TEACH & LEARN

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled "TEACH & LEARN", submitted by Mohammad Sabbir Mahmud, ID no: 143-15-4583 and MD Tarikul Islam, ID No:143-15-4391 and Niaz Md Arafin Haque, ID No- 143-15-4438 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 B.Sc. in Computer Science and Engineering (BSc) and approved as to its style and contents. The presentation has been held on 9 December, 2018

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We hereby declare that, this project has been done by me under the supervision of **Saiful Islam, Lecturer, Department of CSE** Daffodil International University. I 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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Finally, we must acknowledge with due respect the constant support and patients of our parents.

ABSTRACT

Education is a big challenge for third world country like our Bangladesh. Here not every person get enough resource and support for education. Though different type of teaching help is available in lower level of education but it decreases when we go to upper level. When someone is studying in a university and if s/he needs extra help after class there are very limited options for those. This project is a web application named "Teach & Learn". This application is designed for the assistance of any person specially students who wants to learn anything. Through this application a person will be able to post their question or problem digitally. Another user who may know the answer will answer the question. The need for extra care after class will be eliminated as students will get from help our website. Not only extra care regarding institutional study also extra-curricular study can be done with the help of this application. For example an engineer need to learn some accounting term, he could use this application. This system can bring revolutionary change not only in Bangladeshi education system but also in global education system.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

We are living in modern era where education is the power for every person. A person who join an institute for institutional education. Every student from any institute such as school, college and universities sometimes need help after the school time. Sometimes a class is not enough for him/her. Institute is not always enough for every person. Those people who still have lacking despite of joining a class they need special help. They need someone who can teach them that specific topic properly. Our website will be the hub for teachers and learners. Where anyone can learn anything he wants or need. Anyone can teach.

1.2 Motivation

There is a proverb "necessity is the mother of invention". As we are the student and we personally have faced the problem in our everyday learning life. Sometimes after joining the whole class we have some lacking remaining in us. To recover those lacking we needed others help. It's not always easy to get someone's time to get the help. Maybe someone can get help from their classmates or senior student but there is no assurance of their availability.

So we wanted to create a platform where we can get help to learn any topic properly if we need.

1.3 Objectives

To build a web application which will be used for learning and teaching anything for any level of students or people.

1.4 Description of the system

User who wants to learn anything will post a request on this site. Teacher will go

through these learner request post and will select any post for teach. Teaching

medium can be video, live video conference, image sharing etc. Teaching material

will be kept on site for further teaching. Anyone can teach anyone can learn.

1.5 Expected outcome

This web application will provide an environment which will be used for learning and

teaching over internet.

1.6 Report Layout

Chapter 1: Introduction

The Chapter 1 will give an introductory idea of this project to all. Several things will be

discussed here such as motivation objective, expected outcome of our teach and learn system.

Chapter 2: Background

This chapter will helps to know about background discussion and related works. We

searched relative works and studies of few similar systems and then we discussion

was done on scope of the problem and the challenges of this project.

Chapter 3: Requirement Specification

Business process model, Use case model, ERD diagram, Collection of requirement

and their analysis, Logical data model and requirements of designing will be

described in this chapter.

Chapter 4: Design Specification

This chapter will reflect front and backend design of this project also the interaction

design and user experience. Implementation requirements will also be described here.

2

Chapter 5: Implementation and Testing

Here we will follow up the database implementation along with front end design that how this website will look like. Some testing result which will be taken after development will be discussed in this chapter.

Chapter 6: Conclusion and Future Scope

Summary of our works and future development plan will be described in this chapter

At last of the report, we give the related reference to ensure that the information in the report are must be correct.

CHAPTER 2

BACKGROUND

By "Project Background" I mean the formal documentation of the project. In this part I supposed to study about the related works done by others and also analysis their work to find new scopes.

2.1 Introduction

We wanted to work on our educational system and improve it. We want to create a universal platform for every single student or general people who wants to learn anything which can be institutional or for general purpose.

As a student we know that students need special help sometimes after the regular institutional class.

