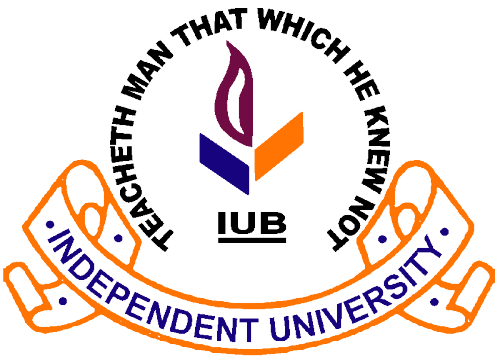

Web Application Development for COVID-19 Awareness and Preparedness among the healthcare workers

Undergraduate Internship Report Submitted By

Kazi Imdadul Hoque

ID:1522248

In consideration of the partial fulfillment of the requirements for the degree of

Bachelor of Science In

Computer Science and Engineering

School of Engineering, Technology and Sciences

Autumn, 2020

Web Application Development for COVID-19 Awareness and Preparedness among the healthcare workers

An Undergraduate Report Submitted by

Kazi Imdadul Hoque (Student ID:1522248)

Has been Approved on 22/01/2021

By

Subrata Kumar Dey

Internship Supervisor & Senior Lecturer

Department of Computer Science and Engineering

School of Engineering, Technology and Sciences

Independent University, Bangladesh

Attestation

This is to certify that report titled “Web Application Development For Covid-19 Awareness and preparedness among the health workers” is completed by me, Kazi Imdadul Hoque (1522248), submitted in fulfillment of the requirement for the Degree of Computer Science and Engineering from Independent University, Bangladesh (IUB).I express my deep gratefulness to my supervisor Subrata Kumar Dey, Senior Lecturer, Department of Computer Science and Engineering, Independent University, Bangladesh, for his invaluable instructions, continuous guidance, constructive criticisms and thoughtful advice during pursuing this internship and preparation of this report.

Date: 20 January 2021

Kazi Imdadul Hoque

Acknowledgement

Above all else, I might want to express gratitude toward Almighty Allah for enabling me the continuance and to buckle down. It is my benefit that I had the chance to do an entry level position in The Debuggers Studio. I might want to thank all the individuals on whom I do my entry level position.

I express my profound thankfulness to my director Subrata Kumar Dey, Lecturer, Department of Computer Science and Engineering, Independent University, Bangladesh, for his important guidelines, nonstop direction, helpful reactions and astute counsel during seeking after this temporary job and readiness of this report.

I additionally express my profound thankfulness to Md. Arianul Islam (Project Manager, Debuggers Studio), Nowsher Nahid(Senior Web Developer, Debuggers Studio). Likewise, I express my profound thankfulness to all representatives of Debuggers Studio for collaborating to assist me with completing this temporary job report.

Last yet not the least, I might want to thank my folks and other relatives for their endless help given to me.

Kazi Imdadul Hoque
Department of Computer Science and Engineering
Independent University, Bangladesh

Letter of Transmittal

21 January, 2021

Subrata Kumar Dey

Internship Supervisor & Senior Lecturer

Department of Computer Science and Engineering

School of Engineering, Technology and Sciences

Independent University, Bangladesh

Subject: Internship report on “Web application development for Covid-19 awareness and preparedness among the health workers”

Dear Sir,

It is my pleasure to submit to you my internship report on “Web application development for Covid-19 awareness and preparedness among the health workers” for Centre for Global Health Research. It took me three months to finish this report. Due to corona, I had to face some difficulties to finish this report. The purpose of this report was to fulfill the requirements of the Bachelor degree of Computer Science and Engineering and simple implementation of what i learnt in my whole university life. I tried my best to make this report successful. .

I would like to express my sincere appreciation and thanks for your help while doing the Internship. Thank you for your cooperation.

Yours sincerely,

Kazi Imdadul Hoque

ID: 1522248

Department of Computer Science and Engineering

Independent University, Bangladesh

Evaluation Committee

Signature . . . . . .

