CAREER GUIDANCE SYSTEM

A PROJECT REPORT

Submitted by

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In fulfillment for the award of the degree

of

BACHELOR OF ENGINEERING

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C.U.Shah College of Engg &Tech.

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C. U. SHAH COLLEGE OF ENGINEERING & TECHNOLOGY,

WADHWAN CITY- 363 030.

COMPUTER ENGINEERING

2012

CERTIFICATE

DATE: 29/10/2012

This is to certify that the Industry Defined Problem(IDP) entitled **"Career guidance system"** has been carried out by **Shah Vatsal N**. under my guidance in fulfillment of the degree of Bachelor of Engineering in Computer Engineering (7th Semester) of Gujarat Technological University, Ahmedabad during the academic year 2011-12.

Asst. Prof. Dhaval Nimavat   **Dr. K.H.Wandra**

(Internal Guide)   **(Principal,CCET)**

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Joshi Milin C. (7th CE-1)

Shah Vatsal N. (7th CE-1)

ABSTRACT

Career guidance system is a system designed for the better guidance of the users for selecting the appropriate option. This system solves the dilemmas faced by the user for the selection of the career option. There is a test module which is interacted by the user and based on the results of that test, the user is suggested to select the right option for their further studies. The system also provides various other additional facilities like providing updates through newsletter, answering FAQs and inquiries. This system is also helpful to various institutes for advertising themselves. They can offer details about various courses they offer. Admin , after logging approves institute and creates polls. Students can fill polls on various topics , give test, ask FAQs and inquiries and at the end provide feedback.

LIST OF FIGURES

LIST OF TABLES

NOTATIONS

SYMBOL	DESCRIPTION
	System Boundary
	Use Case
	Actor
	Uses
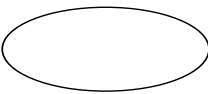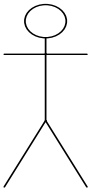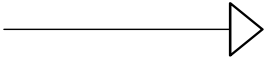
Data Flow Diagram:
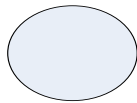
	Actor
	Data Process
	Data Flow
	Data Store

Entity Relationship Diagram:
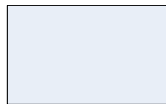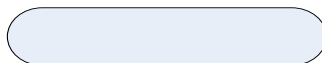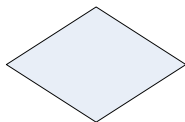
	Entity
	Attribute
	Relationship

Flow Chart:
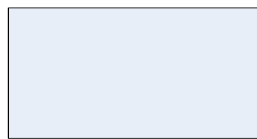
Process

Input
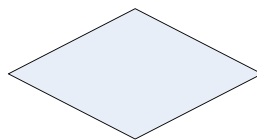
Decision

Terminator

Flow

State Diagram:
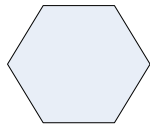
Symbol	Meaning
	Procedure
	Decision
	Event
	Divide Process
	Start
	Stop

Naming and Coding Conventions

We used following coding standards while developing this product.

- Comments are available on top of each and every page.

- Variable are given understandable names.

- There are different event handling classes for handling events from different components.

- Function names have their first letter as capital and contain 'fuc' as a prefix string.

- Variable are declared in a consistent manner.

- At the beginning of every routine, it is helpful to provide standard, boilerplate comments, indication the routines purpose, assumptions and limitations. A boilerplate comments should be a brief introduction to understand why the routine exists and what can it do.

- Use Hungarian naming convention, for naming the variables.

- Use Comments on functions explaining its task and working that what the function does.

- When naming tables, express the name in the singular form.

Primary key start with 'pk' and its value Is not null means null is not allowed for it.

INDEX

1.0 INTRODUCTION

1.1 Project Summary

    Career guidance system will help the user to choose an appropriate career option for his future. There are number of educational courses available to select as a career, as education is occupying wide areas. Therefore students and their parents face a great dilemma to select the right option. Career guidance system suggests the user to take the respective course by offering test modules of intelligence, capabilities and areas of interest. The system also provides details about various institutes and the courses they offer in India as well as abroad. This system covers span of information from school streams, graduation degrees and post-graduation degrees.

1.2 Purpose

Goals

To develop an efficient system for guidance of institute and course selection . To provide suggestions for career selection based on one's interest and capabilities .To make the system user friendly.

Objectives

The main objective of this system is to solve the queries of the user to select an appropriate career option.

1.3 Scope

This system can be used for solving the queries of the user suggesting to select the respective field as a career option and providing various institute details.

1.4 Technology and Literature review

Literature Review:

As this is a web-based application, it requires lots of information to be stored. All the information stored should be accurate and in secured database, as this information can be used in the future for verifications.

Being a web application, there would be lots of confidential information stored in database like admin id, password etc. So security must be required.

When this information is to be maintained manually lots of difficulties will be faced related to accuracy and precision. Lots of files were prepared and paper work was very tedious. All the details should be included to obtain proper processing on the data.

Technology Review:
Front end: ASP .Net.
Back end: SQL Server

The Microsoft .NET strategy was presented by Microsoft officials to the rest of the world in June 2000:

- .NET is Microsoft's new Internet and Web strategy
- .NET is NOT a new operating system.
- .NET is a new Internet and Web based infrastructure
- .NET delivers software as Web Services
- .NET is a framework for universal services
- .NET is a server centric computing model
- .NET will run in any browser on any platform
- .NET is based on the newest Web standards

- **What is Microsoft .Net Framework?**

  The .NET Framework is Microsoft's comprehensive and consistent programming model for building applications that have visually stunning user experiences, seamless and secure communication, and the ability to model a range of business processes.

The following technologies are introduced with the .NET Framework 3.0: New compilers for C#, Visual Basic, and C++.

2.0 PROJECT MANAGEMENT

2.1 Project Planning and Scheduling

2.1.1 Project Development Approach

- For developing the project, the approach that is used is incremental model.

- Incremental model combines elements of the waterfall model in an iterative fashion.

- It applies linear sequences.

- The flow of incremental model is as follows:
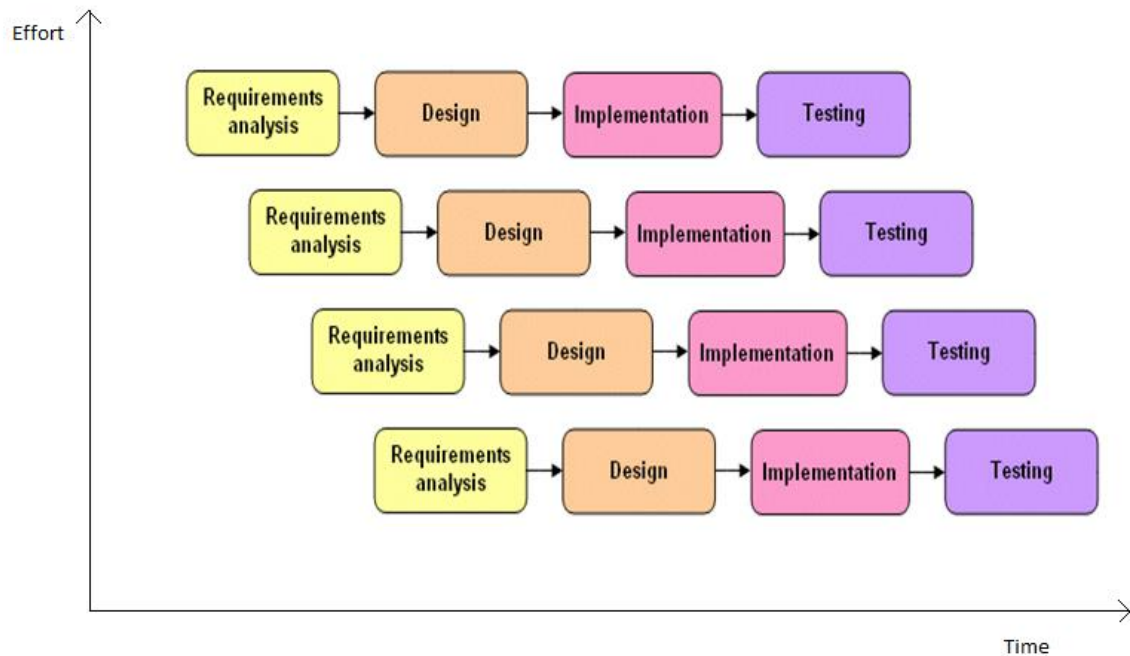
Fig 2.1: Flow of Incremental Model

- The first product is always a core product, that is basic requirement are addressed but many supplementary features remains undelivered.

- There might occur many cases where we add some features to system that adds to the development of the system.

  There are basically four phases in incremental model:

- **Analysis:** During this stage, research must be done to identify the project requirements. The advantage of the current system will be that it will produce test and will reduce the manual working.

- **Design:** In detailed design, the design elements describe the desired system features in detail and generally include functional hierarchy diagrams, screen layout diagrams, business rules, business process diagrams and class diagram. These design elements are intended to describe the software in sufficient detail that programmers may develop the system with minimal additional input.

- **Coding:** After requirements and detailed design is specified, the coding for the system is developed. After every 100 lines of codes are coded, debugging process is carried out to detect error and fix it immediately. The purpose of debugging is to reduce error and to ensure the system will be executed successfully.

- **Testing:** Unit test stage will be done by programmers for checking each small module. This unit tests to make sure test template can function on the platform defined and with the expected output when specific action is taken by user.

- So, all such increments can help us to add such functionalities or new features to the system

- So the incremental model was selected for development purpose.

Advantages:

- Reusable
- Interoperable
- Up-Gradable
- Saving the programmers from complexity
- Time effective

- Cost effective

- Makes programmers Efficient

- Reliable

- Improved Quality

Disadvantages:

- Requires considerable expertise in risk evaluation and reduction

- Complex and relatively difficult to follow strictly

- Applicable only to large systems

- Risk assessment could cost more than development

- Need for further elaboration of spiral model steps (milestones, specifications, guidelines and checklists)

2.1.2 Project plan

The planning stage is first step must be done before start develop a project. The planning must refer to the suitable requirement and specification for that project that we want to develop.

Months	Plan
July	Problem Identification
Aug-Sept	Requirement Gathering And Analysis
Oct-Nov	System Design
Jan-March	Engineering Construction And Release
April	Testing and Customer Evaluation

Table 2.1: Project Plan

- Milestones:

  The milestones associated with the system is that it is the web based project and back side it calls web services so lots of validation are needed to be provided to the system. So the output produced will be the perfect match as any user wants.

- Deliverable:

  A deliverable of the project is the result that is delivered to the user usually at end of some major project phase such as specification, design, coding, testing, etc.

- Roles

  The main role of the system is to acknowledge the students about various career options.

- Responsibilities:

  The main responsibility of the system is to provide remarks and suggestions based on the test results interacted by the student.