2.2 Related Works

There has been some works in the past on education system. There are websites which are being using for educational help of individuals. Here are some examples:

"10 Minutes School"[1] web application teach different topic. They teach by their own teachers and selected topics by them not the students.



Figure 2.2.1: 10Minutes School

"Jaago Online School"[2] use different type of communication system and run remote school for remote and undeveloped areas.



Figure 2.2.2: Jaago Online School

2.3 Comparative Studies

As our school is not like conventional one and it is totally online based so before creating this project we studied few related works that is similar to our works. In Bangladesh there are a few works which are similar to our one but if we consider worldwide there are a massive number of similar type project. We will compare our project with only local rivals for now. One of the local company is 10 minutes school which is a online learning platform and another one is Jaago Online School which is almost similar type of. We are describing those below.

2.3.1 10 Minutes School

It is a online learning platform as ours. But the main difference is significant. They have their own fixed teachers. They create contents for learning by their own teacher and they post those on there site. Student can only learn what they want to teach. Students can not learn their required topic always. But in our website anyone can be teach as a teacher and any topic can be learned by the students. At this moment we don't have plan for creating contents by our own.

2.3.2 Jaago Online School

This school was created by Jaago Foundation a NGO. This school is teaching the unprivileged students who are living in remote areas where good quality education is not available. They are using internet and communication technologies to setup remote schools on those remote areas. Then their teacher is teaching from the city and the students are learning from their own remote villages. So the difference is really massive between their works and our project. As our project is not focused to any special segment of students. Our intention is to build this project for all kind of human being no matter he or she is a student or not. If anyone wants to learn anything he or she can just come and learn here and same goes for the teacher also.

2.4 Scope of the problem

There is nothing can be called perfect system so we also have some limitations in our project right now. We believe that we will eliminate all those limitations and problems. After launching our project we will face the real life issues when our system will be used by the real users. But at this moment we can guess some scope of the problem which we are going to improve gradually in future.

Here are some scope of the problem-

- This project is entirely based on internet and every single process of this application works on internet so without internet our project will not be functional. So at this moment people who are living in remote areas with limited internet access will not be able to use our application in proper manner.
- At this moment any person can be a teacher here but we do not know how good they can teach. So there is no such a quality control system from us except student's review. We have plan to eliminate this problem in near future.

2.5 Challenges

As several web applications are available in market already so we have to compete with them if we want to survive in this market. We think our main issue will be user experience. If the user get good experience from our website than others then we are going to be successful. Besides we have identified few challenges as follows-

- ➤ Provide a smooth teaching experience for teachers.
- > Providing smooth learning experience for the students.
- > Updating our system in regular basis to improve it.
- > Upgrade and add more communication method between students and teachers.
- > Controlling the quality of teachers.
- > Upgrading user interface as per user recommendation in near future.
- > Deploy an android and then ISO app as early as possible.

CHAPTER 3

REQUIREMENT SPECIFICATION

In requirements specification section we try to create those documents those capture the complete description about how the system will perform.

3.1 Business Process Modelling

In this application there are two roles, student and teacher. One user can play both of the roles as his/her requirement. For both of the roles user need to initiate a browser application and visit the site. At that point the user need to signup for an new account with filling out a simple form. After signing up the new account creation process will remain holed until an admin approve the account. After successful creation of the account user can choose one of the two roles from his dashboard. If he have any question or want to learn anything he can post it via dashboard or he can also check for others questions and provide solutions. Learners will pay credit point from their wallet where the teacher will get paid the credit points. Anyone can sell their available credit points to the authority. There is also a option for review. Both teacher and student can review each other by rating.

