

DESIGN & DEVELOPMENT OF AN EDUCATIONAL INTERACTIVE E-BOOK

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This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Masters of Science in Computer Science & Engineering

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APPROVAL

This Project titled “**Design & Development of an Educational Interactive E-book**”, submitted by **Nazia Nishat** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Masters of Science in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 28.01.2013.

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I hereby declare that, this project has been done by me under the supervision of **Dr Yousuf Mahbubul Islam, Professor, Department of Computer Science & Engineering**, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

E-books available on the Internet are generally static, e.g. eBooks in pdf format. Web-based books like encyclopedias or e-magazines now include animation, video and audio clips. Facilities to use an eBook as part of a class exercise for class discussion, engaging or thinking questions, class activities are not generally available. The idea behind this project is to demonstrate initial design ideas on how an eBook can be used as part of class activities and exercises. The project is therefore titled “**Design & Development of an Educational Interactive E-Book**”. Publishers will be able to publish eBooks created by authors. Subsequently, teachers will be able to assign class work, discussions, thinking questions, comments on pictures, home work along with a method of marking. Teachers and students will be able to interact and complete the tasks assigned. Both teachers and students will be able to track their progress. So the eBook will essentially have four types of users – administrators, publishers, teachers and students. Administrators will allow publishers to register, publishers will allow teachers to use the eBook and students will be allowed by teachers to register to do complete a study plan on the eBook. It is believed that such facilities would help learning.

In the early part of the twentieth century, education focused on the acquisition of literacy skills: simple reading, writing, and calculating. It was not the general rule for educational systems to train people to think and read critically. Now, at the end of the century, these aspects of high literacy are required of almost everyone in order to successfully negotiate the complexities of contemporary life.

Maintaining the modern concept of learning, the goal of the **Interactive E-Book** is to increase student teacher involvement in study materials. After implementation of all functions, the system is tested in different stages and it worked successfully as a prototype.

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CHAPTER 1: INTRODUCTION

1.1 Project Overview:

The title of the project is “**DESIGN & DEVELOPMENT OF AN EDUCATIONAL INTERACTIVE E-BOOK**”. This project is aimed to demonstrate initial design ideas on how an e-book can be used as part of class activities and exercises. This system increases student involvement in study materials. This application will be very helpful for users mainly teachers, students, publishers involved with this process. This application will provide a modern technique to create class environment and evaluation of students will be easier. In this practice of learning, most of the students will be involved in the learning process and student & teacher interaction will be increased.

1.2 Background:

According to [3]Hammond (2001) learning changes the physical structure of the brain through the process of continuous interactions between the learner and the external environment. Greater perceptual development and learning occur in environments that are rich with stimuli and provide useful feedback in response to a learner’s efforts to act upon the environment.

Edward Thorndike (1874 – 1949) is considered by many to be the first modern education psychologist who sought to bring a scientific approach to the study of learning.

Thorndike believed that learning was incremental and that people learned through a trial and-error approach.

Jean Piaget (1896 – 1980) was the first to state that learning is a developmental cognitive process, that students create knowledge rather than receive knowledge from the teacher.

The Russian scientist Vygotsky (1896 – 1934) extended Piaget’s developmental theory. He emphasized the role that culture and language play in developing students’ thinking and the ways in which teachers and peers assist learners in developing new ideas and skills. Learning can be viewed, in part, as a matter of encoding and storing information in memory, processing, categorizing and clustering material and later retrieving this information to be applied at the appropriate times and situations.

In context of Bangladesh: in a classroom teachers provide information to enrich students brain with sufficient knowledge but student attentiveness remains for several minutes or less than that. Within the lecture when they are asked questions several of them answers. Rest of them feel shy to give answer or didn't listen the lecture carefully. So information processing is not occurring in a proper way. Now-a-days, students enjoy online interactions like Facebook. As we know learning needs interactions; I have tried to make the application more interactive so that it helps students to learn. I tried to assure that, this interactive e-book can provide useful feedback in response to a learner's efforts to act upon the environment.

1.3 Interactivity of this application:

Interaction is closely linked to successful learning; interacting with others or with information can help clarify concepts, improve problem solving, and enhance retention. While the simplest form of interaction may be questions and answers, a variety of interaction models exist.

ELI(2005) [4] institutions that commit to increasing interaction also commit themselves to provide faculty development, staff support, technological infrastructure, and assessment that support interactive learning. They may find student input and feedback are critical components as well.

Most of the interactive e-books provided on internet are basically PDF formats. Some of them share video tutorials and hypertext links. This type of interaction is called Person to information interaction.

ELI (2005) [4] **Person to information interaction** connects students to the source of information. For example, numerous digital archives contain in-depth information on a wide variety of subjects and often include rich media such as images, video, and sound clips as well as text.

The common problems of these applications are that the learners are connected to the source of information but **peer-to-peer** model is absent there.

According to Interaction: Principles & Practice (2005) [4] in **Peer-to-Peer interaction** students learn with—and from—each other in peer-to-peer models, either virtually or

face-to-face. Blogs and wikis can be peer-to-peer models that promote literacy through writing and storytelling. Students write about and edit each other's work.

To maintain peer-to-peer interaction in this application teachers will train students to answer questions, submit home works, discuss study topics online. Like peer-to-peer teaching students will discuss on class lecture or an image that is given and each student will be able to comment on other's idea. This process will help them to bring out innovative ideas from their mind.

Through this application creative questions can be made and published in the e-book from the existing study material then be placed before students to evaluate their potentials.

1.4 Learning process through this application:

In the early part of the twentieth century, education focused on the acquisition of literacy skills: simple reading, writing, and calculating. It was not the general rule for educational systems to train people to think and read critically. Now, at the end of the century, these aspects of high literacy are required of almost everyone in order to successfully negotiate the complexities of contemporary life.

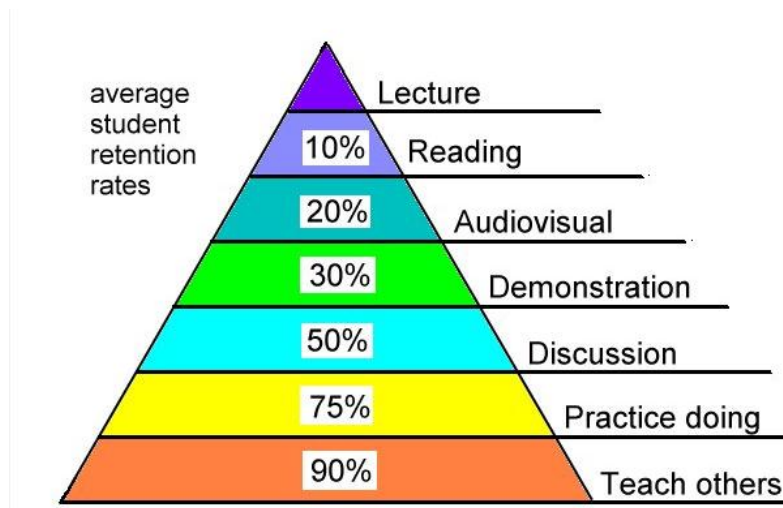


Figure1.1: Learning Pyramid [2]

According to learning pyramid in Figure1.1 I come to know that through lecture a student can achieve 5% of knowledge, through reading 10%, using audiovisual 20%, by

demonstration 30%, while discussion, practice doing, teach others can do(50 to 90)%. This application provides the facility of discussion and though discussion they can teach each other and they can practice by answering questions. So this application can improve student retention rate to 100% approximately.

1.5 Features of this application:

1.5.1 Administrator's task: Admin can authorize member, add/remove member and send notice to members.

1.5.2 Publisher's task:

Add Course: Different courses that teacher will teach and students will register will be included by publishers.

Add Category: Publishers can add book category like English, Physics, Computer, Science etc for adding books in various category.

Create book: Publishers create books by adding Book name, Author name, Book Category, Volume no.

Create chapter: Here publisher can add chapter name and chapter no will be increased automatically.

Select page: Publisher will select page either left or right in a chapter. In left page the user can create questions such as: multiple choice & in right page publisher can insert images where students can add their comments.

Create Questions: Now Publisher will add question by selecting question type in different chapters. According to selection of question type question format will appear and publisher will add question to book for example: multiple choice, homework, fill in the blanks with correct word.

Add image: Different images related to the study material can be included in this process where students can add comments and view individual comments later.

1.5.3 Teacher's task:

Select course to teach: Teacher will register a course so that teacher can allow students to select courses later and get a notice related to that course.

Assign task for students: Teachers can assign task to students and fix a timeline so that students are bound to answer the questions within time limit.

View student's performance: Teachers are allowed to view student performance after students work is done. Here most of the answers are checked automatically, for example multiple choice. Answer given by a student will be compared with the correct answer in the database to check whether it is correct or not.

1.5.4 Student's task:

Select course: Students have to register a course to get a homework notice submitted by teacher in this system.

Select Notice: After student's registration, notices of that course will be added to his notice list if the submission date is passed it will be shown also. Student will select a notice from list to submit his task.

Tasks for students: Students will get notice assigned by teachers where link of selected books, chapters, and last date of task submission added with teacher's message will be shown. Then student can select one notice to continue task.

View Result: After submitting the task student can view the result.

1.6 Objectives of this project:

Other interactive e-books provided on internet allow publisher sharing videos and hypertext links. Some of them just allow sharing PDF formats [1] where student can study their class materials only but can't share their ideas with other classmates or can't judge their potentials. But this interactive e-book will create a classroom environment where students can discuss and also submit their homework.

Objectives of this project are as below:

- This system will be utilized properly when students will be able to create knowledge rather than receiving it through discussion.

- Students will be more involved in the class while doing these tasks.
- Students can discuss while they doing the discussion on image and they can share their ideas on other's comment this will help them to think critically.
- While doing these tasks they may ask questions to teachers. This phenomenon was missing in the regular lecture providing techniques.
- Shy students will engage themselves in discussion and ask questions in this process. This system will allow shy students to develop new ideas and skills through interaction and discussion online.
- They can view their result in a short time and thus practice their study materials.
- Finally e-book will be used as a part of class exercise.

1.7 Development Language & Database:

This application is developed using the following language, tools & database:

- Language: PHP[11], HTML[6], JavaScript[8], CSS[9,10]
- Database: MYSQL
- Server: Apache, Wamp server
- Tool: Dream weaver CS5[7]

1.8 Organization:

This book is organized as below:

- Chapter 1 introduces the idea of project,
- Chapter 2 defines the feasibility factors,
- Chapter 3 analyses the system,
- Chapter 4 defines techniques of system design of this project,
- Chapter 5 provides testing of the system using data dictionary,
- Chapter 6 shows views of system interface,
- Chapter 7 contains self acknowledgement from the project,
- Chapter 8 summarizes the whole project and at last some references are provided.

CHAPTER 2: FEASIBILITY STUDY

2.1 Introduction:

A feasibility study is an evaluation of a proposal designed to determine the difficulty in carrying out a designated task. Generally, a feasibility study precedes technical development and project implementation. In the Feasibility stage, costs of the requirements are determined. After initial study I have come to know that **Design and Development of an Educational Interactive E-book** is feasible. But it is necessary to analyze [12] whether the work for the proposed system can be done with the current equipment and facility.

2.2 Factors of feasibility:

Some common factors are referred in feasibility study. These are as follows:

2.2.1 Technical Feasibility:

Technical Feasibility is the process of proving that the concept is technically possible. The objective of Technical Feasibility step is to confirm that the product will perform and to make sure that there are no production barriers.

Following the above situation the condition of technical feasibility of this application is sufficient enough to run this project. Hardware and software facility is good enough for this project. This system will allow students to submit answer and the system will publish their result in an efficient way.

2.2.2 Economical Feasibility:

More commonly known as cost/benefit analysis, the procedure is to determine the benefits and savings that are expected from a candidate system and compare them with costs. Economic analysis is the most frequently used method for evaluating the effectiveness of a new system. After analyzing this application economically I have evaluated this project's effectiveness. Economic feasibility of this software is given here:

- Cost of System design and up gradation within budget.
- Reduce time and paper consumption.

- Easy maintenance and no need of user training.

2.2.3 Operational Feasibility:

It is a measure of how well a solution meets the identified system requirements to solve the problems and take advantage of the opportunities envisioned for the system. This system meets the operational needs of its user.

This application is user friendly and there is no need of extra effort to train users to control the application. The method of creating books, chapters, questions are easy to handle. There are list of books on those the different publisher works so that publisher feel it easy to find books and work on it. Teacher feels it easy to evaluate students online because the time needed to check answer scripts are reduced in this application. It saves students time also while they are answering questions online. And important thing is every student is taking part in this process.

2.3 System Requirements:

To be used efficiently, all software needs certain hardware components or other software resources to be present on computer. These prerequisites are known as system requirements and are often used as a guideline as opposed to an absolute rule.[5]Most software defines two sets of system requirements: minimum and recommended. With increasing demand for higher processing power and resources in newer versions of software, system requirements tend to increase over time. Industry analysts suggest that this trend plays a bigger part in driving upgrades to existing computer systems than technological advancements.

But I have found that system requirement is a minimum for this project. So an institution can easily afford this.

2.3.1 Hardware requirements:

To maintain Interactive E-Book System needs to have an internet facility. I need high speed internet connection with large bandwidth to accept large traffic. While providing lectures there must be the internet connection to all the students if they want to answer

quizzes on time. Teachers should have a computer with high speed internet connection also to get all results meantime.