2.1.3 Schedule Representation

```
┌──────────┐    ┌──────────────┐    ┌──────────┐    ┌──────────┐
│ Project  │───▶│  Customer    │───▶│ Analysis │───▶│ Logical  │
│ Profile  │    │Communication │    │          │    │ Design   │
└──────────┘    └──────────────┘    └──────────┘    └──────────┘
                                                          │
                                                          ▼
┌──────────┐    ┌──────────────┐    ┌──────────┐    ┌──────────────┐
│Evaluation│◀───│Documentation │◀───│ Testing  │◀───│    Code      │
│          │    │              │    │          │    │Implementation│
└──────────┘    └──────────────┘    └──────────┘    └──────────────┘
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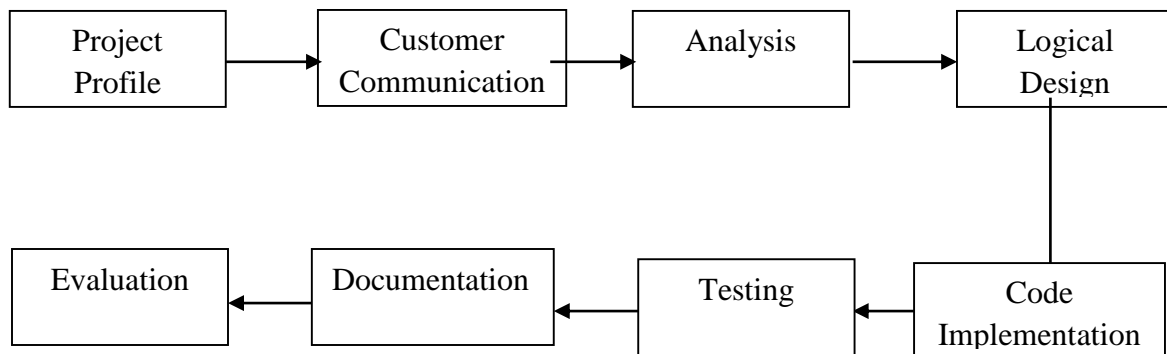
Fig 2.2: Schedule Representation

2.2 Risk Management

The art of managing the risks so that WIN-WIN situation and friendly relationship is developed between team manager and customer is called Risk management.

2.2.1 Risk Identification

Techniques that will be used to identify risk factors will be stated at the beginning of the project and on an on-going basis.

There are three main categories of risks which can affect a software project:

- Project Risks
- Technical Risks
- Business Risks

Project Risks:

Project risks concern various forms of budgetary, schedule, personnel, resource and customer related problems.

1. **Miscommunication:** It leads to misunderstanding, delay, frustration, lack of coordination amongst the team members.
2. **Time shortage:** It leads to delay in the delivery of the product.
3. **Personal conflicts between team members:** It leads to unnecessary delay in each and every phase of software cycle and loss of direction.
4. **Illness or absence of team members:** Absence of a team member increases the load of the project on other team members.
5. **Lack of expertise to fulfill certain tasks:** Lack of knowledge in some areas leads to insignificant delay.
6. **Technical Advisor not available when needed:** Due to the absence of a technical advisor there was a delay in understanding the database**.**

Technical Risks:

Technical risks concern potential design, implementation, interfacing, and testing and maintenance problems.

1. **Too many planned features lead to infeasible design**
2. **Design errors:** Due to lack of experience design errors are bound to happen.
3. **The customer changes the requirements:** The scope of our project keeps changing as per user's requirements
4. **The customer disapproves of the prototype:** The customer may find the developed prototype unsuitable to his requirements

Business Risks:

Business risks threaten the viability of the software to be built. Business risks often jeopardize the project or the product.

1. **Market risk:** Building a excellent product or system that no one really wants
2. **Strategic risk:** Building a product that no longer fits into the overall business strategy for the company
3. **Management risk:** Losing the support of senior management due to a change in focus or a change in people
4. **Product is not put in service**

2.2.2 Risk Analysis

We need to identify and understand the nature of the risks. After understanding the nature of the risks, we need to prioritize the risk and on the basis of prioritization we need to solve the risks.

Personnel Shortfalls:

They may cause the developmental delays and would cause a change in the working strategy due to developmental dependencies of the functional modules.

Unrealistic Schedule:

It may cause the developers to give unrealistic commitments to the users and so lose their faith when the deliverables are not produced as per schedule.

Developing wrong Software functions:

It can be caused due to wrong requirement analysis or wrong programming method used to automate the requirements. It may cause the system to fail and not be implemented at all.

Developing wrong User Interface:

It may be caused due to lack of user acceptance and user involvement during development.

The probability of the risk might be assessed as very low (<10%), low (10-25%), moderate (20-25%), high (50-75%) or very high (>75%).

Sr No.	Risk	Probability	Effect
1	Organizational financial problem force reduction in the product budget	Low	Catastrophic
2	Required knowledge is not available	High	Catastrophic
3	Change to requirement which require major design of rework	Moderate	Serious
4	Organization is restructured so that different management are responsible for project	High	Serious
5	The time required to develop software is underestimated	High	Serious
6	User fail to understand the impact of requirement change	Moderate	Tolerate
7	The rate of defect repair is underestimated	Moderate	Tolerate
8	The size of software is underestimated	High	Tolerate
9	Misuse of the system	High	serious

Table 2.2   Risk Analysis

2.2.3 Risk Planning

The risks encountered in the project should be resolved in order to deliver the desired result to the end user. The project should be managed in such a way that risks don't affect the project in big way. Risk planning refers to the strategies to be applied and getting the desired output.

The three identified Risk types, Technical, Project, and Business all have different mitigation strategies that can be used to reduce or eliminate their impact or probability of occurrence. In the following sections, the general outline for each case is discussed.

1. **Project Risk:** In general, project risks will be minimized by realistic planning and close surveillance.

2. **Technical Risk:** Clear and concise specifications and implementation of QA provisions will minimize technical risk. Technical risks can be further minimized by exploiting previous experience to the greatest extent possible. Making deliberately conservative design choices, where possible, where new technologies are involved has minimized technical risk throughout the Project.

3. **Business Risk:** Business risks can be minimized by studying the feasibility of the project and the requirement specification closely.

2.3 Estimation

2.3.1 Effort estimation

Project Estimation proper evaluation of the system and to get the estimation of the project, it was needed to do some metrics calculation for this project. Software project metrics are the way to do this task efficiently. Project metrics allow knowing the size and complexity of the project and helping us on the planning and cost estimation.

For this project, function-oriented metrics were used to get the size of the project at the abstract level (without taking the language in consideration). For that purpose, Function Points (FP) was used.

Function Points can be counted using the following information domains:

↝ **Number of external inputs (EIs) –** inputs given by a user or another system

↝ **Number of external outputs (EOs) –** outputs derived within the system or given to another system

↝ **Number of external inquiries (EQs) –** as an online input that results in generation of some immediate software response in the form of an on-line output

↝ **Number of internal logical files (ILFs) –** logical grouping of data that resides within the application's boundary and is   maintained via external inputs

↝ **Number of external interfaces files (EIFs) -** logical grouping of data that resides external to the application but provides data that may be of use to the application

Table 2.3 Information Domain Values

Measurement Parameters	Count		Simple ○	Average ⊙	Complex ○		Total
Number of user inputs	10	X	3	4	6	=	40
Number of user outputs	4	X	4	5	7	=	20
Number of user inquiries	5	X	3	4	6	=	20
Number of files	50	X	7	10	15	=	500
Number of external interfaces	2	X	5	7	10	=	14
Count=Total [UFP] Unadjusted function point							594

Question	0	1	2	3	4	5
1. Does the system require reliable backup and recovery?	○	○	○	○	⊙	○
2. Are data communications required?	○	○	○	○	⊙	○
3. Are there distributed processing functions?	○	○	○	○	⊙	○

4. Is performance critical?	○	○	○	○	○	⦿
5. Will the system run in an existing, heavily utilized operational environment?	○	○	○	○	○	⦿
6. Does the system require on-line data entry?	○	○	○	○	○	⦿
7. Does the on-line data entry require the input transaction to be built over multiple screens or operations?	○	⦿	○	○	○	○
8. Are the master file updated on-line?	○	○	○	○	⦿	○
9. Are the inputs, outputs, files, or inquiries complex?	○	○	○	⦿	○	○
10. Is the internal processing complex?	○	○	○	○	⦿	○
11. In the code designed to be reusable?	○	○	○	○	○	⦿
12. Are conversion and installation included in the design?	○	⦿	○	○	○	○
13. Is the system designed for multiple installations in different organizations?	○	○	○	○	⦿	○
14. Is the application designed to facilitate change and ease of use by the user?	○	○	○	○	⦿	○

Degree of influence							
DI TOTAL 53							

Formula FP=UFP x [0.65+0.01 x DI]

The Function Point is: 700.92

2.3.2 cost estimation

COCOMO consists of a hierarchy of three increasingly detailed and accurate forms. The first level, *Basic COCOMO* is good for quick, early, rough order of magnitude estimates of software costs, but its accuracy is limited due to its lack of factors to account for difference in project attributes (*Cost Drivers*). *Intermediate COCOMO* takes these Cost Drivers into account and *Detailed COCOMO* additionally accounts for the influence of individual project phases.

Basic COCOMO

Basic COCOMO computes software development effort (and cost) as a function of program size. Program size is expressed in estimated thousands of source lines of code (SLOC)

COCOMO applies to three classes of software projects:

- Organic projects - "small" teams with "good" experience working with "less than rigid" requirements
- Semi-detached projects - "medium" teams with mixed experience working with a mix of rigid and less than rigid requirements
- Embedded projects - developed within a set of "tight" constraints. It is also combination of organic and semi-detached projects.(hardware, software, operational, ...)

The basic COCOMO equations take the form

Effort Applied (E) = $a_b(KLOC)^{b_b}$ [**man-months**]

Development Time (D) = $c_b(\text{Effort Applied})^{d_b}$ **[months]**

People required (P) = Effort Applied / Development Time **[count]**

where, **KLOC** is the estimated number of delivered lines (expressed in thousands) of code for project. The coefficients a_b, b_b, c_b and d_b are given in the following table:

Software project	a_b	b_b	c_b	d_b
Organic	2.4	1.05	2.5	0.38
Semi-detached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

Basic COCOMO is good for quick estimate of software costs. However it does not account for differences in hardware constraints, personnel quality and experience, use of modern tools and techniques, and so on.

Intermediate COCOMOs

Intermediate COCOMO computes software development effort as function of program size and a set of "cost drivers" that include subjective assessment of product, hardware, personnel and project attributes. This extension considers a set of four "cost drivers",each with a number of subsidiary attributes:-

- product reliability