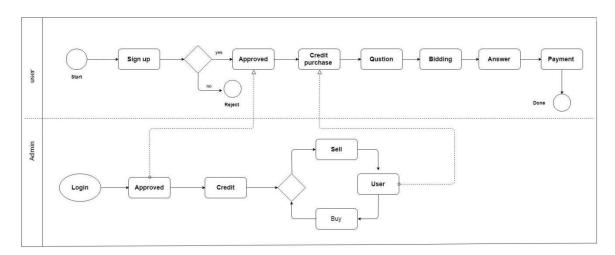


Figure 3.1.1: Business process model of teach and learn web application

3.2 Requirement Collection and Analysis

From the above discussion now we know about the requirements. The requirements are as followings.

We need a module for question and answer. This model will help the user to post a question or problem and another user to answer the problem or question. To make this model functional we have to build a dashboard where all the process will take place. After logging into the dashboard a user will be able to play role as either a teacher or learner.

When a user will act as a student he will be able to post a question with offering of desired credit point from his wallet. After successfully posting of a question or problem it will remain published on the portal.

Another user who may know the solution of a question or problem will bid with his desired credit point.

For handling the credit points we have to design a credit wallet system. This will be decreased from the student's wallet to teacher's wallet after every successful study.

Also for controlling of all above mentioned process we will build an admin portal. Where only admins will be able to login and handle all the systems.

We need to choose a development model to develop the application. Agile method will be used as a process of development. It will help us to build the system in a proper way.

3.3 Use Case Modeling and Description

A use case model is call the blueprints of a system. It is the graphic presentation of the interactions among the elements of a system. A use case is a methodology used in system analysis to identify, clarify and organize system requirements. A use case diagram is a graphic description or depiction of the interactions among the entity or elements of a system. It is used in system analysis to identify, clarify, and organize system requirements. In this use case model we have kept 4 actors. Firstly the user who will act as an admin. Secondly the user who will act as a teacher and the same

user will act as third actor which is teacher. Finally credit server will be our last actor. In our system an user is able to create an account then login and posting questions or answering other's question. Credit server will control the bidding system between users and admin. Admin will control all the matters related to other users.

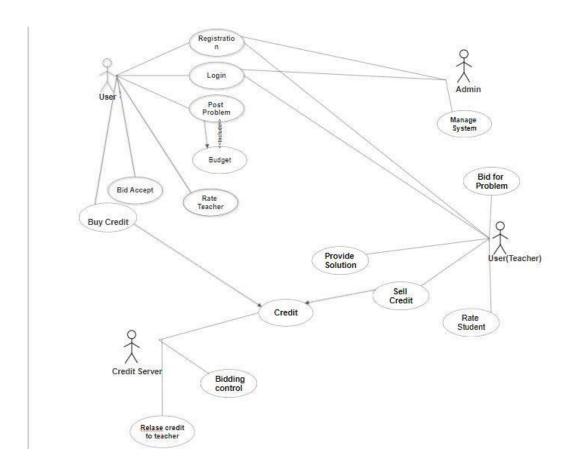


Figure 3.3.1: Use case modeling of Teach & Learn where we have 4 users

3.4 Logical Data Modeling

ERD model is consist with entity types and it identifies relationships that exist between entity types. Following figure shows logical data modeling of our system. We have designed an ER diagram for our web based application teach and learn which will describe the relationships between entity types.

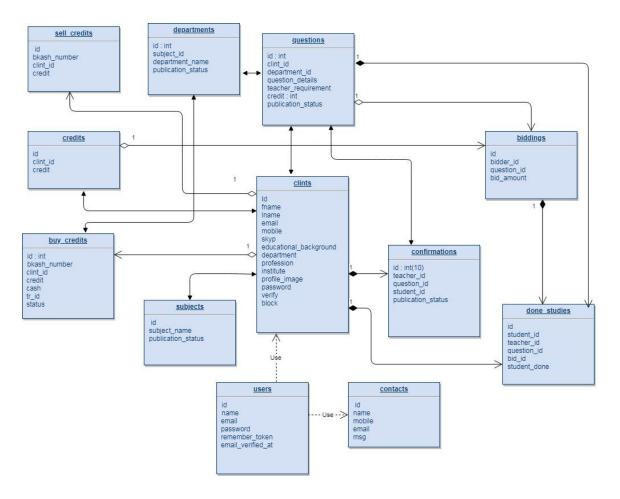


Figure 3.4.1: ER Diagram of Teach & Learn which visualize the database construction

3.5 Design Requirements

For our system designing we have information and requirements.