2.3.2 Software requirements:

The software requirements are as shown below:

- Operating System : Windows XP/ Windows 2000/Windows NT

2.4 Manpower Availability:

I need administrators to manage any errors caused by user activities and handle the security break up issue. Administrator should be aware of the daily actions and other new updates. I need an IT expert also. IT expert need to professional and able to trace down the incompatibility. Administrator should bear the overall power to maintain the whole system, add/delete anything with the system. As the system contains sophisticated data I need an honest and reliable person as an administrator with superiority over other users.

2.5 Conclusion:

After successful completion of the feasibility study I have found that the proposed system is desirable. The new system is technically and economically feasible, it also meets operational feasibility.

CHAPTER 3: SYSTEM ANALYSIS

3.1 Introduction:

The system analysis is a detailed study of the various operations performed by the existing system and their relationships within and outside of the system. One aspect of analysis is defining the boundaries of the system and determining whether a candidate system should consider other related systems. [13] Here I completed system analysis by the input analysis, output analysis and data analysis of existing system. At the preliminary stage of the analysis, I had followed the following Waterfall Development Methodology.

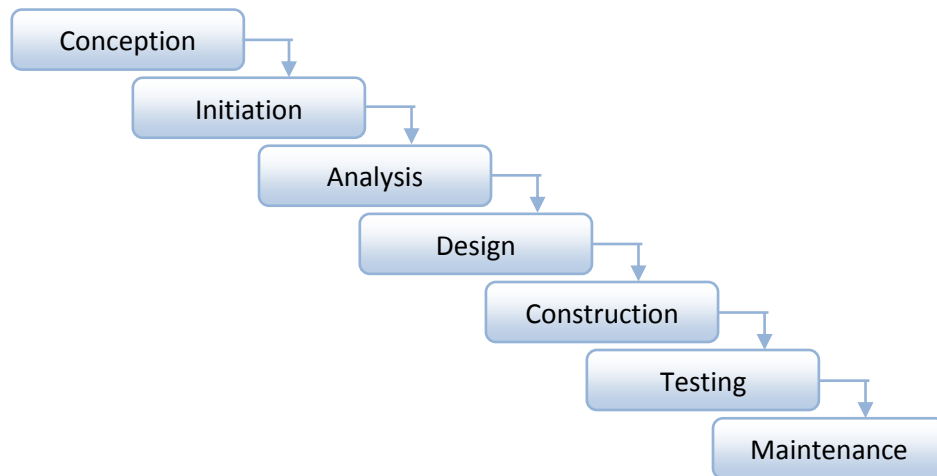


Figure 3.1: Waterfall model [14]

3.1.1 Conception:

The idea behind this project is to demonstrate initial design ideas on how an e-book can be used as part of class activities and exercises. Some interactive e-books provided on internet allow sharing audios and video tutorials and hypertext links. Some of them just allow sharing PDF formats. Where student get information only but their thinking ability is not improved and they can't practice the exercises and can't judge their potentials. But this interactive e-book will create a classroom environment where students can discuss and also submit their homework.

3.1.2 Analysis:

Software analysis patterns or analysis are conceptual models, which capture an abstraction of a situation that can often be encountered in modeling. Using specific analysis, I will do a system-risk-analysis. Based on the results of this analysis, I will define a test concept adapted to the risk requirements. [15]According to analysis I have found that there are 3 categories of members who can use this system. Those are teachers, students and publishers.

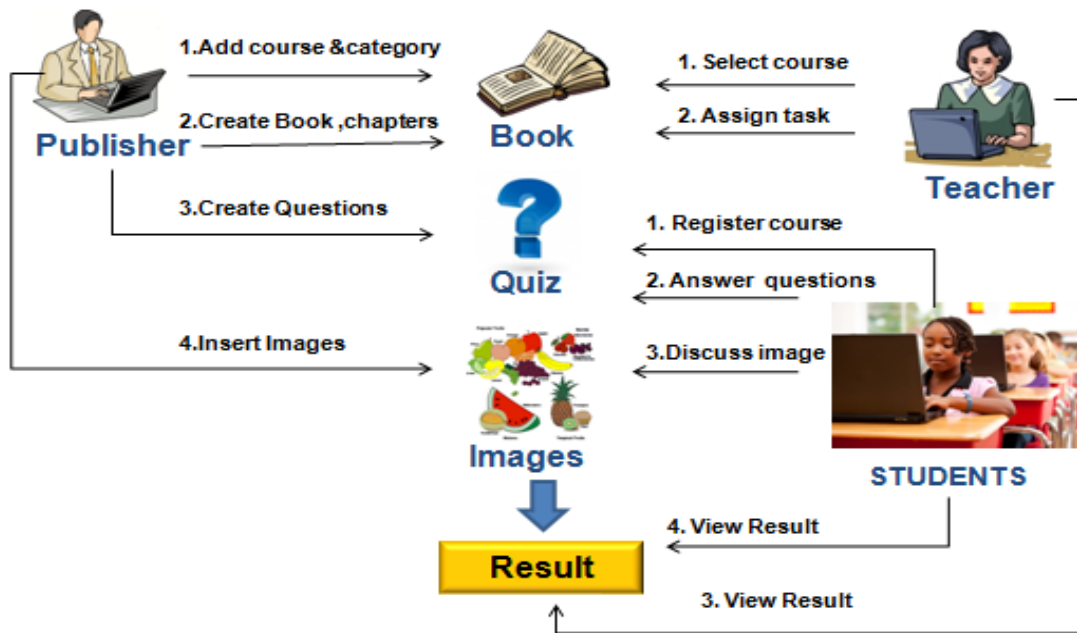


Figure 3.2: Work flow diagram of Design & Development of Interactive E-book

I have summarized the system in flow in a work flow diagram which gives a defined idea about the application. Publishers will be able to publish eBooks created by authors. Subsequently, teachers will be able to assign class work, discussions, thinking questions, comments on pictures, home work along with a method of marking. Teachers and students will be able to interact and complete the tasks assigned. Both teachers and students will be able to track result.

3.1.3 Design:

Design of an application is very important part of system analysis. I have designed this application following the design method. [16]

3.1.4 Construction:

Construction means the implementation or the realization of an application, or execution of a plan, idea, model, design, specification, standard, algorithm, or policy. [17] So, in this phase I build up our application following construction criteria.

3.1.5 Testing:

According to the reference no[18] software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test. Black-box testing is a method of software testing that examines the functionality of an application [20] without peering into its internal structures or workings. I have shown black box testing of this application.

3.1.6 Maintenance:

Maintenance is the modification of a software product after delivery to correct faults, to improve performance or other attributes. I will be responsible to solve for all kinds of software faults after delivery. [19]

3.2 Input Analysis:

Inaccurate input data are the most common cause of errors in data processing. Errors entered by data entry operators can be controlled by input design. Input design is the process of converting user-originated inputs to a computer-based format.

3.3 Conclusion:

After analyzing this system I have come to know that this system meets all system analysis criteria and system will run properly.

CHAPTER 4: SYSTEM DESIGN

4.1 Introduction:

This is the phase where the advance software system will be defined and their functionality. The data catalogue of the advance software system will be defined and the relationship between the entities through the constraints will be identified.

4.2 DFD (DATA FLOW DIAGRAM):

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modeling its process aspects. [21]A DFD consists of a series of bubbles join by lines. The bubbles represent beta transformations and the lines represent data flow in the system. A DFD describes what data flow (logical) rather than how they are processed.

4.2.1 DFD Symbols:

In the DFD, there are four symbols. The descriptions of each symbol are given below:

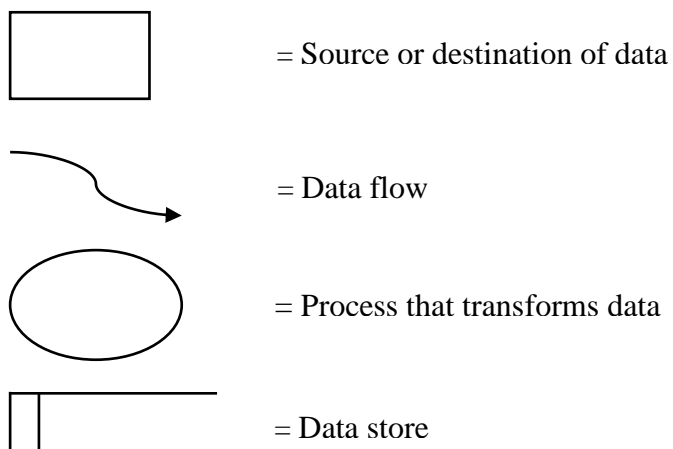


Figure 4.1: DFD Symbols

4.3 DFD of Proposed System

The DFD of subsystems are given below:

4.3.1 DFD of Activities of Publisher:

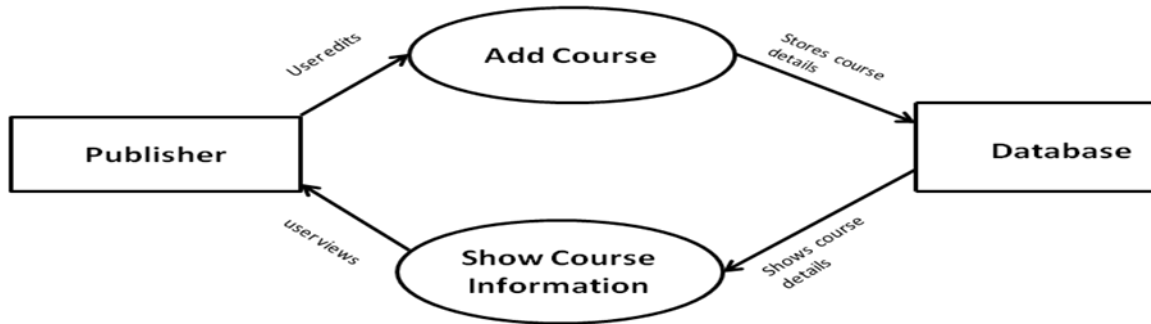


Figure 4.2: DFD of Activities of Publisher of Adding Course

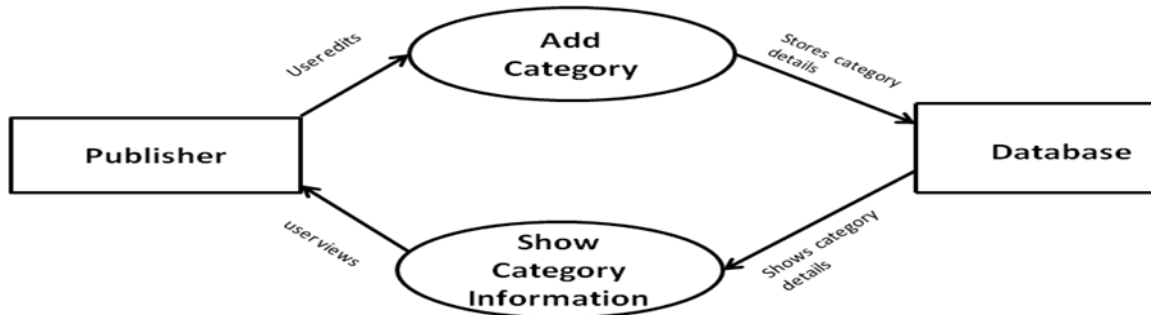


Figure 4.3: DFD of Activities of Publisher of Adding Book Category

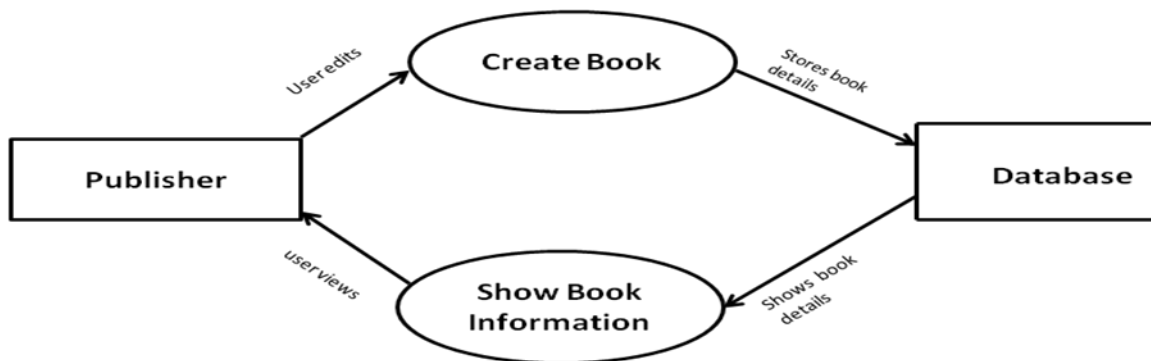


Figure 4.4: DFD of Activities of Publisher of Creating Books

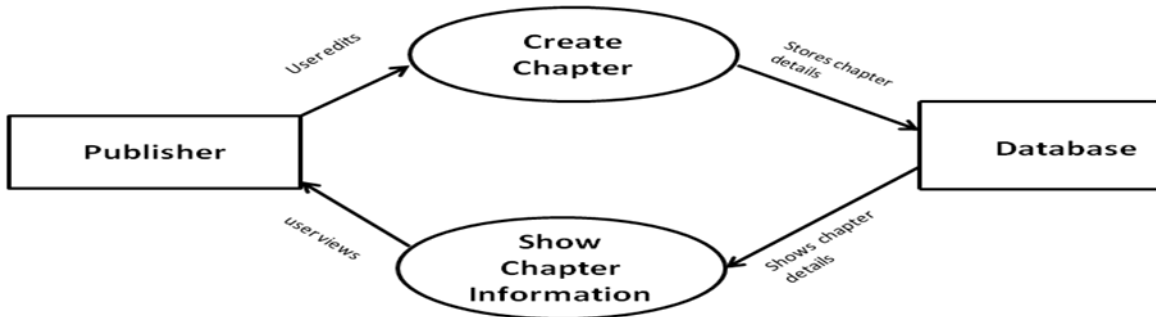


Figure 4.5: DFD of Activities of Publisher of Creating Chapters

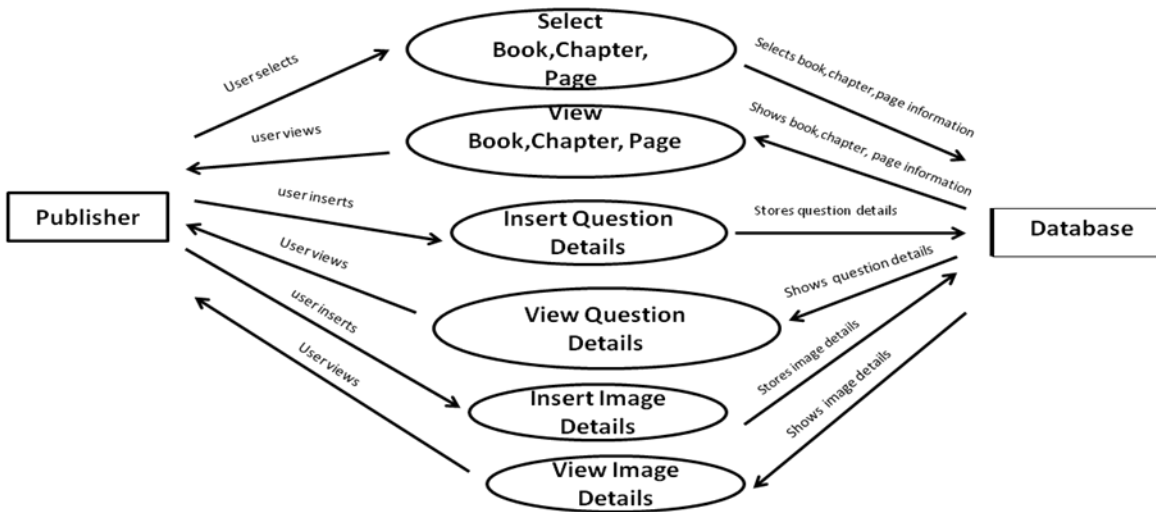


Figure 4.6: DFD of Creating Question & Adding Images by publisher

4.3.2 DFD of Activities of Teacher:

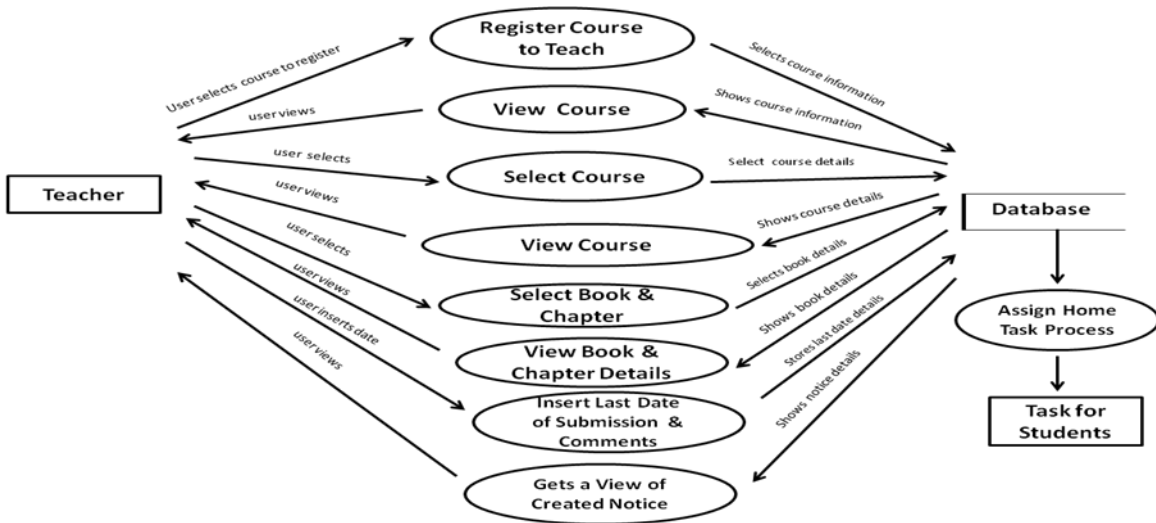


Figure 4.7: DFD of Activities of Teacher of Assigning Task for Students

4.3.3 DFD of Activities of Student:

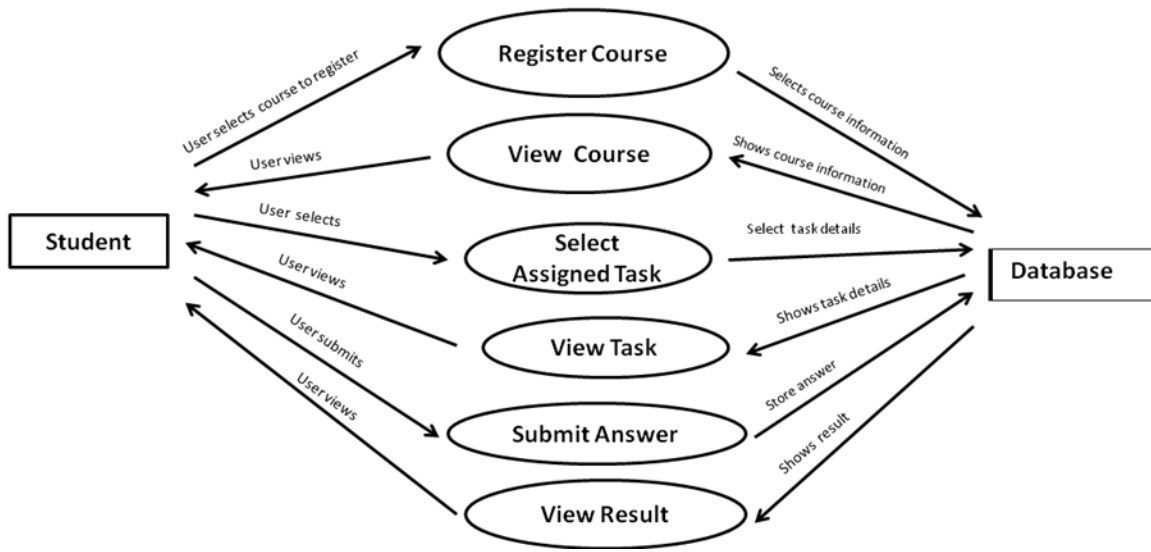


Figure 4.8: DFD of Activities of Student of Submitting Answers and Checking Result

4.4 E-R diagram:

Entity-relationship modeling is a database modeling method, used to produce a type of conceptual schema or semantic data model of a system.[23]According to[24] Hoffer(2004) it is a detailed, logical representation of the data for an organization or for business area. The E-R model is expressed in terms of entities in the business environment, the relationships or associations among those entities and the attributes or properties of both entities and their relationships. Notations of E-R diagram & E-R diagram of the proposed system are shown below:

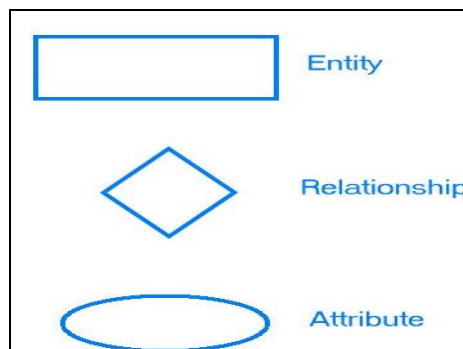


Figure 4.9: Notations of E-R Diagram [25]