- required software reliability
- Size of application database
- Complexity of the product
-   Hardware attributes
- Run-time performance constraints
- Memory constraints
- Volatility of the virtual machine environment
- Required turnabout time
-   Personnel attributes
- Analyst capability
- Software engineering capability
- Applications experience
- Virtual machine experience
- Programming language experience
-   Project attributes
- Use of software tools
- Application of software engineering methods
- Required development schedule

The Intermediate Cocomo formula now takes the form:

   $$E = a_i(\text{KLoC})^{(b_i)}.\text{EAF}$$

where E is the effort applied in person-months, **KLoC** is the estimated number of thousands of delivered lines of code for the project, and**EAF** is the factor calculated above. The coefficient **a_i** and the exponent **b_i** are given in the next table.

Software project	a$_i$	b$_i$
Organic	3.2	1.05
Semi-detached	3.0	1.12
Embedded	2.8	1.20

The Development time **D** calculation uses **E** in the same way as in the Basic COCOMO.

Detailed COCOMO

Detailed COCOMO incorporates all characteristics of the intermediate version with an assessment of the cost driver's impact on each step (analysis, design, etc.) of the software engineering process.

The detailed model uses different effort multipliers for each cost driver attribute. These **Phase Sensitive** effort multipliers are each to determine the amount of effort required to complete each phase.

In detailed COCOMO, the effort is calculated as function of program size and a set of cost drivers given according to each phase of software life cycle.

A Detailed project schedule is never static.

The five phases of detailed COCOMO are:-

- plan and requirement.
- system design.
- detailed design.
- module code and test.
- integration and test.

3.0 System Requirement Study

3.1 User characteristics

It is mandatory that the user of any application should be intricately aware of how to use the application. The user interface of the application should be such that the user can easily get acquainted to it. The user must have the knowledge about using the system. The user must have a clear idea about what he is supposed to do with the system.

Mainly there are two types of users in this system:

Administrator:

He is the key person for controlling the whole system. He will give appropriate permissions to the users for performing specific tasks. He will cover areas such as database, security and integration.

End User (Student/nstitute):

Basically, they are the registered users of the site. This user must be familiar with the internet and basic functionalities of the application.

3.2 Hardware and software requirements

Hardware requirements:

- 512MB Ram
- 1 GB Free Hard disk
- Processor Pentium IV 2GHZ(or later)

Software requirements :

- Language:-ASP.NET,C#,
- Database:-SQL Server 2005 Express.
- Platform: .net
- OS: windows 7

3.3 Constraints

A constraint is anything that prevents the system from achieving more of its goal.

3.3.1 Hardware Limitation
It requires minimum 256MB RAM to be loaded or run. It requires IIS to browse

the   application.

3.3.2 Interfaces to Other Application.
 Since it is a standalone application it cannot be interfaced with other applications

as such.

3.3.3 Reliability Requirements.
Since the application is almost error- free, the reliability of the system is pretty high. Even in

case of natural calamities or power failure or connection failure, the application is not affected as

data remains secured in the corresponding database.

3.3.4 Criticality of Application.

Criticality of the application lies in the fact that when any field in any one of the six modules is empty then that particular record is not added or updated in the database. Even without proper name & password the administrator cannot access the application.

4.0 System Analysis

4.1 Study of Existing System

Existing guidance systems does more work manually, they lack good environment, and they also fail to generate reports.

4.2 Limitations of existing system

- **Manual control:** For any modification, existing e-catalog requires more manual work
- **Need of IT person:** Existing e-catalog has to deal with lot of coding work, which requires the need of IT person.
- **Time consuming:** It is more time consuming because the existing system are not automated.
- **Less Control over system**: The admin does not have total control over the existing system.

4.3 Requirement of new system

As mentioned above, due to limitations of the existing system, there was a need to develop a new system which will overcome the drawbacks of the existing system. The proposed system has following advantages:

Advantages of Proposed System:-

- The working of proposed system is dynamic.
- In the proposed system any modification made in the admin panel is directly reflected in the website.
- It is less complicated and it is less time consuming.
- There is no need of IT person for any modification.
- It is comparatively cheaper.

4.4 Feasibility study

The purpose of feasibility study is not to solve the problem, but to determine whether the problem is worth solving. The feasibility study concentrates on the following area:

- Operational Feasibility
- Technical Feasibility
- Schedule Feasibility
- Economic Feasibility

4.4.1   Operational Feasibility:-

Performance:-

Our system provides adequate throughout and its response time is very quick. Because when any visitors see the application for searching the data, it will search form the database and display the output.

Information:-

The system provides end users with timely, accurate and usefully formatted information. When any manufacturer or administrator wants the information about system, he or she will just log into system. And get their desire information.

Efficiency:-

Does the system make maximum use of available resources including Manual Work of Administrator, time, and flows of forums, minimum processing delays & the like?

In the matter of efficiency, our system is totally computerized, so no need for any person to explain anything regarding our system, and it's very easy to understand as well as operate.

Each and every information is given very briefly so user is able to view the catalogue without any Administrators help. Here also only few person are required for moderating and controlling the system, so with the help of very less human resource and manual work system will work.

All the forms are well designed as well as developed so user can easily deal with system.

4.4.2 Technical Feasibility:-

It is a measure of practically of a specific technical solution and the availability of technical resource and expertise. The analyst must find out whether current technical resources, which are available in the system is capable of handling the visitor's requirements or not. If not, then the analyst with the help of developers should confirm whether the technology is available and capable or not.

 Factor considered:-

• Here we have to consider those tools, which will be requiring for developing the project.

• The tools which are available and the tools, which will be required, have to take in account.

• As far as basic knowledge is concerned we have studied we have basic knowledge of C# and SQL server. Various technical books, e-books etc are available.

• Dealing with database is the main issues in our system. Using SQL server as backend provided this functionality.

4.4.3 Schedule Feasibility:
      Schedule feasibility corresponds to whether sufficient time is available to complete the project.

Factor considered:-

• Schedule of the project.

• Time by which the project has to be completed.

• Reporting period.

Considering all above factors it was decided that we have sufficient time and we decide to start the project. By marinating the schedule we were able to complete the project on time.

4.4.4   Economic Feasibility:-

For declaring that the system is economically feasible, the benefits obtained from the system we have to be rated against the cost incurred to actually develop the system. The benefits must equal or exceed the cost for development.

   The basic resources to consider are:

• Management time.

• Time spent by the system analysis team.

• Cost of doing full system study.

• Estimated cost of hardware.

• Estimated cost of software and /or software development.

The following are benefits that would be derived from the proposed system:-

• The application is developed using C# and SQL server technology. Application does not increase hardware cost as minimal configuration required for developing code. In this way developing application does not generate any overhead costs.

• As this application has no overhead in development and installation but economically this application will be beneficial to user by providing them free open source user support system with common user interface on all windows platforms. In that way the application is economic.

4.5 Requirement validation

As our project is to build a dynamic web-site **E-catalogue**, there no criteria such as windows authentication but still some security must be provided in essence of making the rights of certain entity to be limited to them. Certain validation criteria that are needed listed below.

•   There are three types of users who can use the web-site in different manner with different rights, so the user cannot do the operations that are not permitted to him/her.

•   They can access the pages and see the simple contents. That's why the validation criteria is nothing for these users if they only want to see the product. Such users are Customers.

•   The registered wholesalers are permitted to login to the catalogue. They will be allowed to view the catalogue and also in the case of inquiry, they can inquire about the products.

•   The last is the administrator, the near about owner of the system. As administrator has all the rights he/she also has to satisfy the validation criteria by providing valid login and password information Also administrator can add new products, register new wholesalers in the catalogue.

4.6 Function of system

Admin has been assigned the user name and password so that he has the authority over the system. He is the one who prepares the catalog. The catalog can be prepared by adding filters, such as size,color, environment, etc. Admin also selects the wholesaler with whom who wants have the dealing with. Whenever the new product is launched all the retailers will be notified of the same via email. On the wholesaler`s part he will be able to inquire about the new products and the existing products.Along with this the consumers will also be able to view the e-catalog.

4.6.1. USE-CASE diagram
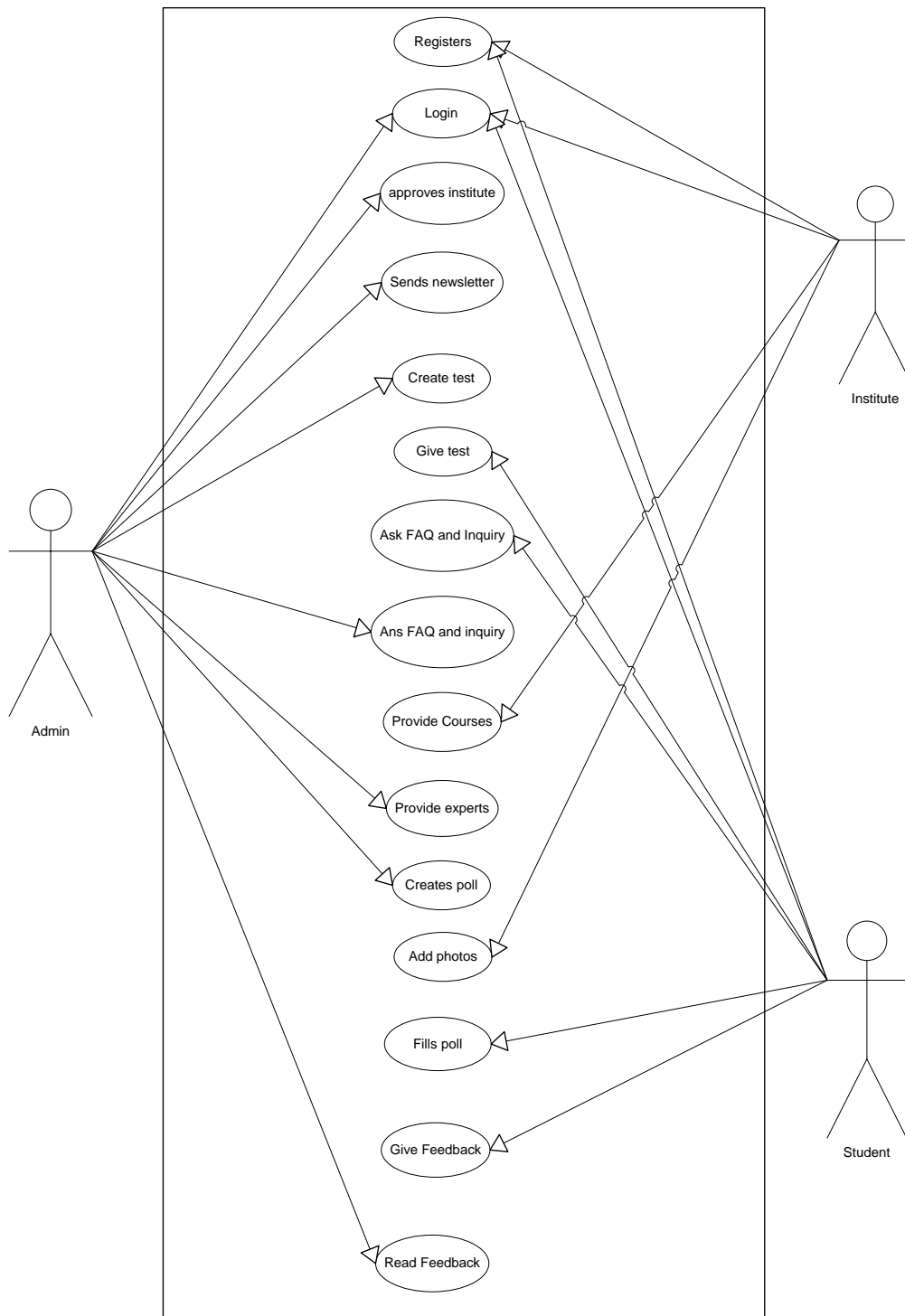
Fig 4.1: Use Case

4.7 Data Modeling

4.7.1 E-R Diagram
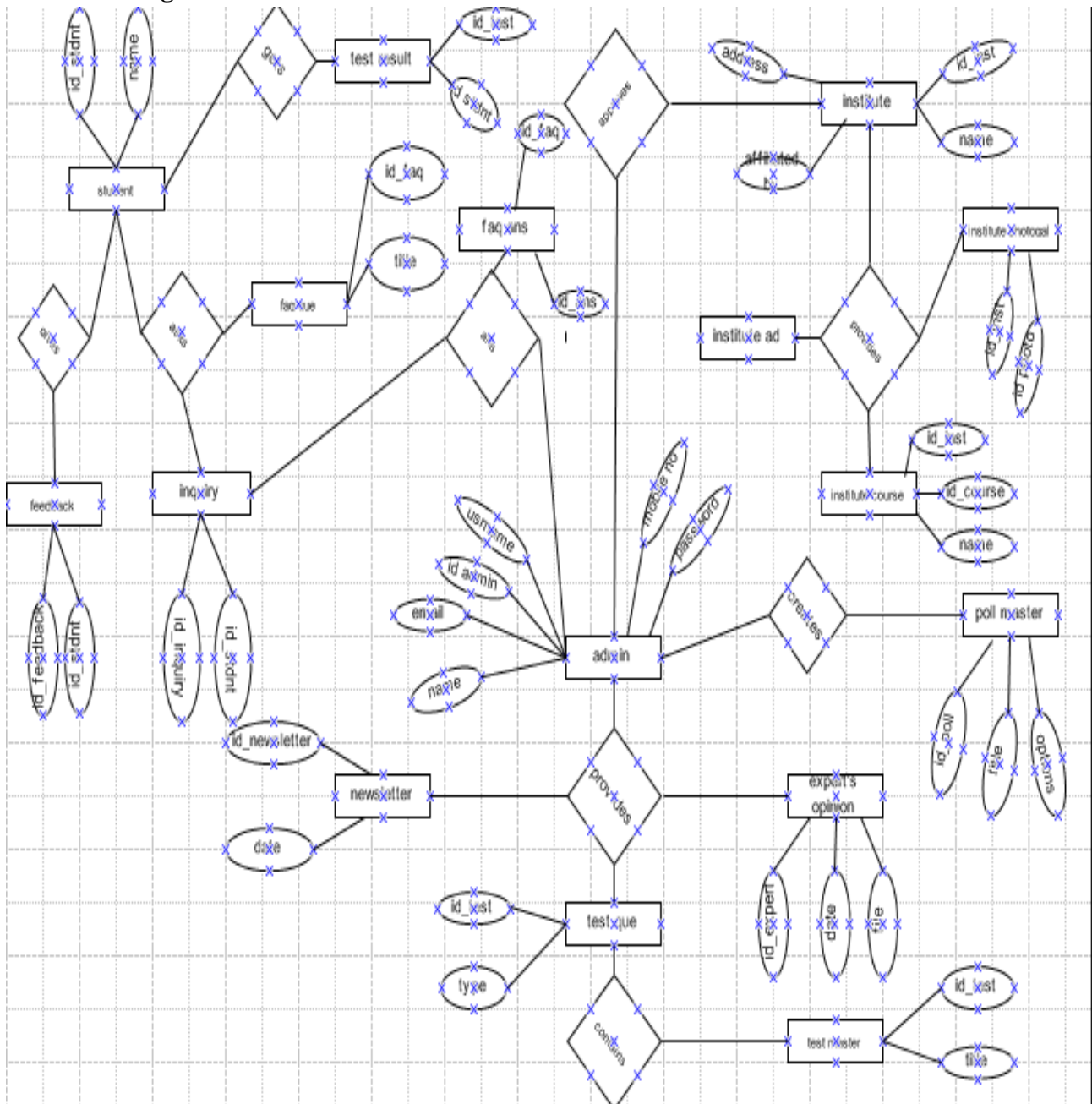
Fig 4.2: E-R Diagram

4.7.2 Activity Diagram:

Admin activity diagram
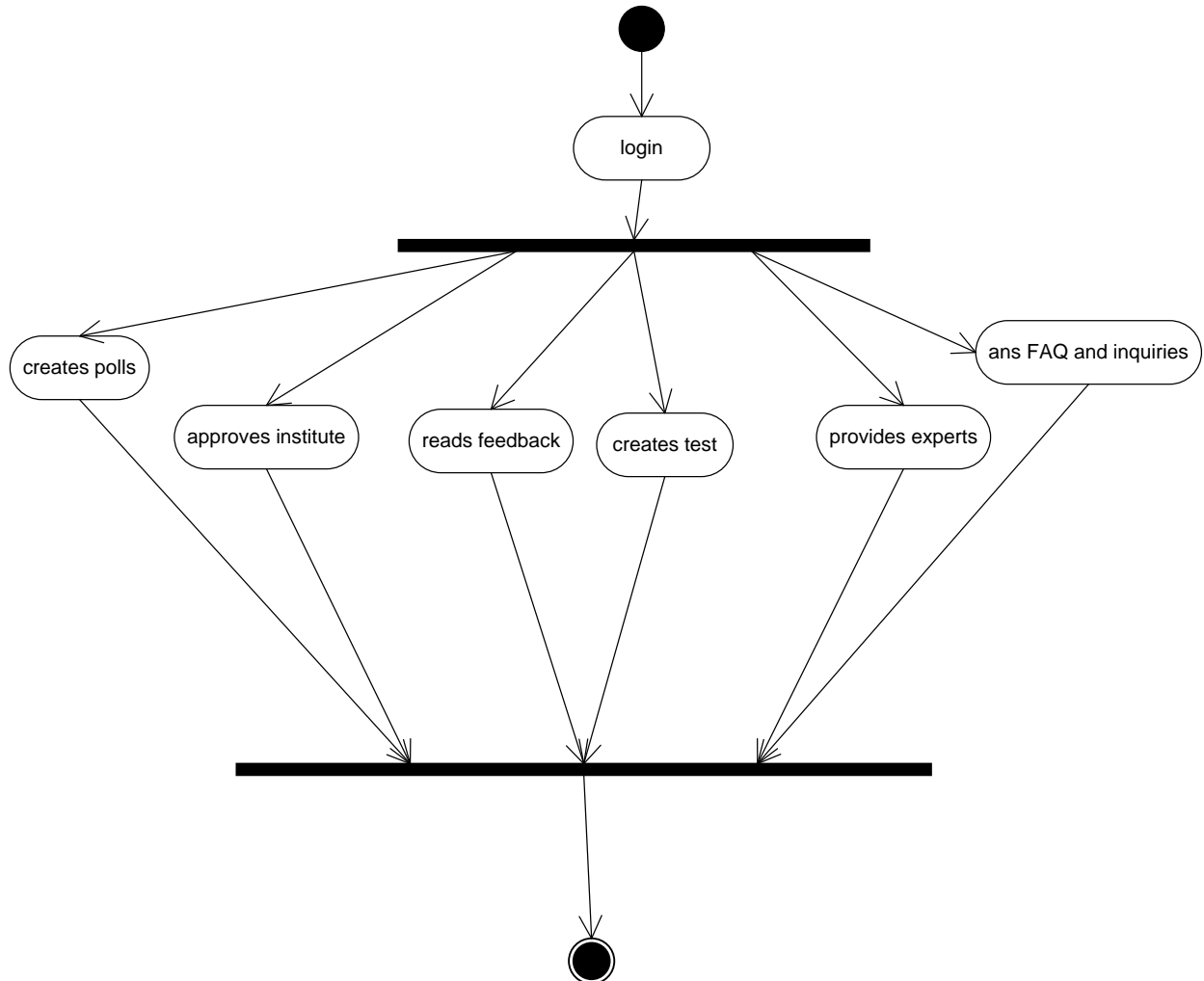
Institute activity diagram