Requirements are:

- 3 users will use this system. Admin, User as a teacher and user as a student.
- User needs to signup first to use this system with providing all the necessary data.
- Admin will be able to control signup request. Admin will accept or reject any request.
- Admin can update and customize the system.

- When user will be acting as a student he will post his question or problem in the portal.
- Student will fixed a bidding amount as his convenient.
- Several user will try to bid for the question by offering lower bids.
- Student can choose any teacher as his convenient from the bidders.
- How the teacher will teach it will be discussed between both user over any media such as email, phone calls or Skype.
- After successful study student and teacher both the parties will click the done button.
- Credit point will be deducted from the student and will be added to the teacher's wallet.
- Both teacher and students can buy or sell credits to the admin.

CHAPTER 4

DATA SPECIFICATION

Design Specification is a statement of how a design is developed. In the section of

Design Specification, we try to show the front-end and back-end design of the game.

Here also discussed about many tools and platforms, which I used to develop this

game.

4.1 Front-end Design

Front-end is the interface of any system where user directly interacts. For this web

application we designed a user friendly interface so that user can experience the

flawlessness. Front-end design includes works of HTML, CSS, JavaScript, Bootstrap

and other frame works. For the design we have used raw HTML to create different

contents then for designing we have used bootstrap and CSS. For different small

applications we have used java script.

HTML: Hyper Text Mark-up Language

HML is a standard mark-up language which used for creating web pages. HTML is

used in various part of our application such as making table, styling text which cannot

be represent in plain text.

CSS: Cascading Style Sheet

CSS is different from HTML. CSS is a style sheet language which is used for

describing the presentation of a document written in HTML. CSS is used in almost

every corner of our project such as margin, padding, size of text, size of font,

alignment of text, font family, background image, border etc.

JavaScript:

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JavaScript is a scripting language that allows us to build different small applications inside our main application. Mainly different complex components in the interface. It is considered as the third layer of the layer cake in standard web technologies.

Bootstrap:

Bootstrap is an open-source JavaScript framework which is developed by the team at Twitter. Its complex combination of different components such as HTML, CSS and JavaScript. It's a free collection of different tools which helped us to build the whole interface. It helps us to make the user interface of our application more smart and good looking.

4.2 Back-end Design

In general web applications have two major sides. One is already discussed which is front-end and the other one is back-end. Back-end consists of a server, an application and the database. Backend is the controller of frontend experience. Backend is also called server site. General user cannot get access to the backend. Only developer can understand and is able to work in the backend. In this application we have used raw PHP and for database OURSQL. Laravel and MVC frameworks are used to make all the things easy for the developer.

4.3 Interaction Design and UX

Interaction design of our web application is described in following points but we want to give some basic ideas here. In our application there are two different panels for three different roles. Any general user who wants to use our web application s/he need to register first. After that user will be able to login and user his interface.

4.3.1 General user's site

- User can choose his role as a student or a teacher.
- User is able to purchase credit points.
- User can ask a question and answer other user's questions.

- User is able to set his desired bid amount for the question when he is acting as student.
- User is able to propose desired bid amount for the answer when he is acting as a teacher.
- User can rate his teacher or student.
- User can trade credit points with the admin.

4.3.2 Admin Panel

- Admin has the authority to approve or reject any signup request from general user.
- If admin wants he can block any user permanently so that the user will not be able to try login again.
- Admin controls the whole database system.
- Admin is able to create new attributes such as department.
- Admin can trade credit points with the general user.
- If any changes need to be done admin is able to do that.

UX

UX stands for user experience. As we didn't lunch our web application for public so we do not have the UX yet.