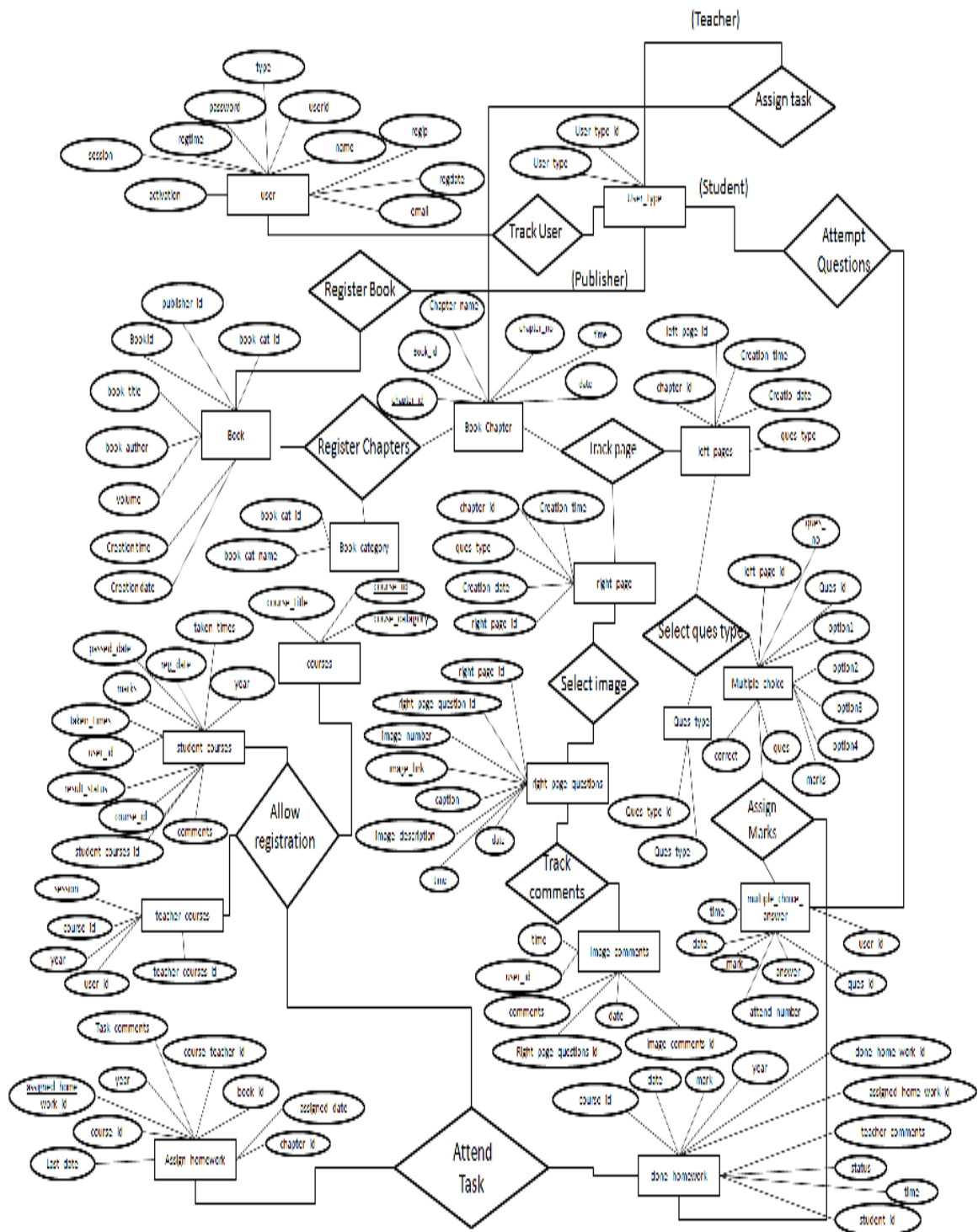


Figure 4.10: E-R Diagram of Interactive E-book

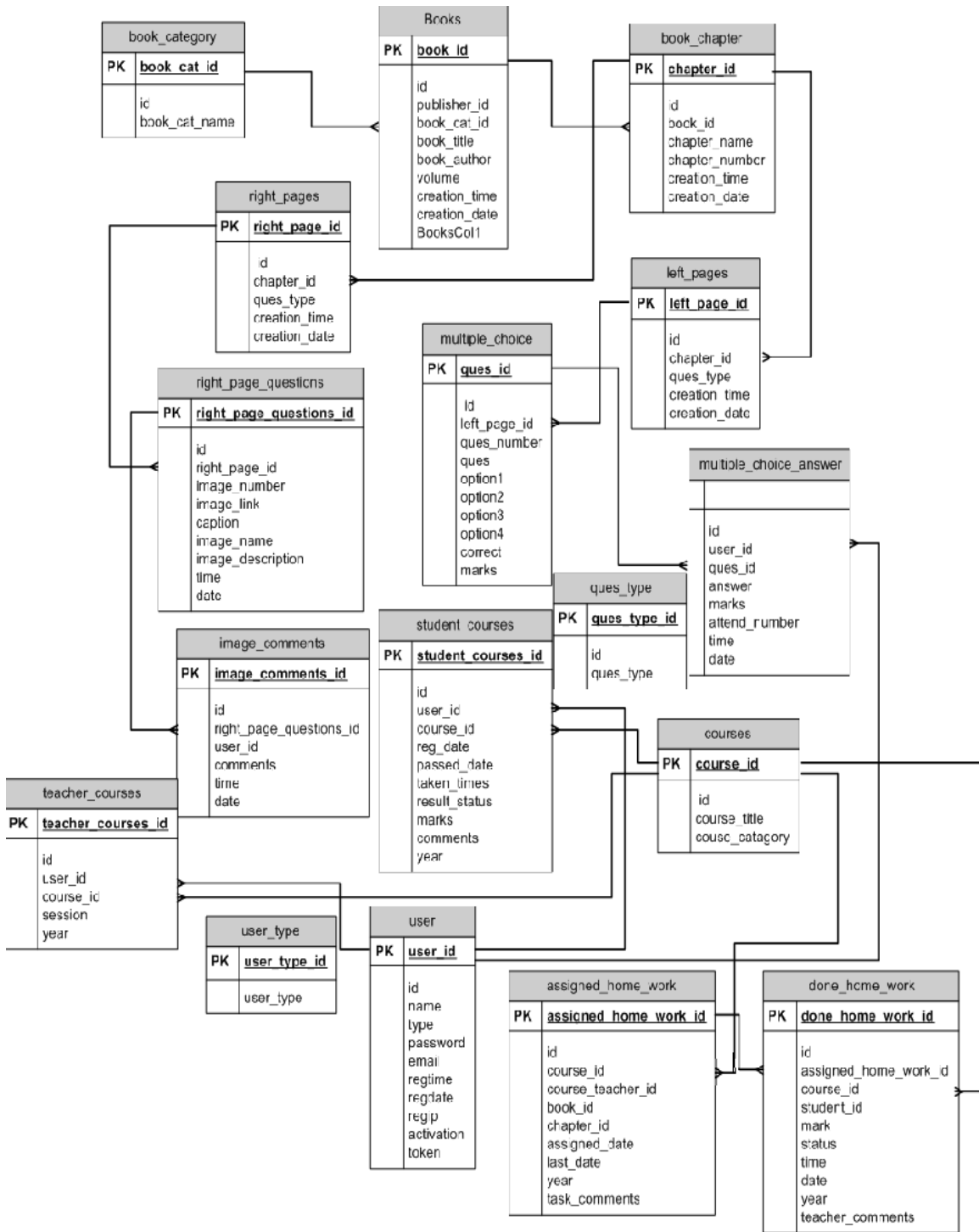


Figure 4.11: E-R Diagram of Interactive E-book (Database View)

4.5 Use Case Diagram:

In software and systems engineering, a use case is a list of steps, typically defining interactions between a role and a system, to achieve a goal. The actor can be a human or an external system.[22] The purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted. The use case diagram of different functions of this project is given here:

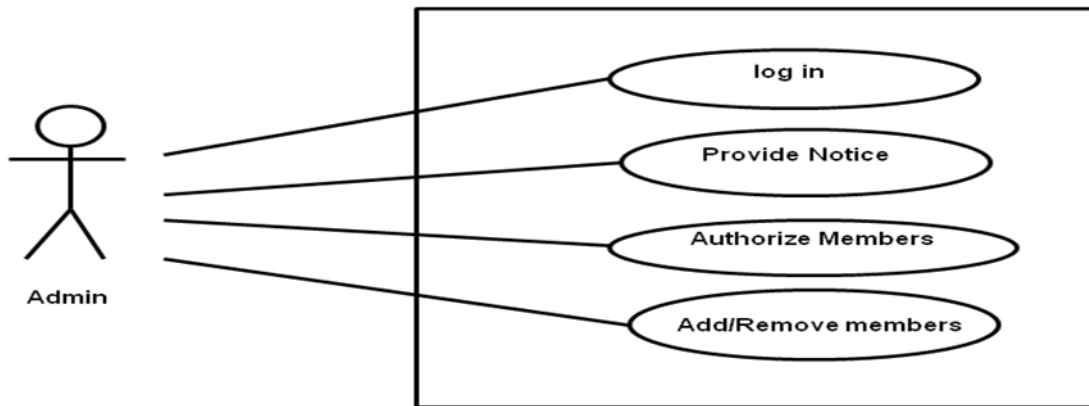


Figure 4.12: Use case for Admin

The admin log in to the system then they can provide notice to members, authorize, add or delete a member.

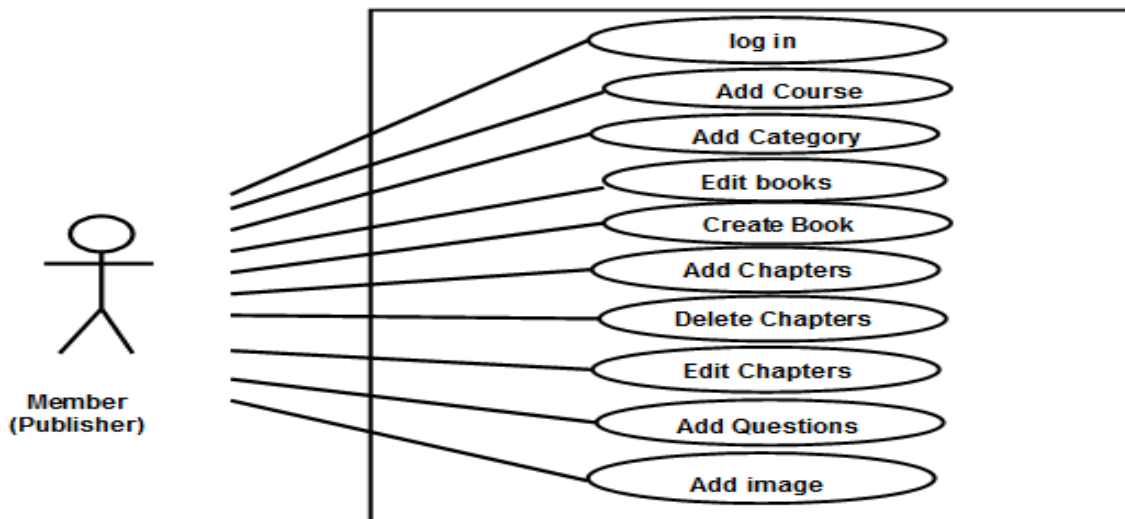


Figure 4.13: Use case for Publisher

The publisher can log in and create book, add, delete or edit a course, chapter, category, question and image.

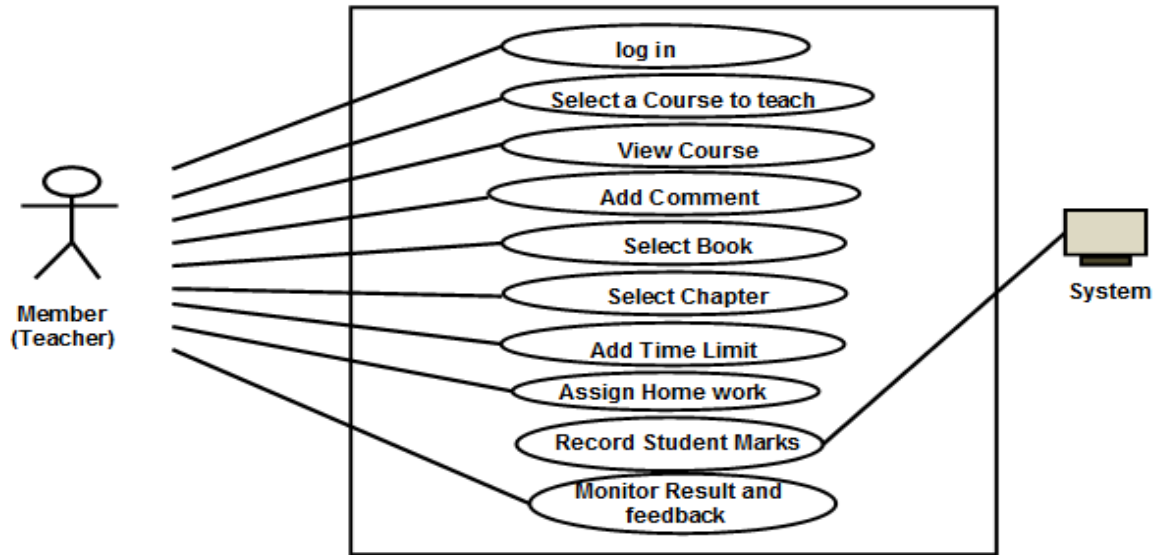


Figure 4.14: Use case for Teacher

The teacher log in to select his course, book & chapter, assign homework& its time limit,& monitor result and its feedback.

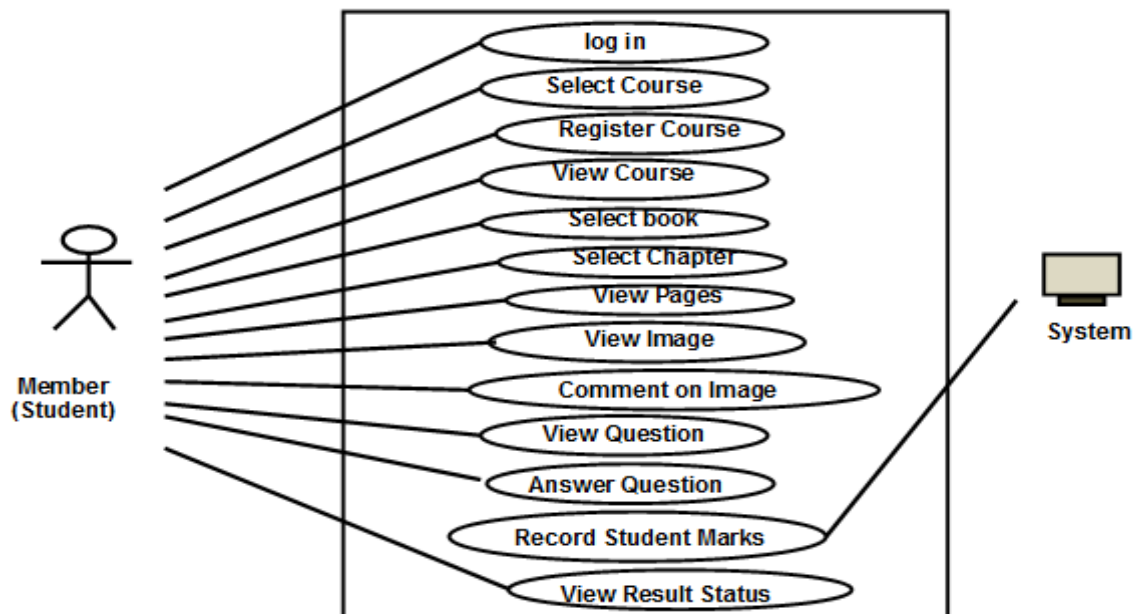


Figure 4.15: Use case for Student

After logging in the student can select, register or view a course, select chapter view pages, images & questions, give comments and answers and view result.

4.6 Conclusion:

The design stage is completed, so the designs can now be converted to physical design in order to make it workable in the operational environment according to the specification.

CHAPTER 5: IMPLEMENTATION AND TESTING

5.1 Introduction:

When system is completed and tested, the system is ready for implementation stage. Different decision should be made for successful implementation of the project. Testing focuses on the most important aspect of a module: how well the module meets its specification. The module is looked at from outside. The focus is on inputs to and outputs from the module, with an eye toward the functions that are to be carried out by module.

5.2 Data dictionary contents:

Here given the contents of the data dictionary created for the project:

Table 5.1: Assigning Homework

id	assigned_home_work_id	course_id	course_teacher_id	book_id	chapter_id	assigned_date	last_date	year	task_comments
13	1	101	100001	2	5	01/22/2013	01/24/2013	2013	Please view the image of ERD and discuss on it and...
14	2	101	100001	2	5	01/23/2013	01/24/2013	2013	Do the assigned task from the given book and chapt...
15	3	108	100001	1	1	01/23/2013	01/25/2013	2013	Do the task
16	4	110	100001	9	19	01/24/2013	01/25/2013	2013	Do the task....

Figure 5.1: Data dictionary of Assigning Homework.

This table contains id, assigned_home_work_id, course_id, course_teacher_id, book_id, chapter_id assigned_date, last_date, year, task_comment(Figure 5.1).

Table 5.2: Book

id	book_id	publisher_id	book_cat_id	book_title	book_auther	volume	creation_time	creation_date
22	1	200000	5	A Chosen Way of Life	Yousuf M Islam	1	17:33:23	2013-01-16
23	2	200000	6	Modern System Analysis & Design	George.Hoffer	1	11:08:40	2013-01-17
26	3	200000	7	C How to Program	Deitel	1	00:12:25	2013-01-19
27	4	200000	4	Computer Algorithm	Shani	1	13:05:12	2013-01-19
28	5	200000	2	My life	Clinton	1	17:55:07	2013-01-21
29	6	200000	2	English Grammar 2	P C Das	1	20:59:26	2013-01-21
30	7	200000	7	Modern Approach to Artificial Intelligence	Stuart	1	23:29:14	01/22/2013
31	8	200000	8	General Knowledge	Sihlon	1	23:42:34	01/22/2013
32	9	200000	6	Assembly Language Programming	Charles Marut	1	01:15:48	01/24/2013

Figure 5.2: Data dictionary of Book

Here we see the Book table containing id, book_id, publisher_id, book_cat_id, book_title, book_auther, volume, creation_time, creation_date(Figure 5.2).