```
                        ●
                        │
                        ▼
                 ┌─────────────┐
                 │ registration │
                 └─────────────┘
                        │
                        ▼
                 ┌─────────────┐
                 │    login     │
                 └─────────────┘
                        │
                        ▼
            ━━━━━━━━━━━━━━━━━━━━━━━
           ╱            │          ╲
          ▼             ▼           ▼
 ┌──────────────┐ ┌──────────────┐ ┌──────────────────┐
 │provide courses│ │provide photos│ │give advertisement│
 └──────────────┘ └──────────────┘ └──────────────────┘
          ╲            │           ╱
           ▼           ▼          ▼
            ━━━━━━━━━━━━━━━━━━━━━━━
                        │
                        ▼
                        ◉
```
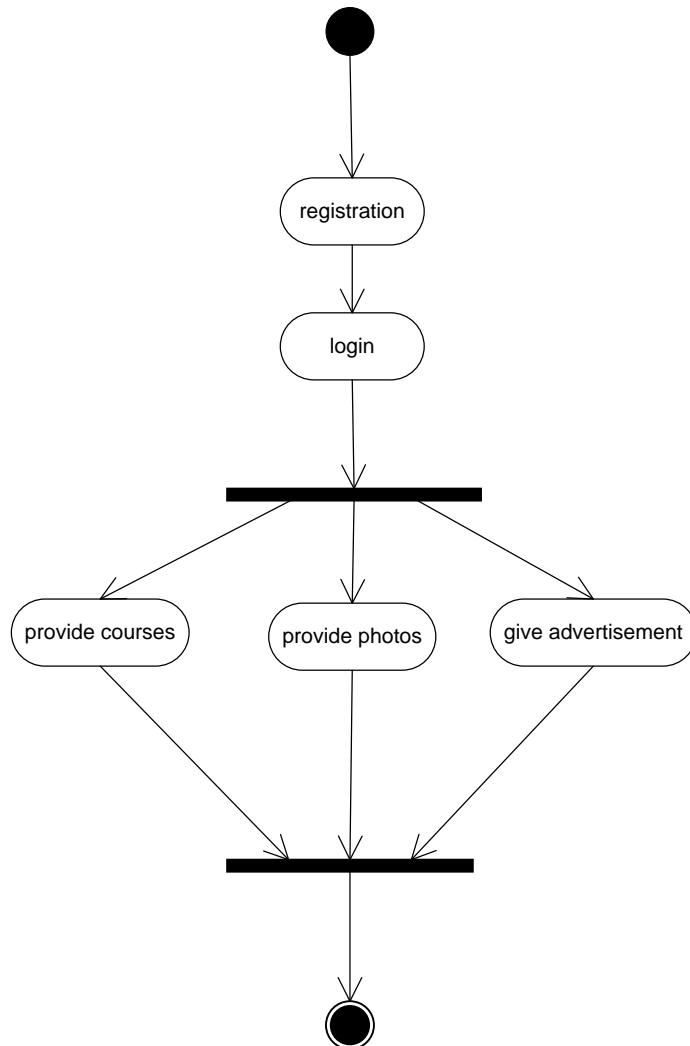
Student activity diagram
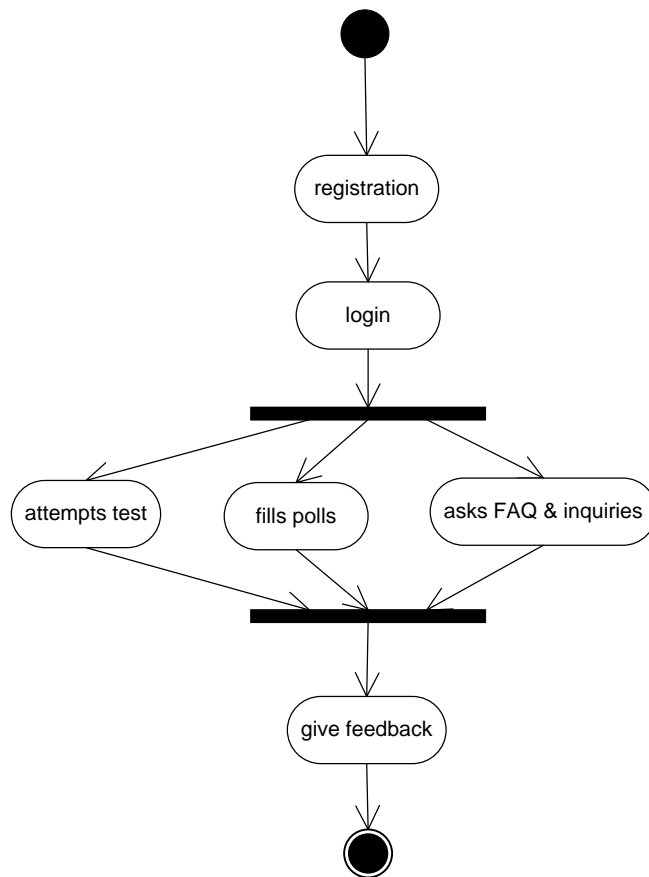
Fig 4.3: Activity Diagram

4.7.3 Data Dictionary:

Institute master			
Field name	datatype	size	constraints
Id_institute	Number	10	Primary key
Name	Varchar2	20	Not null
Address	Varchar2	100	Not null
Helpline no	Number	20	Not null
Category	Varchar2	30	Not null
Sub-category	Varchar2	30	Not null
City	Varchar2	30	Not null
State	Varchar2	30	Not null
Country	Varchar2	30	Not null
About	Varchar2	100	Not null
Affiliatedby	Varchar2	30	Not null
website	Varchar2	30	Not null
e-mail	Varchar2	30	Not null
Username	Varchar2	30	Not null
password	Varchar2	30	Not null
Approved	Boolean		
photogal	Varchar2	100	

Student_master			
Fieldname	Datatype	size	Constraints
Id_student	Number	10	Primary key
Name	Varchar2	20	Not null
Date of birth	Number	10	Not null
Age	Number	2	Not null
Image	Varchar2	100	
Address	Varchar2	100	Not null
Recent qualifications	Varchar2	20	Not null
e-mail	Varchar2	20	Not null
City	Varchar2	30	Not null
State	Varchar2	30	Not null
Country	Varchar2	30	Not null
Username	Varchar2	30	Not null
Password	Varchar2	30	Not null
Signupfornewsletter	Boolean		

Adminmaster

Field name	Datatype	size	constraints
Id_admin	Number	10	Primary key
Name	Varchar2	20	Not null
E-mail	Varchar2	30	Not null
Username	Varchar2	30	Not null
Password	Varchar2	30	Not null
Contactno	Number	10	Not null

Coursemaster

Fieldname	datatype	size	Constraints
Id_course	Number	10	Primary key
Coursename	Varchar2	30	Not null
Detail	Varchar2	100	Not null
Fees	Varchar2	10	

InstitutePhotogallery

Fieldname	datatype	size	Constraints
Id_institute	Number	10	Reference key
Id_photo	Varchar2	10	Primary key
Photofile	Varchar2	50	Not null

Newsletter

Fieldname	datatype	size	constraints
Id_newsletter	number	10	Primary key
Title	Varchar2	30	Not null
Detail	Varchar2		Not null
Date	Number	10	Not null
Time	number	10	Not null

FAQque

Fieldname	datatype	size	Constraints
Id_faq	number	10	Primary key
Title	Varchar2	20	Not null
Detail	Varchar2	50	Not null
Date	Number	10	Not null
Time	Number	10	Not null

FAQans

Fieldname	datatype	size	Constraints
Id_faq	number	10	Reference key
Title	Varchar2	20	
Ans	Varchar2	50	Not null
Date	Number	10	Not null
Time	Number	10	Not null

Poll

Fieldname	datatype	size	constraints
Id_poll	Number	10	Primary key
Title	Varchar2	30	Not null
poll_option1	Varchar2	50	Not null
poll_option2	Varchar2	50	Not null
poll_option3	Varchar2	50	Not null
poll_option4	Varchar2	50	Not null

Expert