4.4 Implementation Requirements

For completion of our project many requirements were need to be fulfilled. For handling and controlling the database we used PHP language where the platform was OURSQL. OURSQL is a database management system, which is used to control the whole database of a application. From the OURSQL we can create class or new database. In PHP our admin we can insert, delete and modify the databases. For the successful implementation of PHP file we must keep it into c-Drive were the XAAMP file exist. Right into the XAAMP file there is another file named htdocs, we keep our PHP file there. If we want we can create a localhost and when we implement our file

we must type localhost then file location into URL. We have some more software requirements mentioned bellow...

Software Requirements

We need few software for coding, implementing and controlling of this application.

- XAAMP(For create a local web server for testing and deployment purposes)
- Sublime Text(For smart coding)
- Browsers like Chrome and Mozilla.(For running codes and checking the interface)

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

This project is made in a web based platform which needs to have a database. Database is implemented by PHP and for handling database OURSQL is used. We used function for SQL query for action database. Because using of PHP we made a different types of content table which describe all about the contents attributes and data type. When a user log in or register all the action checked and linked with the database. Figure 5.1.1 shows all the table of the database. We have several tables in the database system.

Table 5.1.1: Database Tables



5.2 Implementation of Front-End Design

Front-end design is the most important part of a web application. If the website's user interface looks critical, complex and not user friendly then the user will not be happy to use it and the user will look out for other options. Also the page speed is very important for a web application. Nowadays everything is fast so its very important

keep the web application as fast as possible otherwise user will get bored and they will leave the site. Keeping these issues in mind we have tried to keep our application as simple as possible and clean. We have tried our best to create an user interface which is really user friendly and responsive. Its important too that the website is responsive because nowadays user are very divers tile, user are accessing websites from mobiles, tablet computers, laptop computers and desktop computers. Only a responsive site can be solution for all these devices.

- ❖ In this website there mainly two user group with three different roles. They are students, teachers and admins respectively.
- ❖ General users need to register at the beginning to use the portal, where the admin doesn't required to register or signup. Admin have direct access to the website.
- General user can login with their login credential such as email address and password.
- ❖ Admin need to approve signup request by general users.
- ❖ Admin can block any user signup request if he wishes.

5.2.1 Home page

Figure 5.2.1 shows the home page of web application Tech & Learn. In this page we got the menu where a user can sign in, sign up, contact with us etc.



Figure 5.2.1.1: Home page of Tech & Learn web application

5.2.2 Admin login

Figure 5.2.2: visualize the login page for admins who will control the whole Tech & Learn application from backend. Admin may login here with their own credentials.



Figure 5.2.2.1: Admin login page of Tech & Learn web application

5.2.3 Admin panel

After putting login credentials on login page for admin, an admin will be able to see this page. From this panel an admin will control the application. It also shows the available admin list.

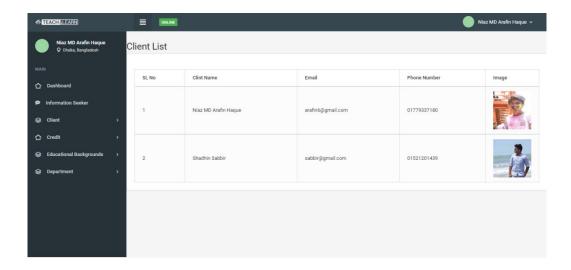


Figure 5.2.3.1: Admin panel of Tech & Learn where all the administrative work will take place.

5.2.4 User registration page

To use Tech & Learn web application a user must need to sign up first. For signing up a user need to provide some information. The signup page is the very first step for any general user to use this application.

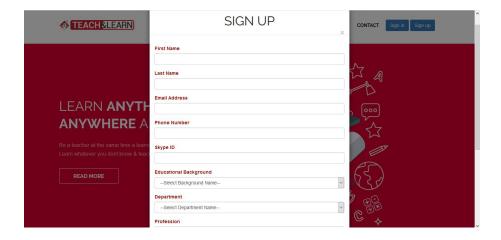


Figure 5.2.4.1: Signup page where general user will signup for using this application.