Table 5.3: Book Category

id	book_cat_id	book_cat_name
6	1	Bangla
7	2	English
8	3	Math
9	4	Science
10	5	Islam
11	6	Computer
14	7	Programming
15	8	General Knowledge
16	9	Biology
17	10	Computer Science

Figure 5.3: Data dictionary of Book Category.

This table has id, book_cat_id, book_cat_name(Figure 5.3).

Table 5.4: Book Chapter

id	chapter_id	book_id	chapter_name	chapter_number	creation_time	creation_date
21	1	1	Cycles of Creation	1	17:34:08	2013-01-16
22	2	1	Varieties Given to You	2	17:35:01	2013-01-16
23	3	1	What should you do	3	17:43:15	2013-01-16
24	4	1	Are You Grateful to Allah	4	10:46:15	2013-01-17
26	5	2	Foundation For Systems Development	1	11:10:02	2013-01-17
27	6	2	Making The Business Case	2	11:10:59	2013-01-17
29	7	3	Introduction	1	17:14:27	2013-01-18
32	9	4	Introduction	1	17:39:22	2013-01-18
33	10	4	Introduction To Number	2	17:39:37	2013-01-18
37	11	3	C programming	2	13:08:50	2013-01-19
48	12	8	Introduction to Genral knowledge	1	23:43:13	01/22/2013
39	13	3	C programming 2	3	13:17:17	2013-01-19
40	14	3	C prog	4	13:18:57	2013-01-19
41	15	3	C++	5	17:39:19	2013-01-21
42	16	3	C++	6	17:44:56	2013-01-21
46	17	7	Introduction to AI	1	23:34:11	01/22/2013
38	18	4	Algorithm 2	3	13:14:31	2013-01-19
50	19	9	Component of Microprocessor	1	01:22:26	01/24/2013

Figure 5.4: Data dictionary of Book Chapter

It contains the id, chapter_id, book_id, chapter_name, chapter_number, creation_time, creation_date(Figure 5.4).

5.5: Courses

id	course_id	course_title	course_catagory
1	101	System Analysis And Design	
2	102	Software Engineering	
3	103	Operating System	
8	104	Data Structures	
9	105	Discrete Mathematics	
10	106	Artificial Intelligence	
11	107	General knowledge for all	
12	108	Religious Studies	
13	109	Object Oriented Programming	
14	110	Assembly language	

Figure 5.5: Data dictionary of Courses

This table has the id, course_id, course_title, course_catagory. (Figure 5.5)

Table 5.6: Done Homework

id	done_home_work_id	assigned_home_work_id	course_id	student_id	mark	status	time	date	year	teacher_comments
1	1	4	110	100000	1	yes	13-02:14	01/24/2013	2013	NONE
2	2	3	108	123456	2	yes	13-03:24	01/24/2013	2013	NONE
3	3	3	108	123456	3	yes	13-06:06	01/24/2013	2013	NONE
4	4	3	108	123456	2	yes	13-06:26	01/24/2013	2013	NONE

Figure 5.6: : Data dictionary of Done Homework

This table contains id, done_home_work_id, assigned_home_work_id, course_id, student_id, mark, status, time, date, year, teacher_comment.

Table 5.7: Image Comment

id	image_comments_id	right_page_questions_id	user_id	comments	time	date
39	1	3	100000	Nice Picture	01:25:10	2013-01-20
40	2	3	100000	A nice view	01:26:14	2013-01-20
41	3	3	100000	Foods for human are stored there.	01:42:17	2013-01-20
42	4	3	100000	welcome	01:43:00	2013-01-20
43	5	2	123456	There are foods for human.	19:11:56	01/23/2013
44	6	7	123456	Mother board contains microprocessor and memory ci...	03:42:54	01/24/2013
45	7	7	100000	Motherboards are also called system boards.It cont...	04:17:50	01/24/2013

Figure 5.7: Data dictionary of Image Comment

This table contains the id, image_comment, right_page_question_id, user_id, comment, time, date.

Table 5.8: Left Pages

id	chapter_id	left_page_id	ques_type	creation_time	creation_date
4	1	1	multiple_choice	17:34:08	2013-01-16
5	2	2	multiple_choice	17:35:01	2013-01-16
6	3	3	multiple_choice	17:43:15	2013-01-16
7	4	4	multiple_choice	10:46:15	2013-01-17
8	5	5	None	11:10:02	2013-01-17
9	6	6	multiple_choice	11:10:59	2013-01-17
10	7	7	multiple_choice	17:14:27	2013-01-18
11	8	8	None	17:14:49	2013-01-18
12	9	9	multiple_choice	17:39:22	2013-01-18
13	10	10	multiple_choice	17:39:37	2013-01-18
14	11	11	multiple_choice	00:13:16	2013-01-19
15	12	12	multiple_choice	13:08:50	2013-01-19
16	13	13	multiple_choice	13:17:17	2013-01-19
17	14	14	multiple_choice	13:18:57	2013-01-19
18	15	15	multiple_choice	17:39:19	2013-01-21
19	16	16	multiple_choice	17:44:56	2013-01-21
20	17	17	multiple_choice	23:34:11	01/22/2013
21	18	18	multiple_choice	23:43:13	01/22/2013
22	19	19	multiple_choice	01:22:26	01/24/2013

Figure 5.8: : Data dictionary of Left Pages

The left page contains the id, chapter_id, left_page_id, ques_type, creation_time, creation_date.

Table 5.9: Multiple Choices

id	left_page_id	ques_id	ques_number	ques	option1	option2	option3	option4	correct	marks
1	1	1	1	Do you eat rice?	Yes	No	Never	Sometime	1	1
2	1	2	2	Do you eat vegetables?	No	Never	Sometimes	Yes	3	2
3	2	3	1	Do you eat rice?	Sometimes	Never	Yes	No	3	1
4	2	4	2	Who is Almighty?	You	Me	Allah	Nobody	3	5
6	10	6	1	0 - 9 is number , Here 0 is lowest number and 9 is...	8889	9999	9000	7899	2	1
7	11	7	1	Which is an input device from below?	Monitor	Speaker	Mouse	Printer	3	1
8	17	8	1	What is the term used for describing the judgmenta...	Heuristic	Critical	Value Based	Analytical	1	1
9	18	9	1	Who is the father of Geometry?	Aristotle	Pythagoras	Euclid	Kepler	3	1
10	18	10	2	Professor Amartya Sen is famous in which of the fi...	Biochemistry	Electronics	Economics	Geology	3	1

Figure 5.9: Data dictionary of Multiple Choices

This table has id, left_page_id, ques_id, ques_number, ques, option1, option2, option3, option4, correct and marks.

Table 5.10: Multiple Choices Answer

id	user_id	ques_id	answer	marks	attend_number	time	date
1	100000	1	2	0	1	16:48:33	2013-01-18
2	100000	2	2	0	1	16:48:33	2013-01-18
3	100000	1	3	0	2	16:49:12	2013-01-18
4	100000	2	4	0	2	16:49:12	2013-01-18
5	100000	2	3	0	3	16:51:44	2013-01-18
6	100000	3	2	0	1	17:03:49	2013-01-18
7	100000	3	3	1	2	17:04:11	2013-01-18
8	100000	4	3	5	1	17:06:04	2013-01-18
9	123456	1	4	0	1	17:08:16	2013-01-18
10	123456	2	1	0	1	17:08:16	2013-01-18
11	123456	3	1	0	1	17:10:03	2013-01-18
12	123456	4	4	0	1	17:10:03	2013-01-18
13	123456	5	1	0	1	17:21:46	2013-01-18
14	123456	5	3	5	2	17:22:17	2013-01-18
15	123456	5	3	5	3	17:26:42	2013-01-18
16	123456	5	2	0	4	17:27:23	2013-01-18
17	100000	7	3	1	1	00:20:48	2013-01-19
18	100000	7	3	1	2	00:21:10	2013-01-19
19	100000	6	2	1	1	15:46:25	2013-01-19

Figure 5.10: Data dictionary of Multiple Choices Answer

The table has id, user_id, ques_id, answer, mark, atted_number, time.date,

Table 5.11: Question Type

id	ques_type_id	ques_type
1	1000	multiple_choice

Figure 5.11: : Data dictionary of Question Type

This table contains the id, ques_type_id, ques_type.

Table 5.12: Right Page

id	chapter_id	right_page_id	ques_type	creation_time	creation_date
1	1	1	None	00:00:00	0000-00-00
2	2	2	None	00:00:00	0000-00-00
3	3	3	None	17:34:08	2013-01-16
4	4	4	None	17:35:01	2013-01-16
5	5	5	None	17:43:15	2013-01-16
6	6	6	None	10:46:15	2013-01-17
7	7	7	None	11:10:02	2013-01-17
8	8	8	None	11:10:59	2013-01-17
9	9	9	None	17:14:27	2013-01-18
10	10	10	None	17:14:49	2013-01-18
11	11	11	None	17:39:22	2013-01-18
15	12	12	None	13:14:31	2013-01-19
16	13	13	None	13:17:17	2013-01-19
17	14	14	None	13:18:57	2013-01-19
18	15	15	None	17:39:19	2013-01-21
19	16	16	None	17:44:56	2013-01-21
20	17	17	None	23:34:11	01/22/2013
21	18	18	None	23:43:13	01/22/2013
22	19	19	None	01:22:26	01/24/2013

Figure 5.12: : Data dictionary of Right Page

The table has the id, chapter_id, right_page_id, ques_type, creation_time,creation_date.

Table 5.13: Right Page Question

id	right_page_questions_id	right_page_id	image_number	image_link	caption	image_name	image_description	time	date
2	1	4	0	QuestionImage Chapter4 foods.jpg	These are foods	These are foods	These are foods	14:28:56	2013-01-19
3	2	1	1	QuestionImage Chapter1 foods.jpg	All foods	Foods	Foods for you.....	14:44:16	2013-01-19
4	3	12	1	QuestionImage Chapter12 foods.jpg	Things	Things	What are the things?Why you need them?Describe the...	14:52:21	2013-01-19
5	4	12	2	QuestionImage Chapter12 des.jpg	Image of a Desert	Desert	Can you tell what is desert?	15:30:35	2013-01-19
6	5	12	3	QuestionImage Chapter12 Koala.jpg	Picture of animal	Picture of animal	What is the name of this animal?	15:32:44	2013-01-19
7	6	5	1	QuestionImage Chapter5 dfd.png	Symbols of Data Flow Diagram	Symbols of Data Flow Diagram	Data Flow Diagram symbols	22:40:39	01/23/2013
8	7	19	1	QuestionImage Chapter19 motherboard-callouts.jpg	Different parts of motherboard	Motherboard	Different parts of motherboard	02:12:09	01/24/2013

Figure 5.13: : Data dictionary of Right Page Question

This table has id, right_page_question_id, right_page_id, image_number, image_link, caption, image_name, image_description, date. time.

Table 5.14: Student Courses

id	student_courses_id	user_id	course_id	reg_date	passed_date	taken_times	result_status	marks	comments	year
9	1	100000	102	2013-01-19	0000-00-00	1	Incomplete	0	No comments	2013
10	2	100000	101	01/23/2013	0000-00-00	2	Incomplete	0	No comments	2013
11	3	100000	104	01/23/2013	0000-00-00	3	Incomplete	0	No comments	2013
12	4	123456	108	01/23/2013	0000-00-00	1	Incomplete	0	No comments	2013
13	5	123456	110	01/24/2013	0000-00-00	2	Incomplete	0	No comments	2013
14	6	100000	110	01/24/2013	0000-00-00	4	Incomplete	0	No comments	2013
15	7	123456	101	01/25/2013	0000-00-00	3	Incomplete	0	No comments	2013
16	8	123456	107	01/25/2013	0000-00-00	4	Incomplete	0	No comments	2013
17	9	200003	101	01/27/2013	0000-00-00	1	Incomplete	0	No comments	2013
18	10	200003	104	01/27/2013	0000-00-00	2	Incomplete	0	No comments	2013
19	11	200003	111	01/27/2013	0000-00-00	3	Incomplete	0	No comments	2013
20	12	200004	101	01/27/2013	0000-00-00	1	Incomplete	0	No comments	2013
21	13	200004	102	01/27/2013	0000-00-00	2	Incomplete	0	No comments	2013
22	14	200004	111	01/27/2013	0000-00-00	3	Incomplete	0	No comments	2013
23	15	200004	108	01/27/2013	0000-00-00	4	Incomplete	0	No comments	2013

Figure 5.14: : Data dictionary of Student Courses

The Student Courses table has id, student_courses_id, user_id, course_id, reg_date, passed_date, taken_times, result_status, marks, comment and year.

Table 5.15: Teacher Courses

id	teacher_courses_id	user_id	course_id	session	year
13	1	100001	102	None	2013
14	2	100001	101	None	2013
15	3	100001	104	None	2013
16	4	100001	108	None	2013
17	5	100001	110	None	2013

Figure 5.15: Data dictionary of Teacher Courses

This table has id, teacher_course_id, user_id, course_id, session, year.