Fieldname	datatype	size	constraints
Id_expert	Number	10	Primary key
File	Varchar2	100	Not null
Date	Number	10	Not null
time	Number	10	Not null

Feedback

fieldname	datatype	size	constraints
Id_feedback	number	10	Primary key
Id_student	Number	10	Reference key
Title	Varchar2	30	Not null
Detail	Varchar2	100	Not null
Date	Number	10	Not null
Time	Number	10	Not null

Testmaster

Fieldname	datatype	size	constraints
Id_testno	Number	10	Primary key
Type	Varchar2	30	Not null
Category	Varchar2	10	Not null
Noofque	Number	5	Not null
Timelimit	Number	5	Not null

Testque

Fieldname	datatype	size	Constraints
id_test number	Number	10	Primary key
Qno	Number	3	Not null
Que	Varchar2	200	Not null
Option1	Varchar2	200	Not null
Option2	Varchar2	200	Not null
Option3	Varchar2	200	Not null
Option4	Varchar2	200	Not null

Testans			
Fieldname	**datatype**	**size**	**Constraints**
id_test	Number	10	Primary key
id_student	Number	10	Reference key
Score	Number	5	Not null
Result	Number	5	Not null
Remarks	Varchar2	200	Not null

Inquiry			
Fieldname	**Datatype**	**Size**	**Constraints**
id_inquiry	Number	10	Primary key
id_student	Number	10	Reference key
about	Varchar2	50	
Date	Number	5	
Time	number	5	

4.8 Functional and behavioural modeling:
4.8.1. Context Diagram:
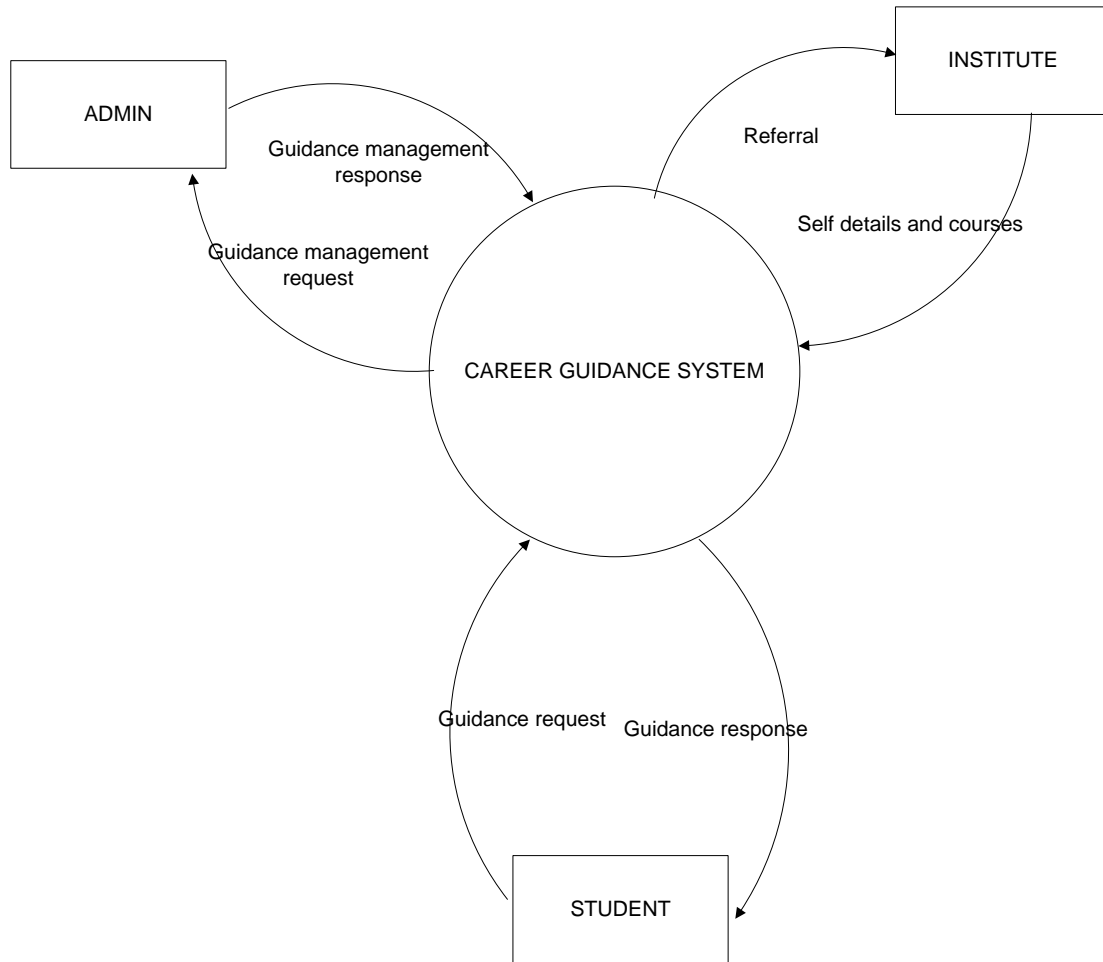
Fig 4.4: Context Diagram

4.8.2 Data Flow Diagram (0 and 1 level)
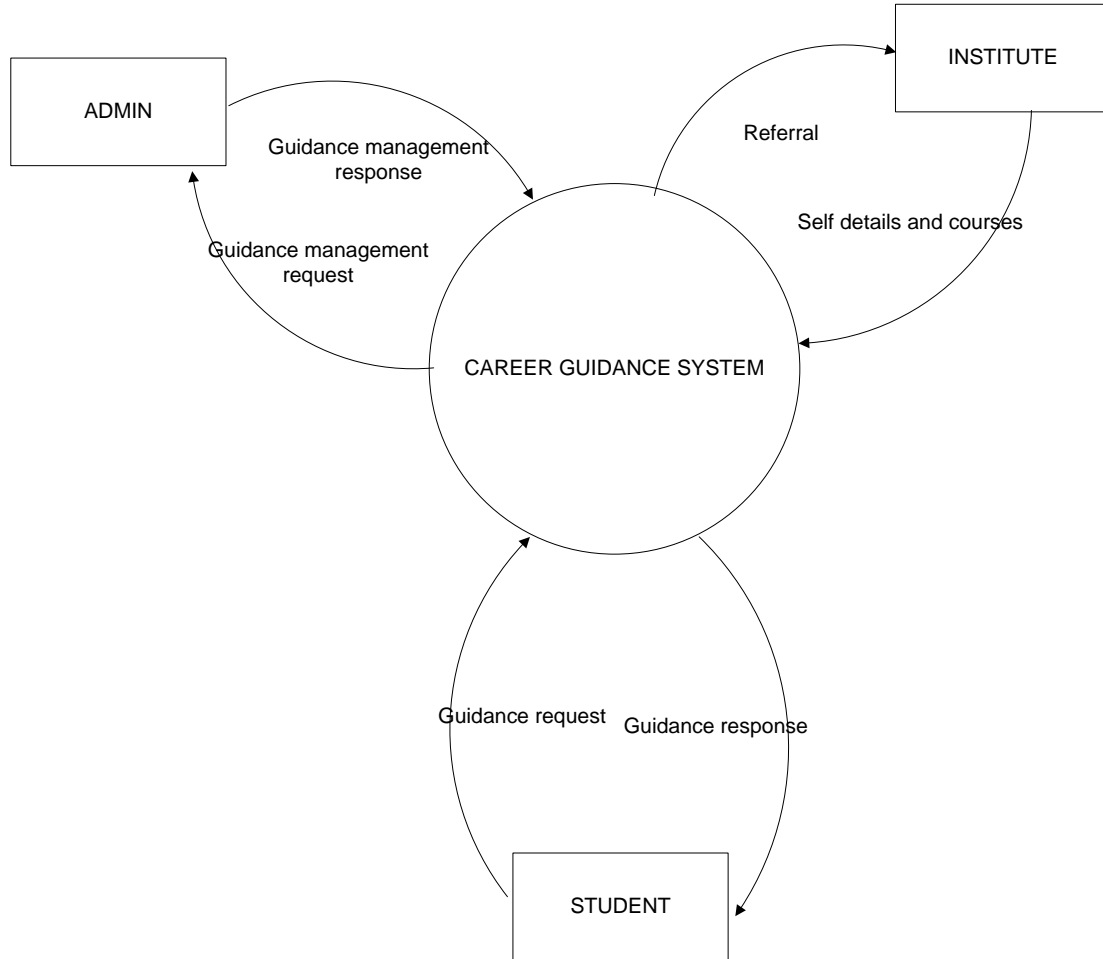
DFD (Level 0)

ADMIN

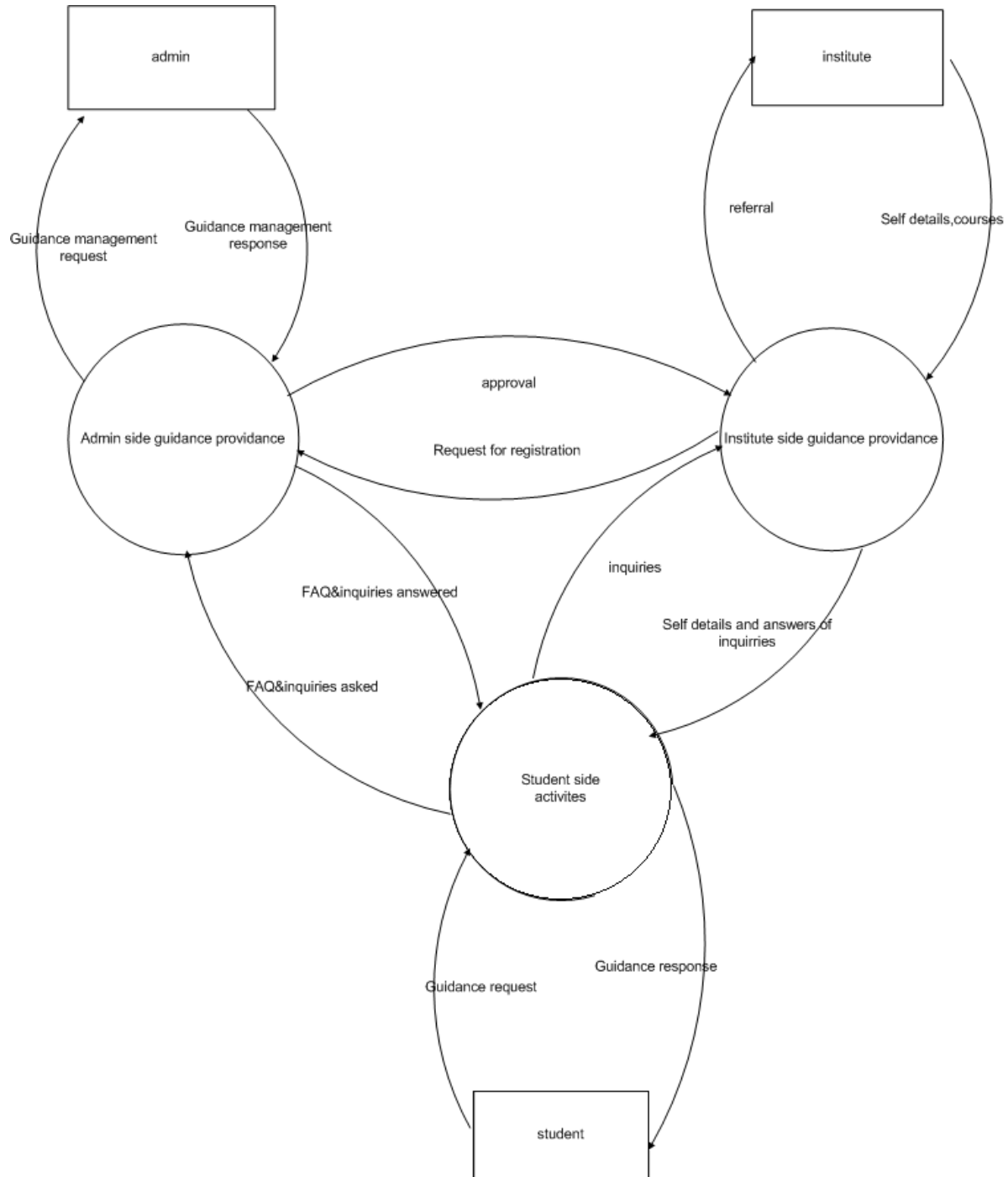INSTITUTE

Guidance management
response

Referral

Guidance management
request

Self details and courses

CAREER GUIDANCE SYSTEM

Guidance request   Guidance response

STUDENT

Fig 4.5: DFD Level 0 diagram

DFD (Level 1)

admin

institute

Guidance management response

Guidance management request

referral

Self details,courses

Admin side guidance providance

Institute side guidance providance

approval

Request for registration

FAQ&inquiries answered

inquiries

Self details and answers of inquirries

FAQ&inquiries asked

Student side activites

Guidance response

Guidance request

student

Fig 4.6: DFD Level 1 Diagram

4.8.3Control flow diagram
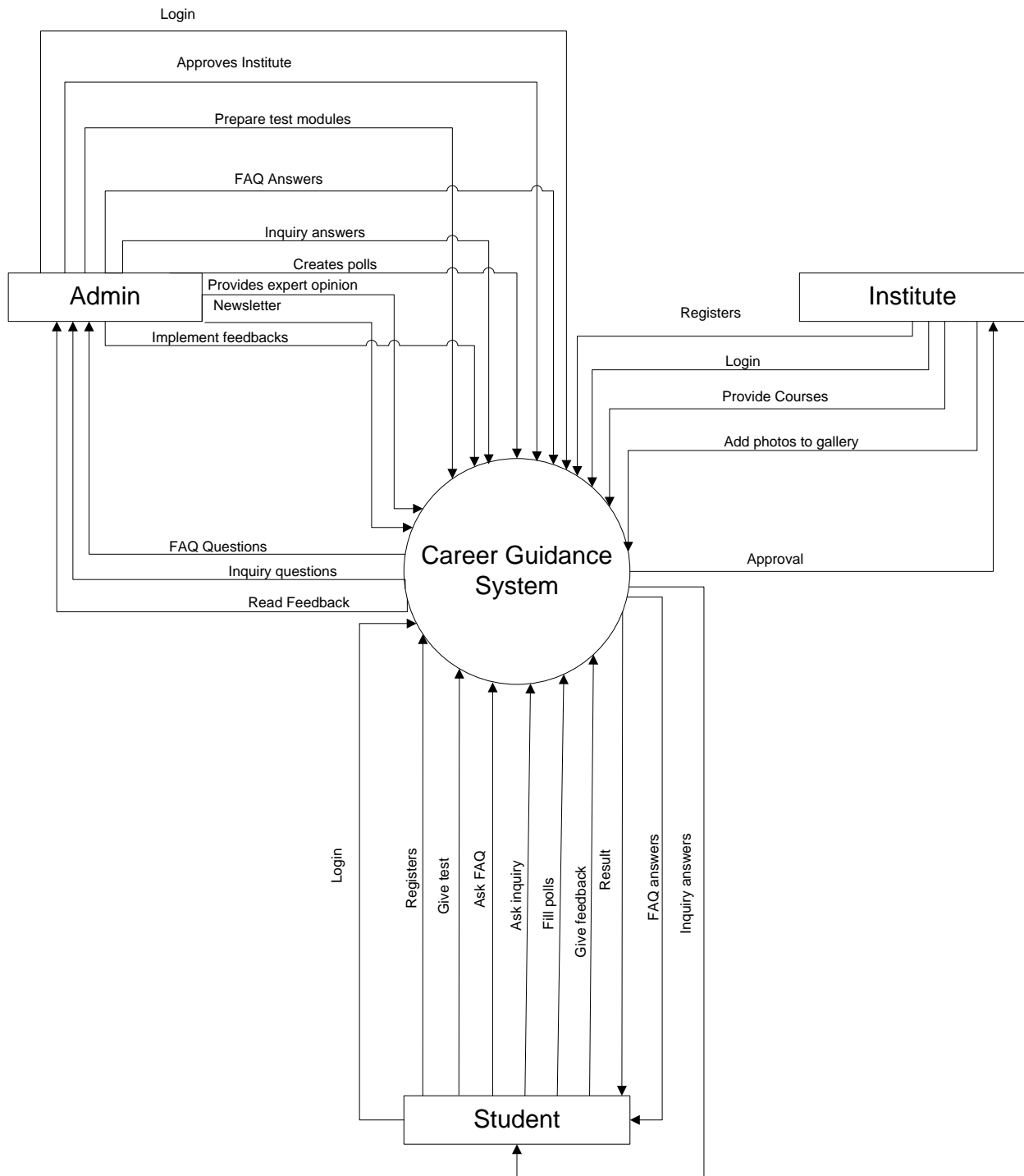
Fig 4.7: Control Flow Diagram

4.9 Main Modules

- Admin – It is the main user of the system. It creates test, manages the whole website and approves institute.
- Institute – It registers on the website and provides courses and advertisements.
- Student- It is the main purpose of creating the system. It applies for the test and gets guidance.
- Test- The main module of the system. It includes various categories of test. The actual guidance is provided on the basis of test results.
- Courses- It includes various courses provided by the various institutes.
- Newsletter- It is a facility provided by the system to update user about various courses and institutes.
- FAQ- They include various general questions asked of website by the student and answered by the admin.
- Inquiry- It is asked by the students about various institutes and courses about their specific dilemma and answered by the admin.
- Experts opinion- It is an additional facility provided by admin for better guidance.
- Polls- It displays ratings about various topics provided by the students.
- Feedback- It is the suggestion asked by the admin from the students.

4.10 Selection of hardware and software justification