5.2.5 Credit purchase

After successful signup a user may post a question if he wants to learn something. But he need to pay the teacher with credit. So he have to purchase the credit point first.

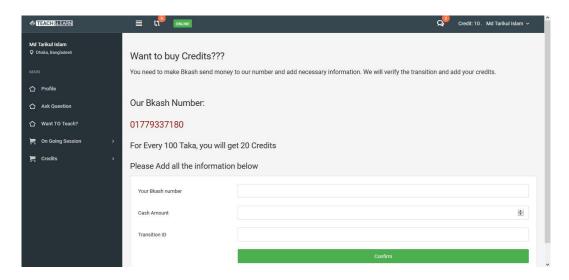


Figure 5.2.5.1: Credit purchasing panel of Teach & Learn

5.2.6 Payment confirmation

After making the payment via bKash user submits payment details from his panel. Then an admin need to confirm the payment. From the following confirmation panel an admin will confirm the payment.

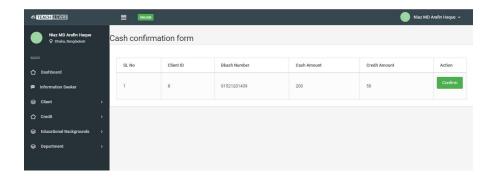


Figure 5.2.6.1: Payment confirmation panel where admin will confirm the user payment.

5.2.7 Posting Question

Now the user have credits in his account to use it for asking a question. Now a user who wants to learn any topic will post his question with his target budget for bidding.

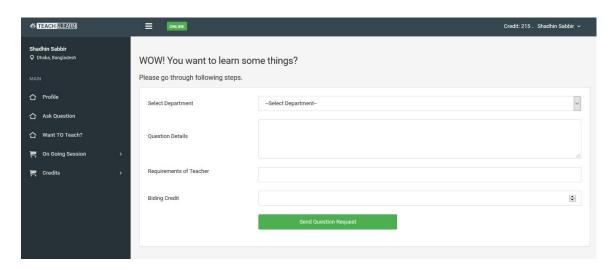


Figure 5.2.7.1: Posting a question by user with target bid.

5.2.8 Bidding for existing question

After posting a successful question by one user another users who knows the answer of that question will start bidding for answering that question. Question asker will choose anyone from them.

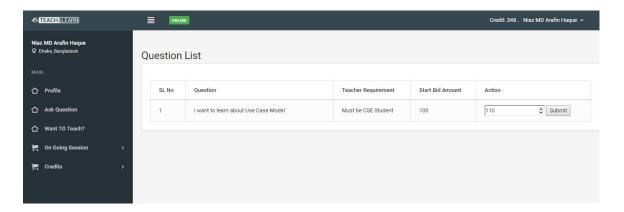


Figure 5.2.8.1: Bidding for a questions by teachers will take place here

5.2.9 Status of posted question

After posting a question student may check his posted question later to check the status. He may check whether someone have bidded or not. Also all the biddings for his question.

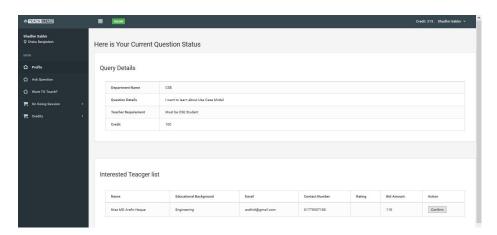


Figure 5.2.9.1: Status of previously posted question.

5.2.10 Student profile

An user of this web application can act both as a student and teacher. They will have to maintain their both profile.

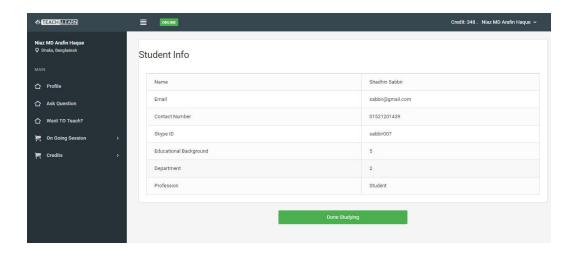


Figure 5.2.10.1: Student profile page where user will show his details as a student.