Table 5.16: User

id	userid	name	type	password	email	regtime	regdate	regip	activation	session
2	100000	Shahnur Rahman	Student	e10adc3949ba59abbe56e057f20f883e	shahnur@gmail.com	00:00:00	0000-00-00		No	
3	100001	Lutfar Rahman	Teacher	e10adc3949ba59abbe56e057f20f883e	lutfar@gmail.com	00:00:00	0000-00-00		No	
1	123456	Nazia Nishat	Student	e10adc3949ba59abbe56e057f20f883e	nishat@gmail.com	00:00:00	0000-00-00		No	
4	200000	Umam Mustain	Publisher	e10adc3949ba59abbe56e057f20f883e	nishat@gmail.com	00:00:00	0000-00-00		No	

Figure 5.16: : Data dictionary of User

On this table we have id, userid, name, type, password, email, regtime, regdate, regip, activation, session.

Table 5.17: User Type

user_type_id	user_type
1	Student
2	Teacher
3	Admin
4	Publisher

Figure 5.17: Data dictionary of User Type

this table has the user_type_id, user_type.

5.3 Summary:

This system is implemented and tested thoroughly and we have found that the system is an effective system which works properly to meet user needs.

CHAPTER 6: INTERFACE DESIGN

6.1 Interface Design:

Interface is the implementation of new system can take place to determine the success of the system. Implementation stages of a system provide user confidence. This procedure has been designed so that most problems can be managed.

The interface design of our project is shown here:

6.2 Interface design of Developed System:

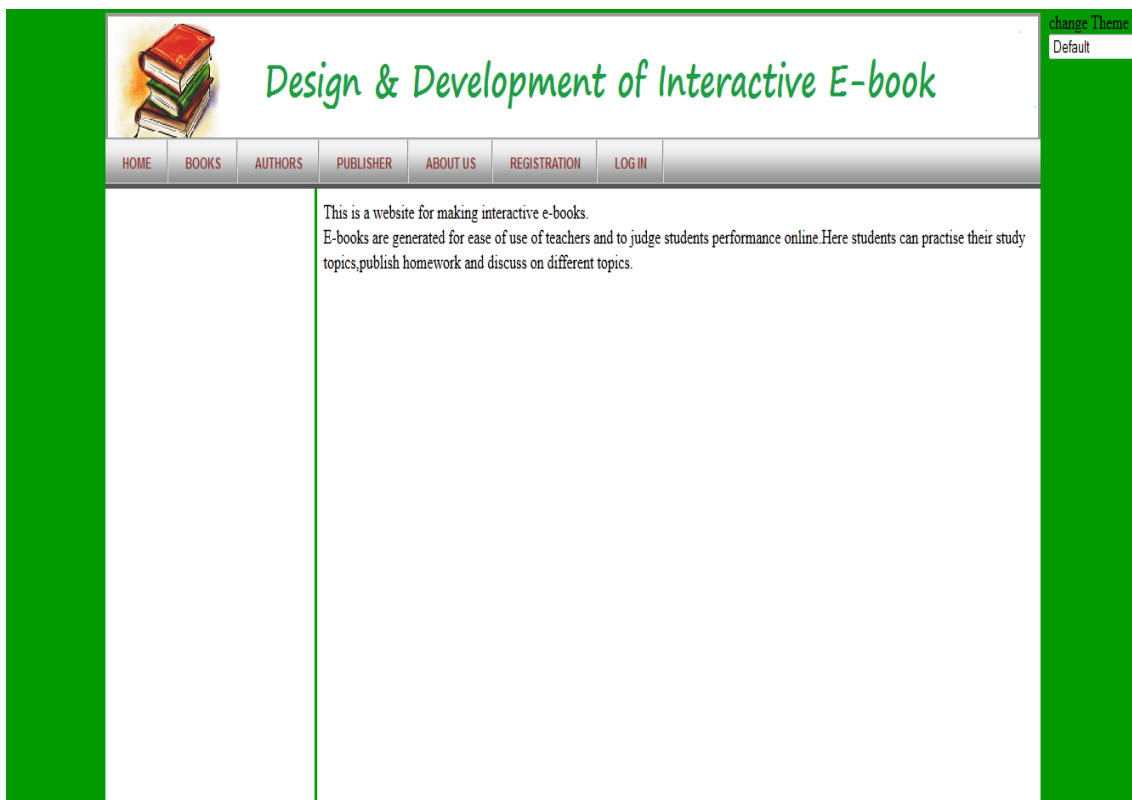


Figure 6.1: Website view of proposed system

This is a web site view of Design & Development of Interactive E-book shown in figure 6.1

A registration form with the following fields and a button:

- Name:
- Email:
- User Type: (dropdown menu)
- Password:
- Registration:

Figure 6.2: Registration Process.

Publisher, teacher and student must registration before using this system shown in figure 6.2

A publisher login form with the following fields and a button:

- User Type: (dropdown menu)
- ID:
- Password: (password field with a yellow background)
- Submit:

Figure 6.3: Publisher login.

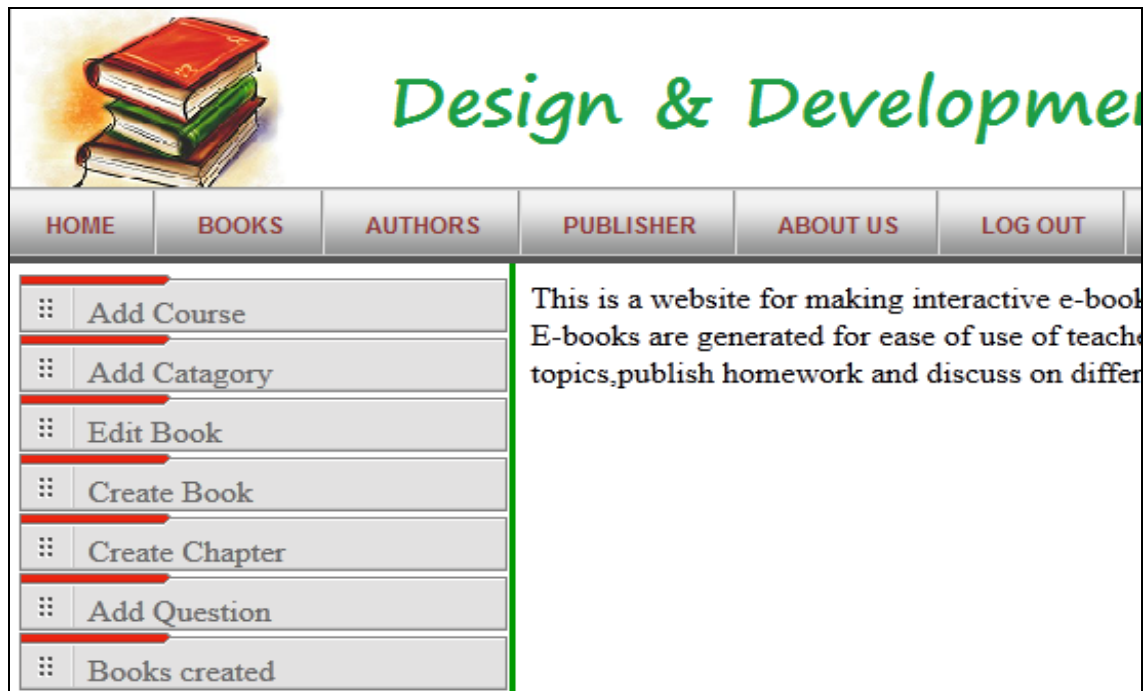


Figure 6.4: Site view after login of a publisher.

Publisher can view menu added on the left side of the sidebar. Publisher can choose any option from the sidebar shown in figure 6.4

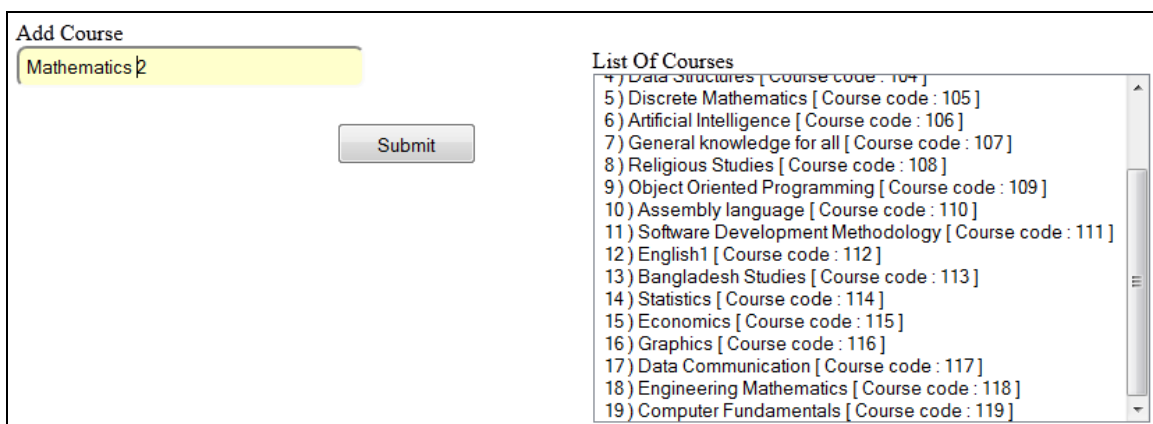


Figure 6.5: Add course view.

Publisher can add new course to database shown in figure 6.5

Add category

List of category
0 --> Bangla
1 --> English
2 --> Math
3 --> Science
4 --> Islam
5 --> Computer
6 --> Programming
7 --> General Knowledge
8 --> Biology
9 --> Computer Science

Figure 6.6: Add category view.

Publisher can add new category of book to database shown in figure 6.6

Book name
Assembly Language Programming

Author name
Charles Maruth

Volume no
1

Category
Computer

Figure 6.7: Create new book.

Publisher can create new book by adding book name, author name, volume no, category to the form shown in figure 6.7

Figure 6.8: Create new chapter.

Publisher can create new chapter by adding chapter name to the form shown in figure 6.8

Figure 6.9: Add Question type

Publisher can add question type by selecting book, chapter and question type in the forms shown in figure 6.9

Now You are going to insert in : **Component of Microprocessor**

Question Number: 1

Which one is the brain of a computer?

Question :

Option 1 : Motherboard

Option 2 : Monitor

Option 3 : Ram

Option 4 : CPU

Correct Answer : Option 4 Mark : 1

Figure 6.10: Add Multiple Question to database.

Publisher can add multiple choice question to database by adding question, question options ,marks and correct answer to the form shown in figure6.10

Book Name **Assembly Language Programming**

Chapter Name

0--> NONE .

1--> Component of Microprocessor .

A Chosen Way of Life (1) By Yousuf M Islam

Modern System Analysis & Design (1) By George.

C How to Program (1) By Deitel

Computer Algorithm (1) By Shani

My life (1) By Clinton

English Grammar 2 (1) By P C Das

Modern Approach to Artificial Intelligence (1) By St

General Knowledge (1) By Sihlon

Assembly Language Programming (1) By Charles

Figure 6.11: Select right page to add diagram

Publisher can select right page for adding image to book in the form shown in figure 6.11

Now You are going to insert in : **Component of Microprocessor**

Image Name

Image Description

Image Caption

Image File:

Figure 6.12: Add image to book

Publisher can add image to book by adding image name, description, caption and browsing image in the form shown in figure 6.12

User Type

ID

Password

Figure 6.13: Teacher login



Figure 6.14: Site view after login of a teacher.

Teacher can view menu added on the left side of the sidebar. Teacher can choose any option from the sidebar shown in figure 6.14

Select A course to Teach	List Of Courses by teacher
<ul style="list-style-type: none"> 1) System Analysis And Design [Course code : 101] 2) Software Engineering [Course code : 102] 3) Operating System [Course code : 103] 4) Data Structures [Course code : 104] 5) Discrete Mathematics [Course code : 105] 6) Artificial Intelligence [Course code : 106] 7) General knowledge for all [Course code : 107] 8) Religious Studies [Course code : 108] 9) Object Oriented Programming [Course code : 109] 10) Assembly language [Course code : 110] 11) Software Development Methodology [Course code : 111] 12) English1 [Course code : 112] 13) Bangladesh Studies [Course code : 113] 14) Statistics [Course code : 114] 15) Economics [Course code : 115] 	<ul style="list-style-type: none"> 1) Artificial Intelligence [Course code : 106]
<input type="button" value="Submit"/>	

Figure 6.15: Teacher selects courses to teach

Teacher can select courses to teach shown in figure 6.15

New

Select A Course To Assign HomeWork : 5) Assembly language [Course code : 110]

Dear Sir ,
You are going to assign home task for : **Assembly language**

Search Book By Category

Figure 6.16: Teacher selects course

New

Select A Course To Assign HomeWork : 1) Software Engineering [Course code : 102]

Dear Sir ,
You are going to assign home task for : **Assembly language**

Search Book By Category

Search Result of : **Computer**
Select A Book

Modern System Analysis & Design (1) By George.
Assembly Language Programming (1) By Charles

Selected Book : Assembly Language Programming
Chapter Name

0 --> NONE .
1 --> Component of Microprocessor .

Home Work :
Component of Microprocessor
Last Date of Submission

January 2013						
Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		



Search Result of : **Computer**
Select A Book

Modern System Analysis & Design (1) By George.
Assembly Language Programming (1) By Charles

Selected Book : Assembly Language Programming
Chapter Name

0 --> NONE .
1 --> Component of Microprocessor .