4.10.1 SOFTWARE:-

- The software selected for the modules are .NET(Asp), SQLServer Express.

- This software has been selected for this module for the following reasons:

- .NET is selected for this module because it supports multiple languages.

- .NET provides many built in functionality so we choose to develop our project in .NET

- SQL Server Express is used as database as it easier to built database in it and connect.

- SQL Server Express   is used as database, because as stated earlier MYSQL is Open source there is no need to purchase license for that.

4.10.2 HARDWARE:-

- PROCESSOR   : Pentium IV.
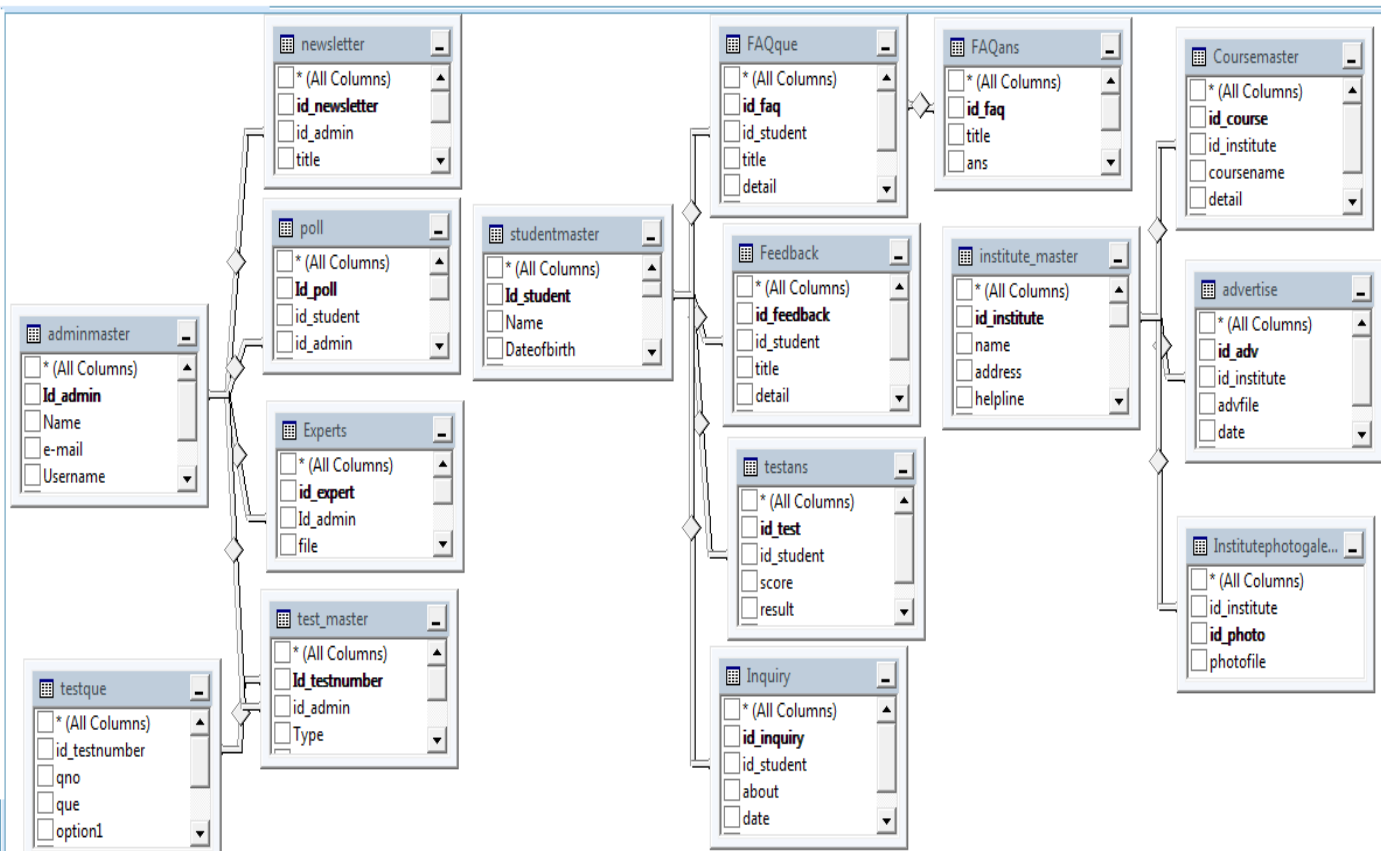- RAM   : 1GB.
- MEMORY   : 80 GB HDD SPACE.

- I have used the above mentioned hardware specification in order to obtain optimized performance.

5.0 SYSTEM DESIGN

5.1 Database Design/Data Structure Design

5.1.1 Mapping Objects/Classes to tables (if non OO language)

5.1.2 Tables and Relationship

5.1.3 Logical Description of Data

- **Admin**

    Description

    Admin is a person who manages the system.

    Relation

    the key factor for creating tests,polls,answerinf FAQs,inquiries

- **Institute**

    Description

    Institute (here user) is the user who registers to the system and handles the institute interactions behalf of the INSTITUTE that has registered for the system.

    Relation

    Institute provides self-details and courses offered by it.

- **Student**

    Description

    A student is a user who registers to the system for the guidance.

    Relation:

    A student can give tests, answer polls,ask FAQs,give feedback.

- **Login Details**

    Description

    Admin create Login Username and Password. After first time login user can change the Username and Password. Information is stored in AdminMaster

Project Diary

Description

Project Diary Describe the basic information of student project training and about his/her project. Information stored is project basic details, company name, address, project title, platform, database, internal guide, external guide, daily progress.

Relation

Project title, company name, daily progress, external guide, internal guide details.

5.2SYSTEM PROCEDURAL DESIGN:

5.2.1 Designing Pseudo code or algorithm for Method or operations
Algorithms:

Insert: Here saving of the data or record is done. The record is saved in the database.

> 1) Start Application Form

> Fill Application Form

> 2) Define, create and open connection.

> 3) Raise the query.

> ExecuteNonQuery(call the Stored Procedure)

> Saved Record

Modify : Here modification of the data or record is done. The record is modified in thedatabase and in the grid.

> 1) Start Application Form

> Modify Application Form

> 2) Define, create and open connection.

> 3) Raise the update query

> ExecuteNonQuery(call the Stored Procedure)

> Update Record

Delete : Here delete of the data or record is done.

The record has been deleted from database and grid.

> 1) Start Grid view Form

Select Particular record

2) Define, create and open connection.

3) Raise the delete query

ExecuteNonQuery(call the Stored Procedure).

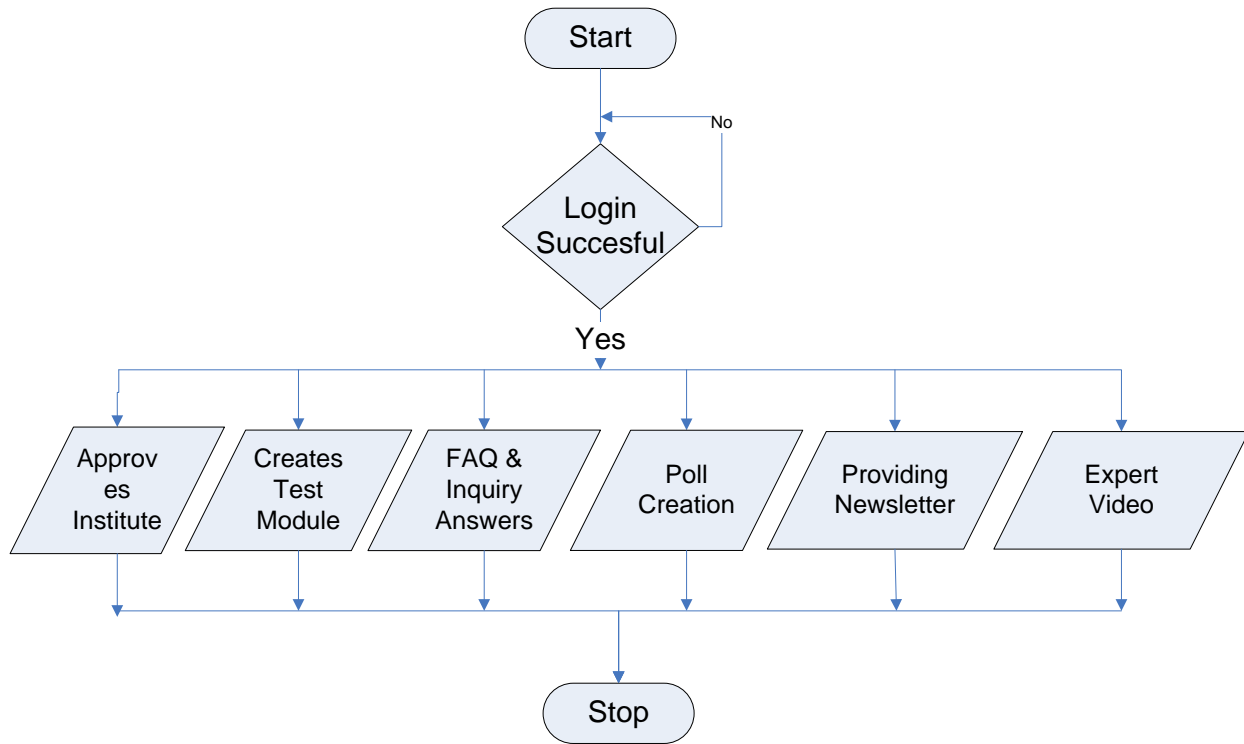Delete Record

5.2.2 Flowcharts
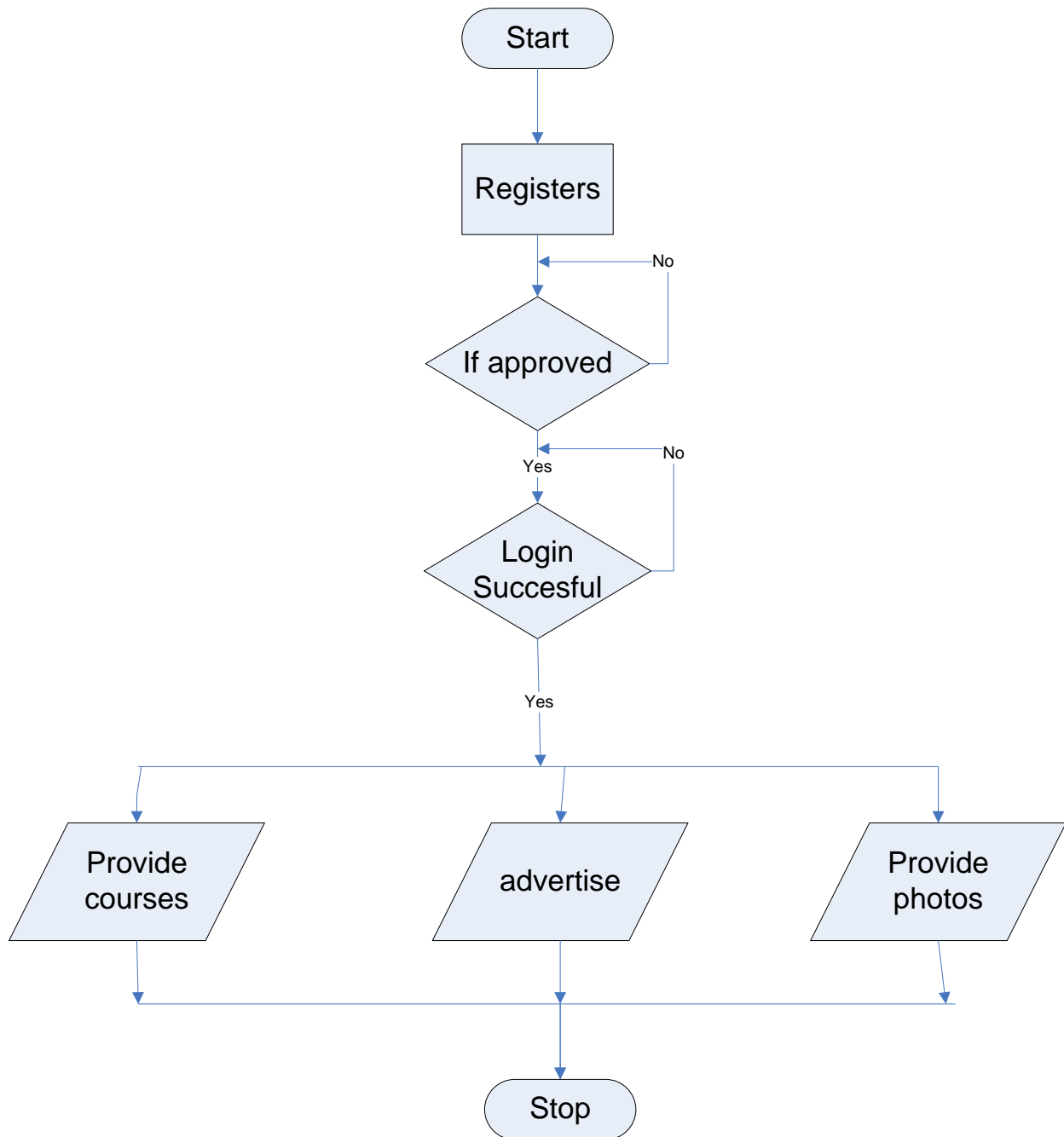**Module 1: Admin**
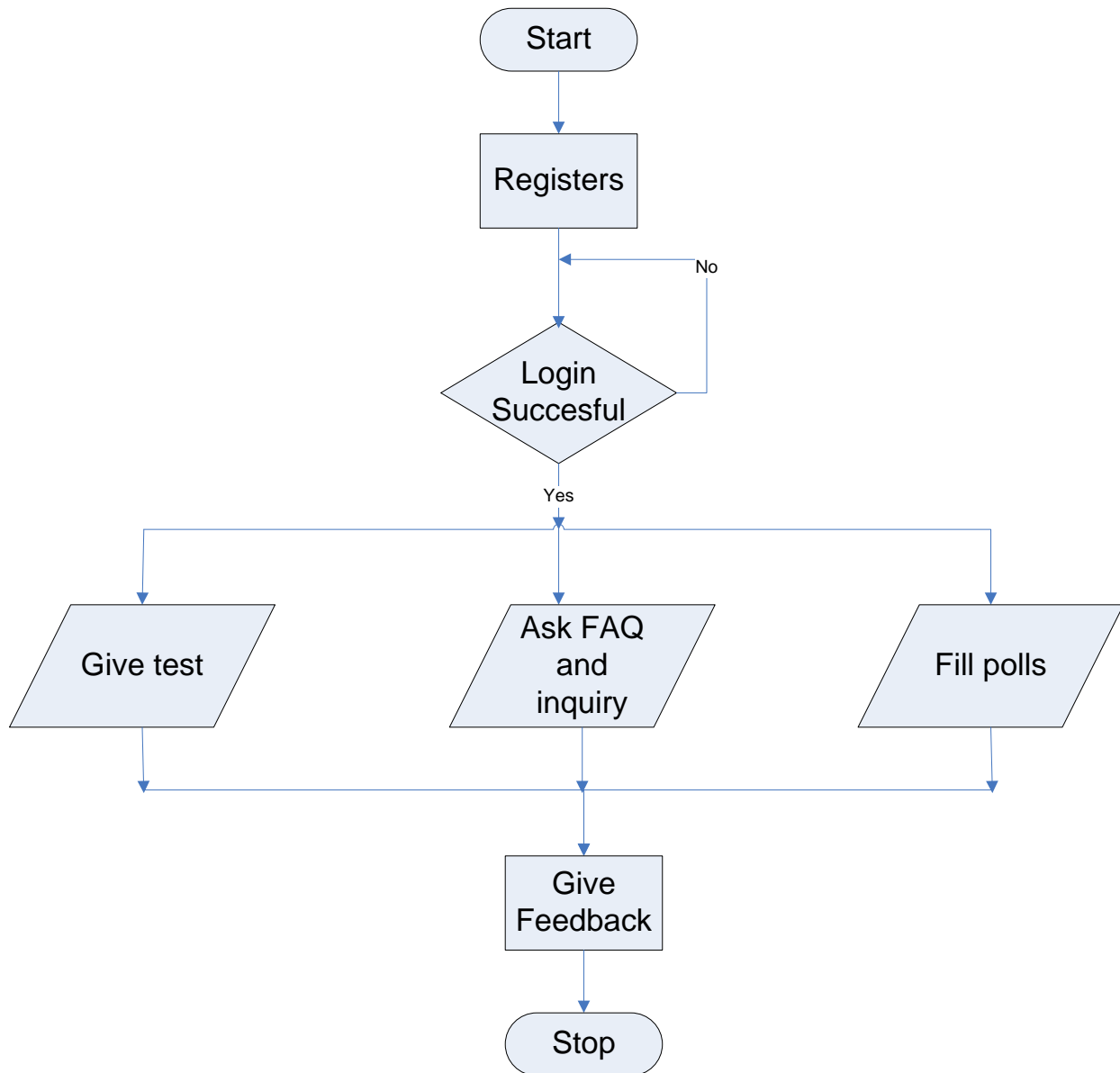

Fig 5.1 : Flowchart for admin

Module 2: institute