5.2.11 Teacher profile

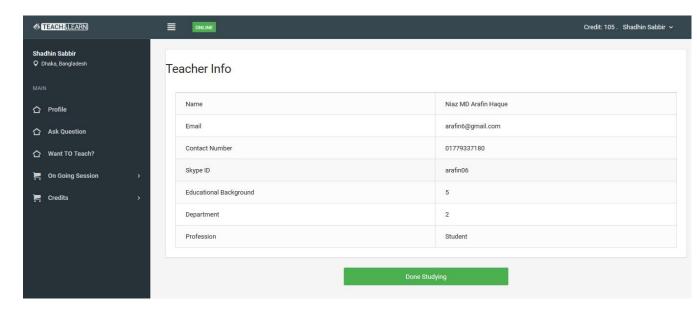


Figure 5.2.11.1: Teacher profile page where user will show his profile as a teacher.

5.2.12 Departments

For segregation of different questions we have divided topics in major departments.

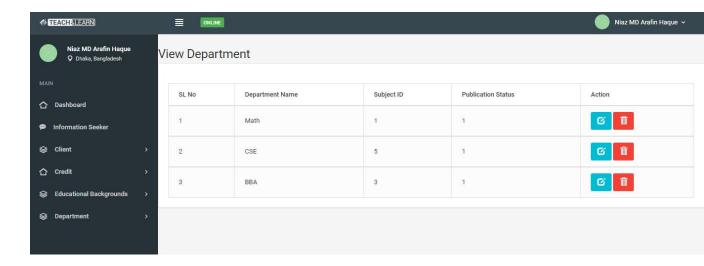


Figure 5.2.12.1: Department list of topics.

5.2.13 Backgrounds

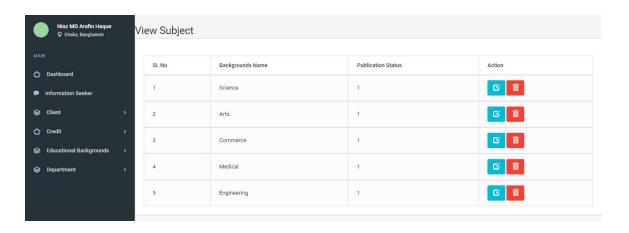


Figure 5.2.13.1: Education background of an user.

5.2.14 Messages from contact us page

We have kept an contact us page for general visitor and all user for contacting the admin panel for any kind of information or feedback. After posting any query in that page admin will get messages as followings.

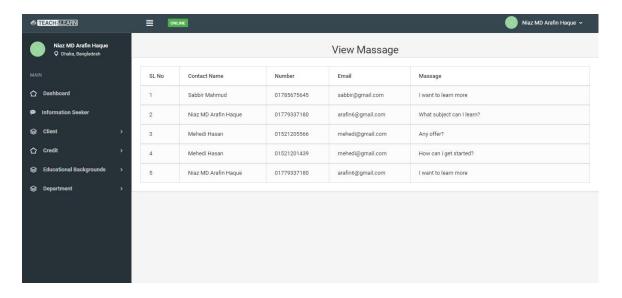


Figure 5.2.14.1: Contact us page's feedback messages in admin panel

5.3 Implementation Interactions

We have tried to make our system as user friendly as possible. People will like this application easily. Specially for the rating system. When a teacher and students completes a session they have to rate each other. So they are able to give us the feedback by the rating.

5.4 Testing Implementation

In this section, the use cases to be tested during functional testing are listed and testing steps and expected results are explained in detail.

