator each time. The system will manage all applications by its own. Technology-assisted teaching and learning have been gradually paid much attention and their effectiveness has been empirically verified for student outcomes in educational research or teaching practice [4, 7, 8]. The information not only in textual form but in audio, video or any other media is also to be transmitted to the users. Thus, the ICT = IT + Multimedia [9].

19. Conclusions :-

The Agriculture and the education departments are two elements where the ICT can play the very

important role in the development of the country. It is first priority in such institutions that to maintain the data digitally on the computers. The present of computer system 'Computer Institute Management System' is useful for administrator, to keep the information of students, staff and course.

This system is developed as simple as possible to use. Being user friendly software the user does not find any difficulty in using it. Keeping details, records of each and every student, course and staff is a very lengthy, costly and tedious job in manual system. This software overcomes these problems with less maintenance. Most of the organizations such as Hospitals, Railways, Airways, Companies, Colleges, etc. have developed & moved forward due to this computerization

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