```
                        ┌─────────────┐
                        │    Start     │
                        └─────────────┘
                               │
                               ▼
                        ┌─────────────┐
                        │  Registers   │
                        └─────────────┘
                               │        ◄──────── No
                               ▼
                         ◇ If approved ◇ ────────┘
                               │
                              Yes        ◄──────── No
                               ▼
                            ◇ Login
                            Succesful ◇ ──────────┘
                               │
                              Yes
                               ▼
        ┌──────────────────────┼──────────────────────┐
        ▼                      ▼                       ▼
   /Provide    /          /advertise/            /Provide   /
   /courses   /                                  /photos    /
        │                      │                       │
        └──────────────────────┼───────────────────────┘
                               ▼
                        ┌─────────────┐
                        │    Stop      │
                        └─────────────┘
```

Fig 5.2   Flowchart for institute

Student

Fig 5.3: Flowchart for student

5.3 Input/output and Interface Design

5.3.1 Samples of Forms, Reports and Interface

Registration form: It is used by institute and student to register to the institute and student panel respectively .

Login form: This form is used by the admin, institute and student to login to their account in the system.

Reports:

Reports regarding any particular tests, no of users visited the website can be generated in regular interval or of any Specific time.

5.3.2 Access Control & Security

Perhaps the biggest advantage of using the .NET Framework is its simplicity and compatibility with different programming languages. For example, Visual Basic and C++ are complex languages, and it's a challenge to go from one to another. The .NET Framework is very similar to both languages and easy to work with while also making it easy to transfer projects to another programming platform.