Table 5.4.1 Test Case

Test Case	Test Input	Expected	Obtained	Pass/Faill
		Outcome	Outcome	
1.Admin login	Admin can login	Successfully	Successfully	Pass
	via computers,	login	login	
	mobile by email			
	address and			

	password.			
1. User Login	User can login via computers and mobile devices by email address and password.	Successfully login	Successfully login	Pass
2. User registration	User must fill the signup form by name, email address, photo, password and other necessary data.		User will get clearance from admins.	Pass
3. Update user profile	User can edit and update their profile.	Profile update successful.	Profile update successful.	Pass
m by user	User need to write a question and offer a bidding amount for the question.	Question posted successfully.	Question posting successful.	Pass
5. Answering a question/proble m.	Another user will provide the answer to the previously asked question by other user.	Answered successfully.	Answered successfully.	Pass.

6.	Rating	teacher	Teacher	and	Rated	Rated	Pass
	and stud	ent.	student	will be	Successfully.	successfully.	
			able to	rate each			
			other b	ased on			
			their ser	vice and			
			quality.				
7.	Credit	point	User	will be	Transaction	Transaction	Pass
	trading		able to	buy or	successful.	successful.	
			sell cree	dit point			
			from the	portal.			

5.5 Test Results and Reports

After the project work completion we have tested our project many times from different devices and by different users. Our goal was to check whether the project is working fine or not. After testing several times we were glad to saw that the project is working smartly and flawlessly. A report is the paper that actually describe that test result and define that the system is ready or not.

Few test categories that were performed for this project.

- Registration test successfully
- Login system work fine
- Profile update process is working fine
- Rating system is working correctly
- Website speed and loading.
- Overall performance and usability.

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 Discussion and Conclusion

We have successfully developed a web based application named "Teach & Learn" that will serve people who wants to learn anything from any subject or department from his home with an ease. We have been working since JULY 2017 to make this project successful and the journey was not so easy. We have learned a lot of things through this journey. Even 3 of our team mates completed a 4 months long web development training. We have a long plan to establish this web application as a successful start-up.

6.2 Scope for Further Developments

As we have already mentioned in previous point that we will launch this project very soon as a start-up primarily in Bangladesh market then internationally. So we have to do a lot of works to make this project international standard.

Here are some future development scopes for this project-

- We will start a start-up with this project.
- As it will be a real business for us so we have to ensure top notch security for the portal.
- Creating an android application and gradually an ios application.
- We will create our own video calling system as well as chatting system for the users.

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APPENDIX

Name	Description			
HTML	Hypertext Markup Language. HTML is standard language for creating any web pages or web based application.			
Css	Cascading Style sheets. Css is a Style sheet language That is use for designing purpose of any web based application.			
РНР	Hypertext preprocessor. PHP is server-side scripting language. PHP used as a programming purpose.			
Javascript	Javascript is a programming language. Mainly use for web development.			
JQuery	JQuery is a concise and fast Javascript library that can be used to simplify event, HTML document.			
JSON	Javascript Object Notation. It is a text based data exchange format fi structuring data. Mainly use for exchang data between web based application and server.			
Ajax	Ajax is method of exchanging data with a server and updating parts of a web			
CodeIgniter				

PLAGIARISM REPORT

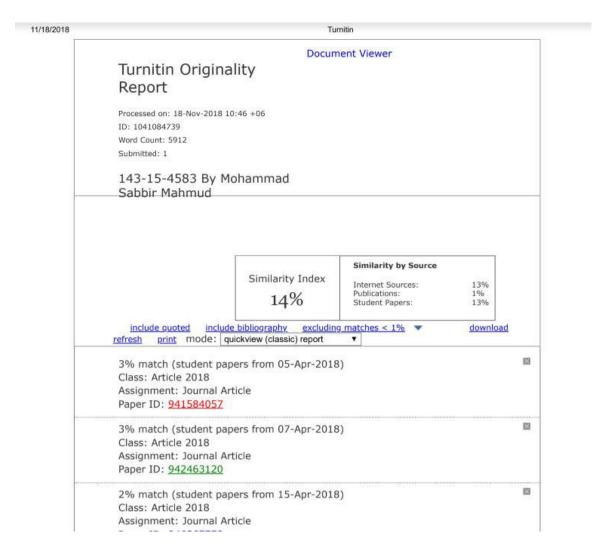


Figure: Plagiarism Report