Name . . . . . .

Supervisor . . . . . .

Signature . . . . . .

Name . . . . . .

Internal Examiner . . . . . .

. . . . . Signature . . . . . .

. . . . . Name . . . . . .

. External Examiner . . . . . .

. . . . . Signature . . . . . .

. . . . . Name . . . . . .

. . . Convener

Abstract

The outbreak of Coronavirus disease infected all over the world. In this pandemic situation, the World Health Organization also has been responding rapidly, working with governments around the world. Most of the people, especially diabetes patients are infected by covid-19. Our web application will help the general people, even the health workers to create social awareness among us. Even in this pandemic, their main purpose of the system is conducting a survey and E-learning system for the Health workers and diabetes patients to create awareness among them for their research purpose. This web application is created for those who are working with health organizations like nurses, doctors, medical students, interns etc. In this pandemic situation, all the people of Bangladesh are unaware about covid-19. To train the health workers, there is an online learning system. To get this course, user need to sign in first, then user needs to enroll the course. In this learning method, it's easy to analyze the measurement of the knowledge about covid-19. If the doctor is not aware of this, this will be hard for Government to control this situation. There is also a survey management system for every person to measure the knowledge about covid-19.

Keywords: *Covid-19, awareness, research, health workers*

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Chapter 1

Introduction

1.1 Background

The main purpose of the project is to conduct a survey and E-learning system for the Health workers and diabetes patients to create awareness among them for their research purpose. This system may help the researcher in administering their research work more efficiently. The idea of this proposal is based on a number of related studies. This report enables to understand overall COVID-19 situation and to analyze the government measures. This web application is designed for those who are working with Health organizations such as nurses, doctors, medical students, interns, medical researchers. Any background of people can do the survey anytime. For better analysis, there is a course for measuring their knowledge about Covid-19. Before enrolling the course to measure their knowledge about Covid-19 there is a quiz system. It's called pre-test. After doing the pre-test, there is another quiz with the same quiz questions. It's called post-test. The post test is basically the result of the changes of the mentality. Only medical organizations such as doctors, nurses and medical students can participate in this quiz. This report is going to help the government for their research work. This technology provides an inexpensive mechanism for conducting surveys online instead of through traditional survey methods. Also, it speeds up the distribution and response cycles.

1.2 Objectives

The main objective of the project is how the Health Organization workers think about Covid-19 and their proper knowledge, their awareness for research purposes. In our web application, there is an online course system. This course is for every health worker and diabetes patients to create awareness among them about Covid-19. The course is divided into two parts- pre-test and post-test. All the questions of the system are generated both in Bangla and English. It prevents the problems such as understanding the questions properly. But it will be stored in our database system in English. The Centre for Global Health Researcher can view it anytime in the website

and also download it. This system will help in terms of no data entry errors form hand entry, savings in printing and immediate access to data for analysis. The system will keep a record of all the data. So, there is no chance of losing data. The researcher also finds any data from the system by selecting time and date. It can be easily downloaded from our system**.**

1.3 Scopes

There was a limitation in this system. The system received the pre-test and post-test reports separately. But for better analysis and to develop their system, we need to merge it into one report in English.

Admin:

- ❑ Admin can add lesson under course
- ❑ Admin can upload certificate under course
- ❑ Admin create quizzes for the user
- ❑ Admin can create webinar through zoom
- ❑ Admin can download Quiz Result
- ❑ Admin can upload pre/post Bangla or English quiz to merge both result into single result report
- ❑ Admin can translate Quiz and survey result from Bangla to English

User:

- ❑ Users can sign up & Login into the system using valid email & password
- ❑ Users recover their forget password
- ❑ Users must be login before enroll any course
- ❑ Users must participate pre quiz & post quiz to complete the course
- ❑ Users must participate pre quiz & post quiz to complete the course
- ❑ Users can participate survey without login
- ❑ After completing the course users will get a certificate as per their registered first name & last name

Chapter 2

Company Profile

2.1 Introduction

Debuggers Studio is an IT arrangements organization with the devotion and enthusiasm to give quality IT administrations. Right now, ICT experts flourish to offer the types of assistance like Web application and improvement, Mobile App advancement, UI and UX plan, E-trade arrangements, Digital Marketing administrations and numerous other amazing stuffs which are extremely useful for a business to develop carefully. This is where you can thrive your new thoughts. Gifts and hard-works are esteemed here extraordinarily.