Another advantage of the .NET Framework is that it's easily integrated into multiple formats. The data can be integrated with a PC, laptop, smartphone, tablets, and more. This makes it easy to access and use the program, regardless of what hardware the user is currently on. Installation is also very easy and less problematic than other formats.

A third advantage is the .NET Framework's extensive security. Developers and the system administrators can set the security level, allowing organizations to free up the need for security since they can just set it directly. There are many options available, as everything from HTTP, XML, TCP/IP and SOAP can be used to manage the software in question.

The .NET Framework doesn't use the Windows registry when running and installing. Rather than using the registry, the data of the software is stored in the code and accessed when it's running. This results in fewer conflicts between different applications and also ensures that there are fewer problems with the registry. Now you can run multiple apps without any issues.

There's a huge market for online applications and plenty of tools for building them quickly while on a budget. Yet another advantage of the .NET Framework is that it allows you to quickly scale your projects and use shortcuts to create intuitive, compelling applications. There's no need to spend a small fortune on development and expect an endless development process that seems to drag on forever.

The .NET Framework offers extensive security, enhanced usability, flexibility, and fewer problems for the network. Business owners who invest in training their staff in .NET development or hire external .NET application development partners can reap the benefits of this flexible Microsoft framework via the enterprise applications it can produce when properly leveraged.

5.3.3 State transition diagrams
Admin state transition diagram
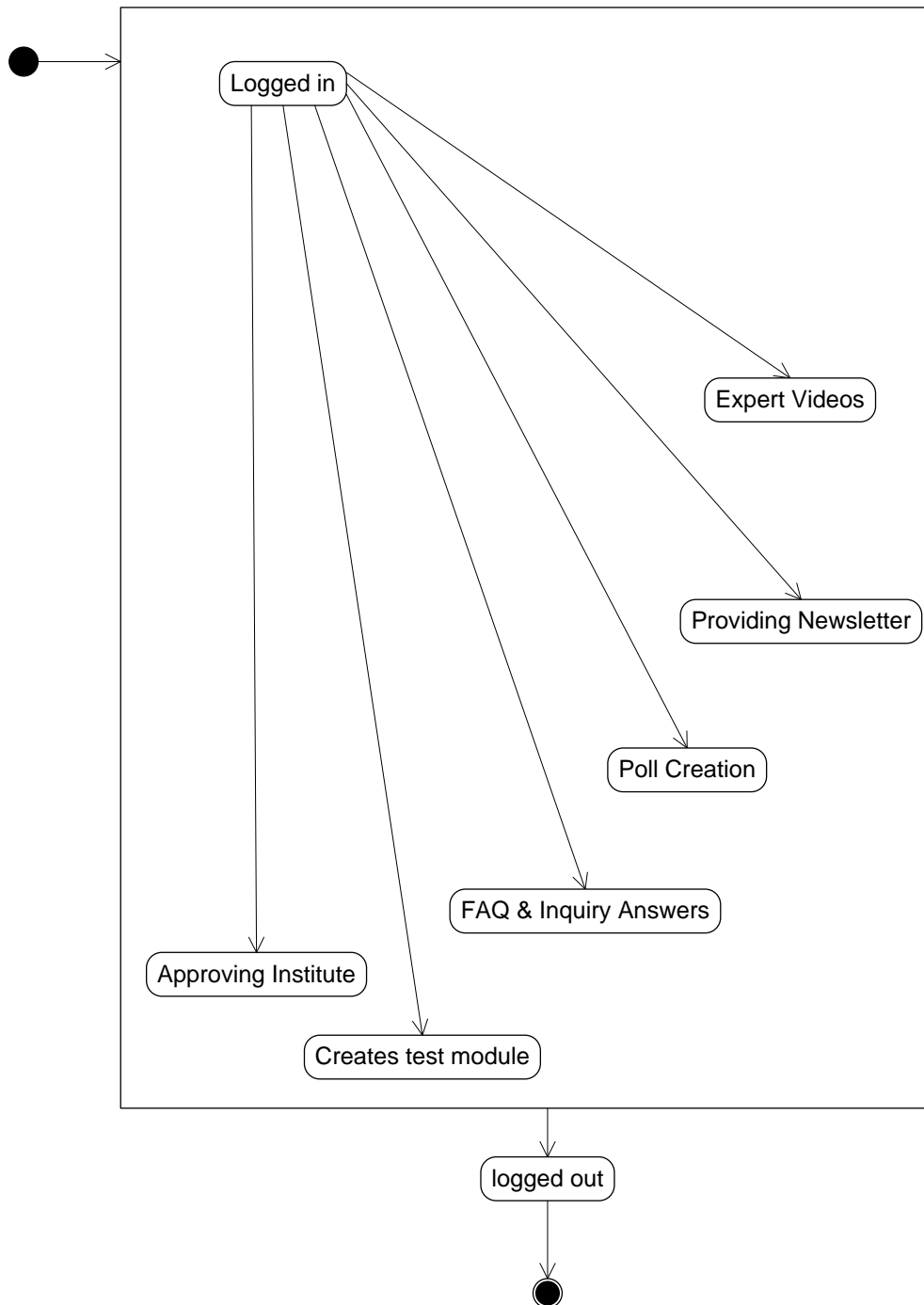
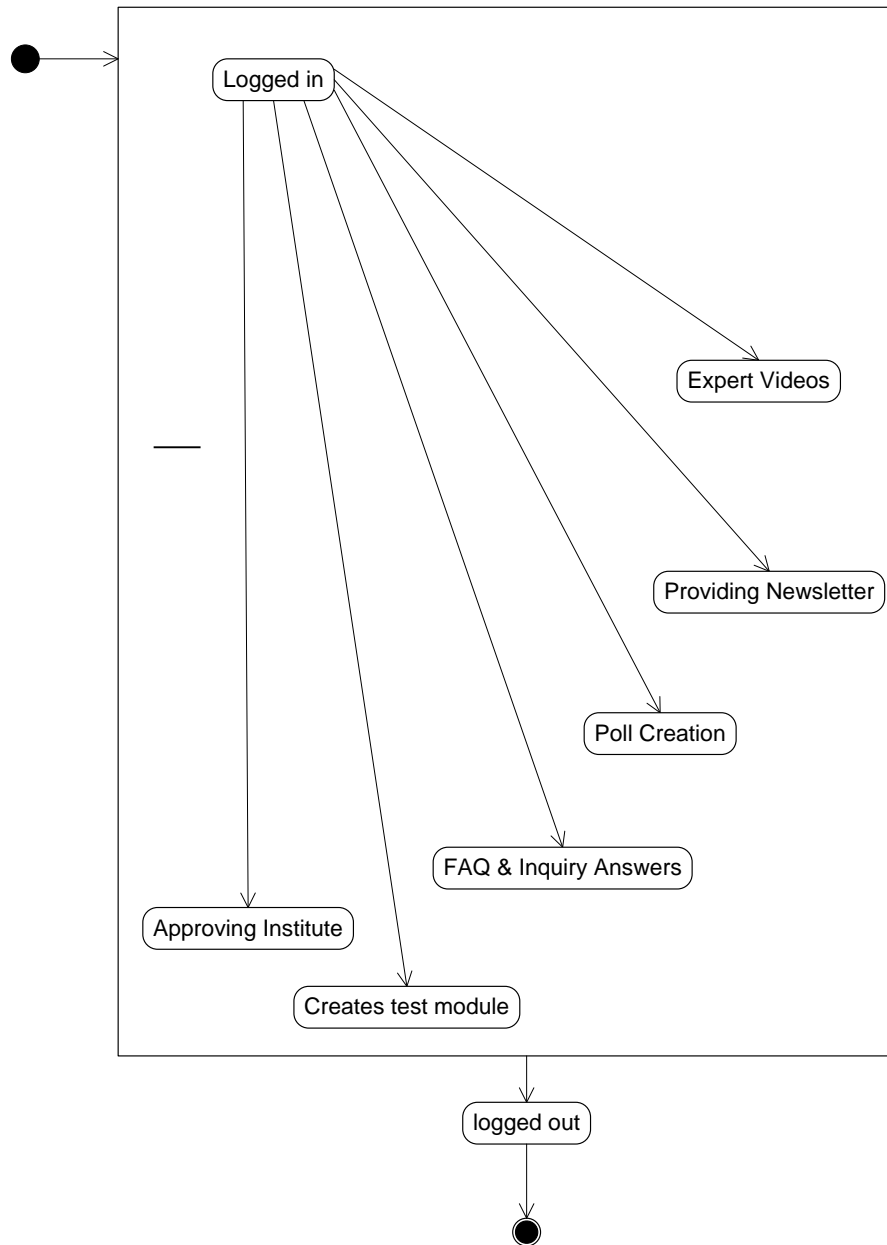**Institute state transition diagram**
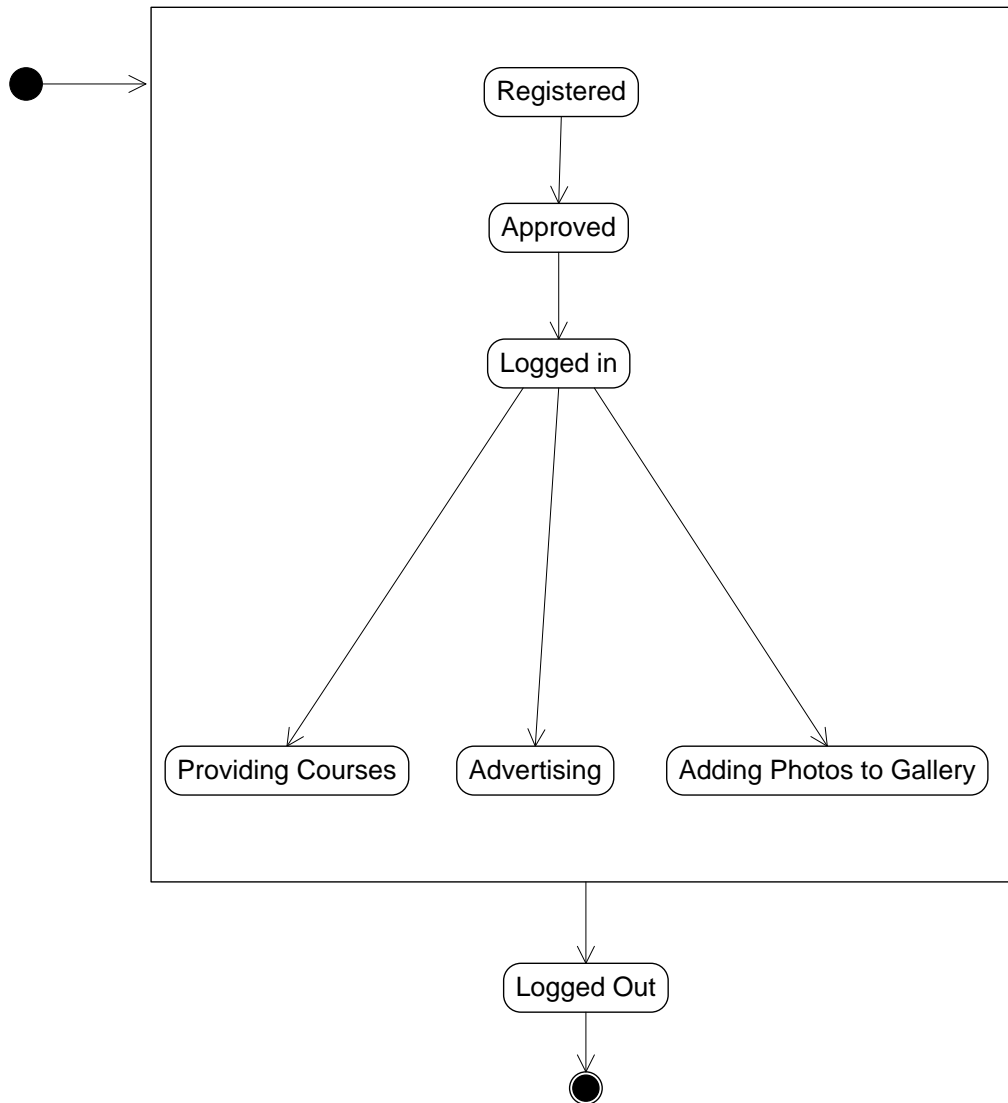
student state transition diagram

Fig 5.3: State Transition Diagram
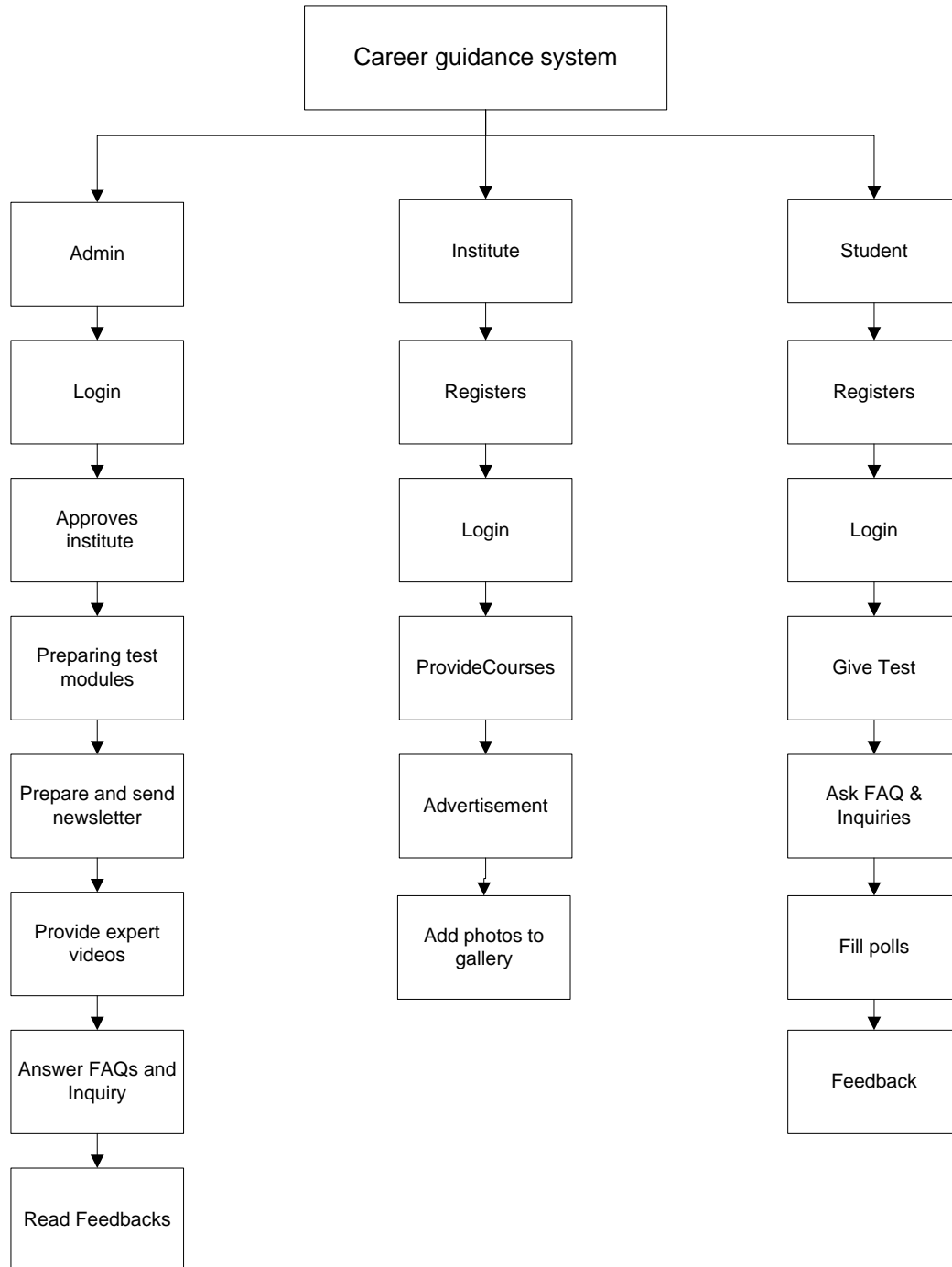
5.3.4 System Design Architecture

Fig 5.4: System Design Architecture

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