Home Work :
Component of Microprocessor
Last Date of Submission

Last Date : 01/26/2013

Instructions :

Figure 6.17: Teacher assigns task

Teacher can assign task by selecting course, adding book by category, selecting chapter, adding last date of submission and adding instruction as shown in figure 6.16

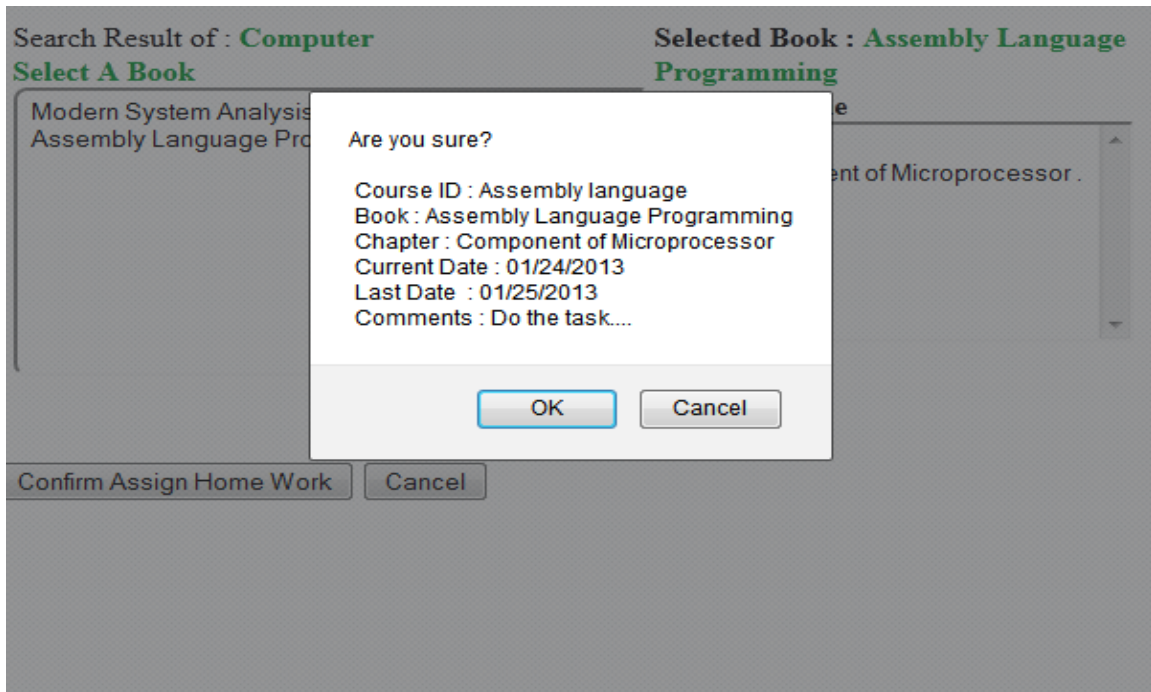


Figure 6.18: Confirm homework by teacher

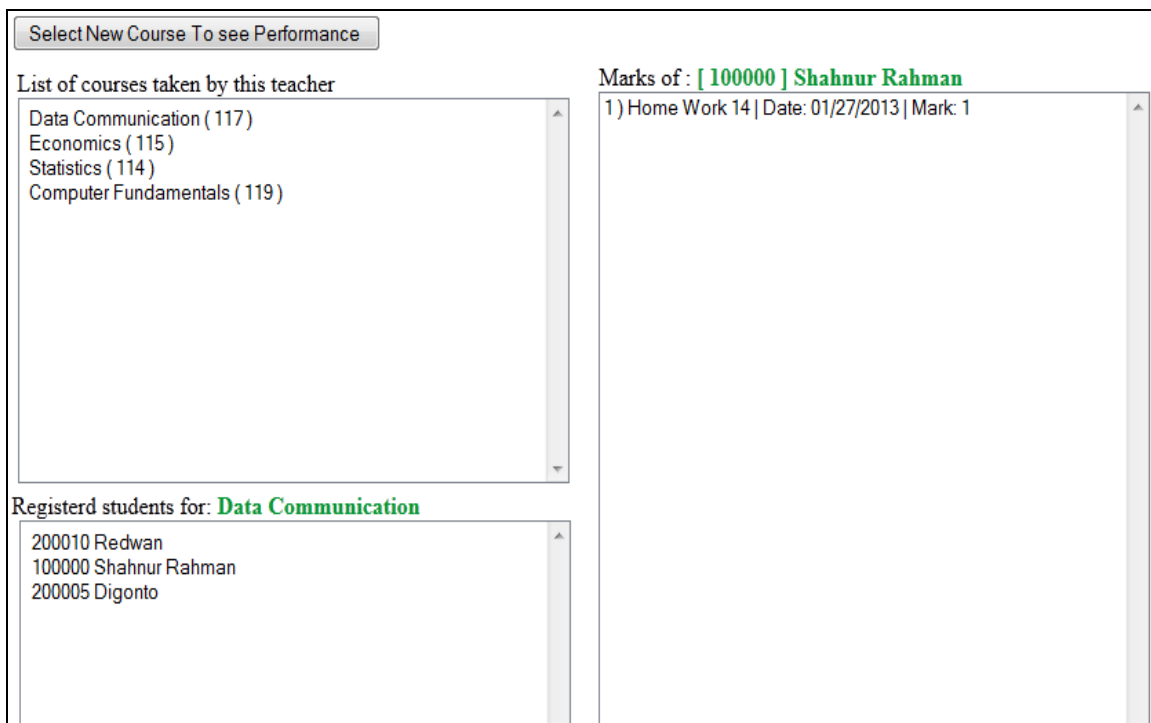
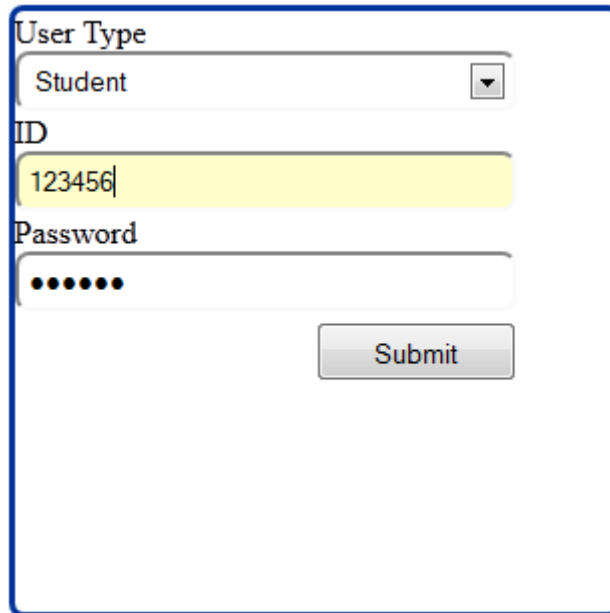


Figure 6.19: View Student Result by teacher

In figure 6.19, teacher will select a course and view registered student list. From the list teacher will select a student to view his result.



The image shows a login form with the following fields and elements:

- User Type:** A dropdown menu with "Student" selected.
- ID:** A text input field containing "123456".
- Password:** A text input field with six dots representing a masked password.
- Submit:** A button located at the bottom right of the form.

Figure 6.20: Login by student



The image shows a website header and sidebar. The header features a stack of books on the left and the text "Design & Developme" on the right. Below the header is a navigation menu with the following items: HOME, BOOKS, AUTHORS, PUBLISHER, ABOUT US, and LOG OUT. The sidebar on the left contains a menu with the following items: Course Resistration, Attend Exam, Home Work, and View Profile. The main content area on the right contains the text: "This is a website for making interactive e-bo... E-books are generated for ease of use of teach... topics,publish homework and discuss on diff...

Figure 6.21: Site view after login of a student

Student can view menu added on the left side of the sidebar. Student can choose any option from the sidebar shown in figure 6.21

At first a student must be registered to a course to view notice by teachers.

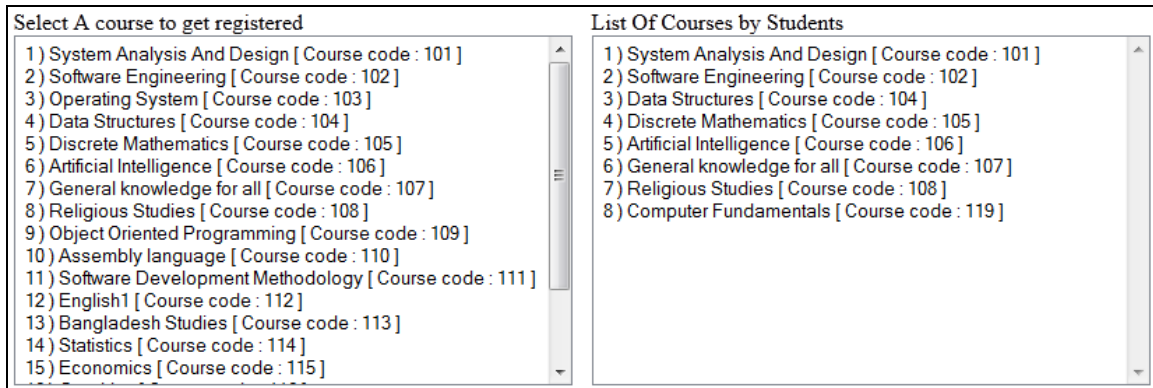


Figure 6.22: Register Courses by student

Student can register courses taken by teachers shown in figure 6.22. After that a student must choose a notice to do the task. If the date of submission is passed then it will be shown also beside the notice box as below:

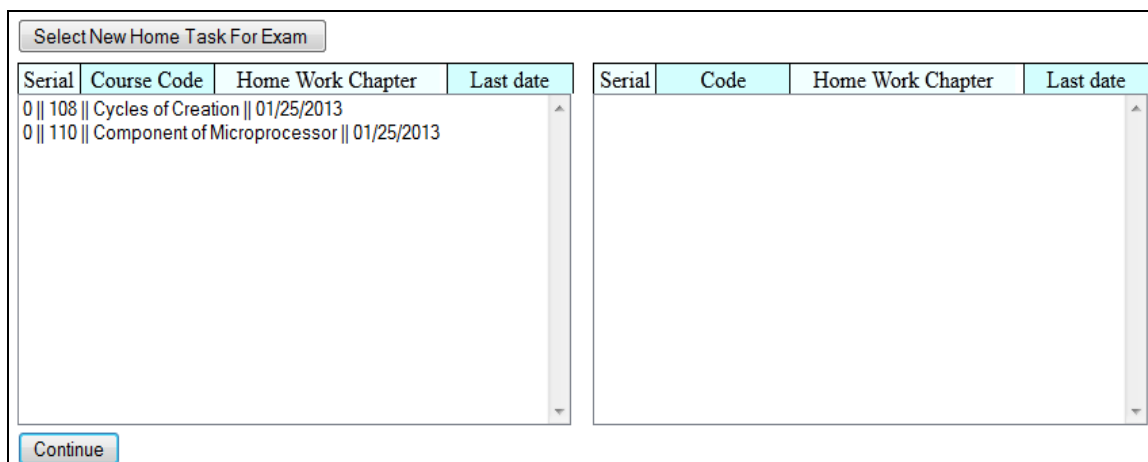


Figure 6.23: Select tasks by student

Student can select tasks added by teachers shown in figure 6.23

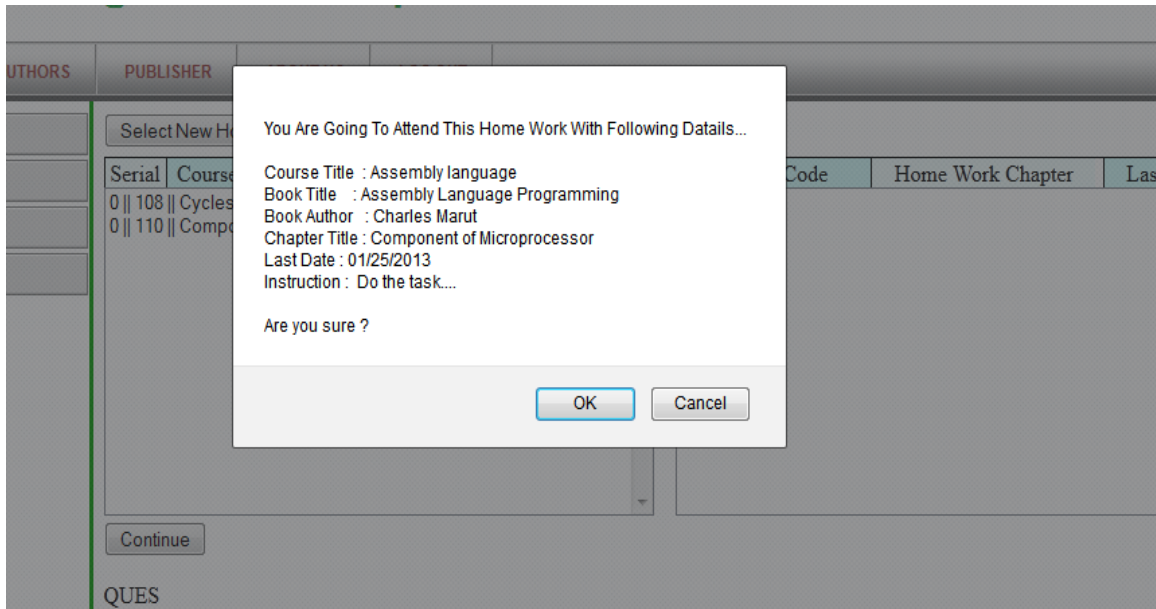


Figure 6.24: Confirm selected tasks

Student can confirm selected tasks added by teachers shown in figure 6.24

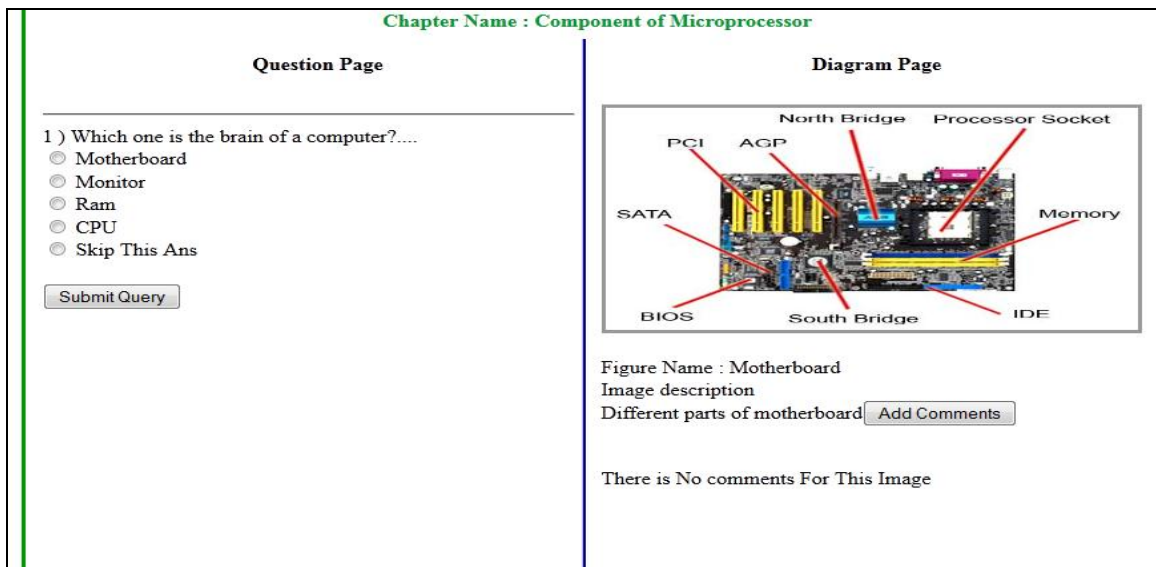


Figure 6.25: View selected task

Student can view selected tasks added in previous form shown in 6.25. Here student can submit answer and add comment.

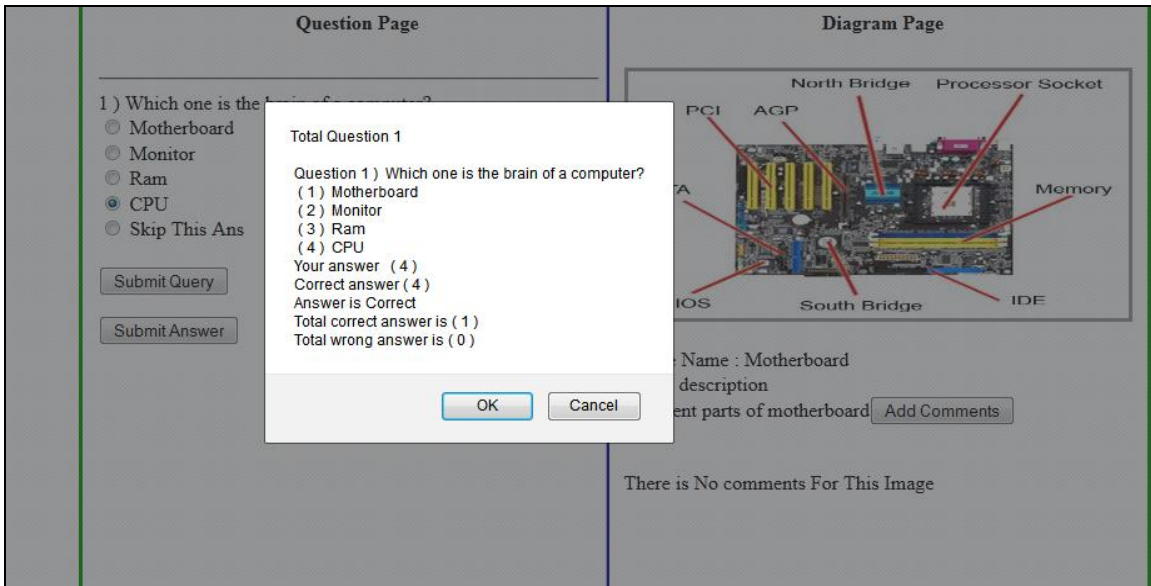


Figure 6.26: Confirm submitting task

Student can submit task and confirm submitting task shown in figure 6.26

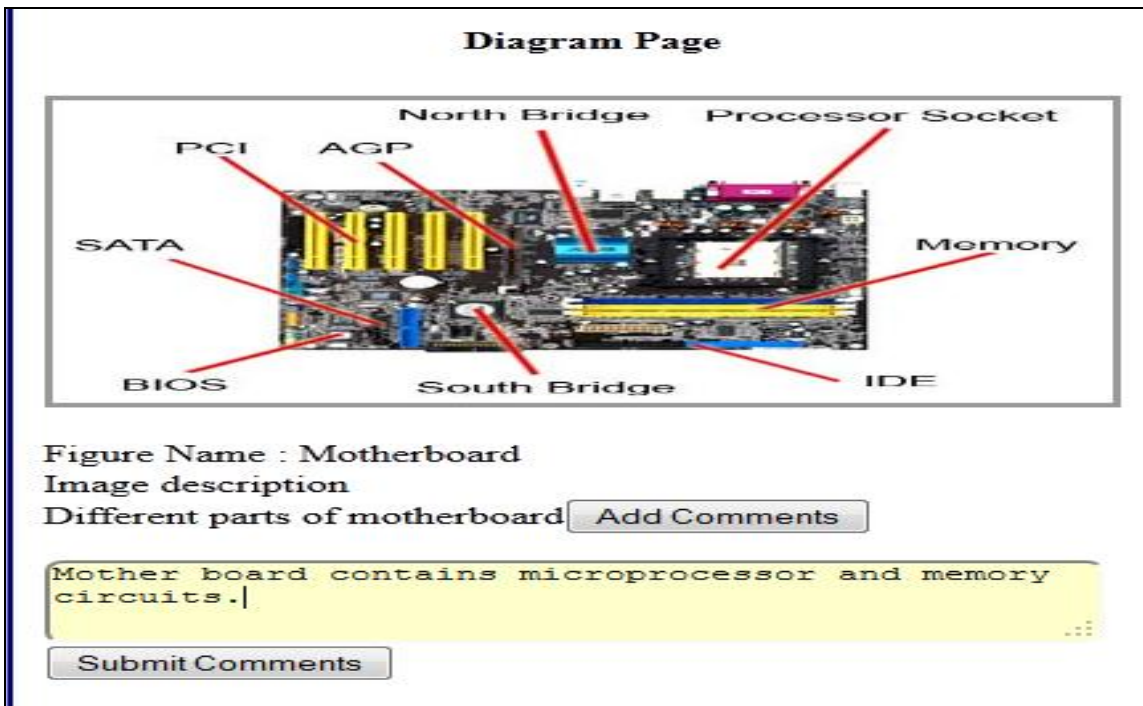


Figure 6.27: Add comments to images

Student can add comments to images shown in figure 6.27

Figure Name : Motherboard
Image description
 Different parts of motherboard

All Comments

Nazia Nishat : Mother board contains microprocessor and memory circuits.
 At 03:42:54 On 01/24/2013

Figure 6.28: View comments after submission

Student can view added comments shown in figure 6.28

Figure Name : Motherboard
Image description
 Different parts of motherboard

All Comments

Nazia Nishat : Mother board contains microprocessor and memory circuits.
 At 03:42:54 On 01/24/2013

Shahnur Rahman : Motherboards are also called system boards. It contains expansion slots which are connectors for additional circuit boards called add in boards.
 At 04:17:50 On 01/24/2013

[change Theme](#)
Default

Figure 6.29: View other student's comments also

Student can view added comments of other students also shown in figure 6.29. Through this discussion they will learn new things from others and through interactivity their

thinking and reading skill will be developed. They can share ideas on others comments and thus they can teach others which will be helpful for gathering knowledge.

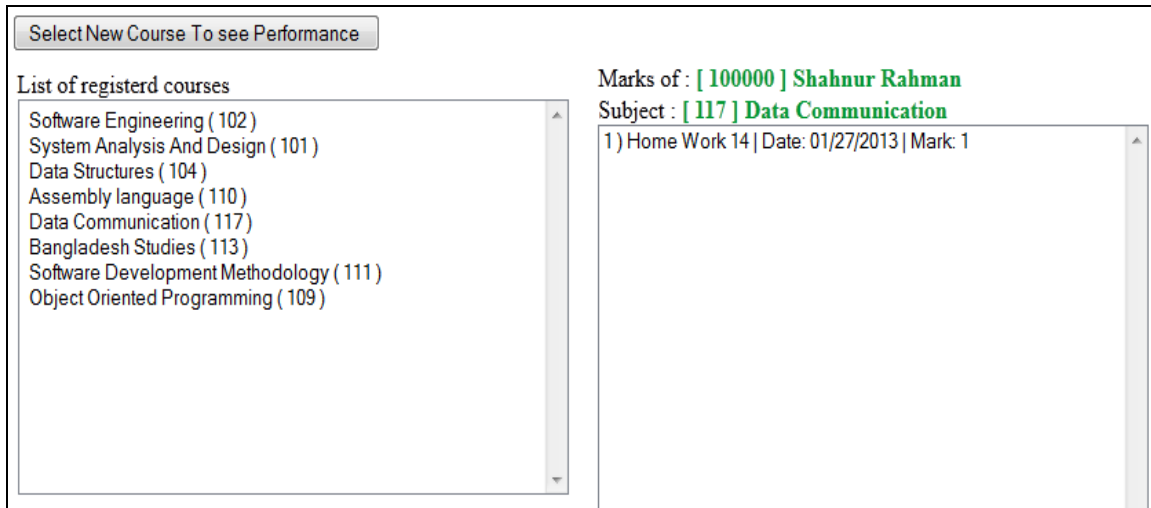


Figure 6.30: View Result by Student

A student can view his/her result just after attending the quiz. This practice will help him/her to be more attentive.

6.3 Conclusion:

After analyzing the interface design of this entire system we have come to know that the module meets its specification very effectively.

CHAPTER 7: CRITICAL APPRAISAL

7.1 Introduction

The critical appraisal justifies what requirements are achieved from the advance software system. As a matter of fact, it also describes what future requirements could have been thought to make it more dynamic and more reliable, accurate and flexible. The critical appraisal describes the best things that one can possibly include in the project and the things that would have been better if included in the project to make it more reliable and accurate.

7.2 Learning from the project:

While doing this project I learned that deep understanding of a subject can be achieved through making a learning environment what was the aim of this project. To make learning more efficient the features for the practice of discussion, practice doing, teaching others are attempted to include in this system.

The project has given me the idea to expand my knowledge into future thinking in order to develop any new or advance software system. It is true that development environment is totally unpredictable. Many things may go wrong while working in practical life project. There are some problems for which most of the time development plan needs to be changed. In this project, I also faced some of those problems.

I face some problem while development as I are very new in this platform. I tried to implement it as best as possible error free still I need more testing to ensure it.

Launching the application in real environment is not done yet. So I am only able to test the system in limited small environment. But it is necessary to test with real users.

7.3 Future Plan:

Data:

- Adding more books with more resource what will help students to learn more.

Adding more question modules like:

- Fill in the gaps, Rearrange, Matching, completing story etc.

System:

- Make it more secure
- Make it more friendly
- Complete all requirements.
- Upgrade & upgrade this system with modern world.

7.4 Conclusion:

If this project is implemented successfully in real life environment without facing any obstacles it would be a helpful system for users.

CHAPTER 8: CONCLUSION

8.1 Summary:

After successful completion of the design and development of an educational interactive e-book, I have found that this software is helpful for users. The system helps students to attempt questions, to do exercises online, to share ideas and discuss with others. This system supports teachers to take everyday class lessons and publishers to upload book contents. The overall System has met most of the requirements. This application is user friendly. It is user friendly system so that users can easily handle and control the operation.

- This application reduces use of paper so it is environment friendly software also.
- It also saves time and effort and makes the lengthy task of attempting quiz very easy.
- When users are in a rush they will just click some buttons and get the result ready.
- This software secures the valuable information of the institution. Unauthorized person can't access.
- This application has class exercise features.
- This system will encourage students in class activities
- This system will help to create knowledge rather than receive knowledge through discussions.
- This system will help to train people to think and read critically.
- This system will help to develop new ideas and skills.
- This application use open source tools so there is no tools cost.

From our point of view this is an effective application which is user friendly. It would be more effective when real life users will use this application. This project has the scope of future up gradation also.

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