Debuggers Studio encourages the assistants to discover legitimate arrangements of different issues and thoroughly consider of box. They give appropriate rules all through the venture works.

2.2 Company Profile of Debuggers Studio

Debuggers Studio offers customers quality administrations, arrangements, and promising strategies by guaranteeing customers the absolute best help in every classification. The entire group is energetic, dynamic and centered when it's an ideal opportunity to raise a business in the advanced world. Debuggers Studio holds specialized aptitude in the IT divisions which assists with building an advanced business in each angle. They create responsive and versatile inviting sites to fortify the online nearness of any organization. Just as creating custom iPhone, Android, and Native applications to improve administration conveyance and drive development for customers. Building up an internet business store, which conveys more income and works flawlessly with a whole business. In a flash improving the business procedure and settling on better choices with CRM Sales Integration administrations. Master counsel, methodologies, and crusades to rank any site on search questions at the segment of website streamlining. Debuggers Studio makes exceptionally usable and instinctive structures for the B2B showcase improving the convenience and value of applications for ideal client experience for content planning. For

advanced publicizing Debuggers Studio assists with arriving at a huge number of clients through online advancement for any business. For the most part, Economic worth is the estimation of the advantage got from a decent or administration to an organization. Financial worth can likewise be the greatest cost or measure of cash that somebody is eager to pay for an assistance. Debuggers Studio decides its monetary incentive by thinking about the necessities of a customer. The necessity and highlights of a venture requested by a customer. In view of those, the monetary worth is settled down.

2.3 Mission, vision and worth

Among Debuggers Studios missions giving B2B Web/App Solution to all SME, turning out to be driving AR/VR Solution for different kind SME, getting one of prestigious business robotization Solution Company, giving quality arrangement and support to clients are for the most part engaged.

1. Introductory Vision: Providing minimal effort Web/App Solution to Startup and on-board many Partner as conceivable to make long haul connection guaranteeing acceptable administrations.

2. Long haul Vision: Building some arrangements and attempting to sell them a membership-based model to SME.

3. Extreme Vision: Providing information related arrangement and Automated SME Business Process.

Among values, Teamwork capacities for Debuggers Studio as allotting groups to undertakings are fruitful on the grounds that cooperation energizes correspondence and the progression of thoughts. Representatives work in groups since working with others permits every worker to carry their best to work. Trust among representatives and clients is another incentive here. In this manner, underline the worth, uprightness. The organization is soaked with private data. Debuggers Studio works with respectability to pick up their client's regard and trust. Keeping up a quality conduct between clients is one of the most significant qualities in Debuggers Studio.

2.4 Products and Services

Debuggers Studio gives a lot of value items and Services. It gives Web/Mobile Based Application Development administrations. AR/VR Application Development utilizing intuitive programming for recreating a three-dimensional condition. Debuggers Studio separates a lot of information from the site by giving Data Scraping and Data Analysis administration. It likewise gives Chat Assistant (Chatbot) administrations for Business Pages Robotic Process Automation.

Chapter 3

Literature Review

3.1 Introduction

Literature review identifies, evaluates and synthesizes the relevant literature within a particular field of research. It illuminates how knowledge has evolved within the field, highlighting what has already been done, what is generally accepted, what is emerging and what is the current state of thinking on the topic and how to make your project come to live. It consists of many surveys and research that needs to take place. The process of the phase is the study of similar systems around the world. Analysis the related projects through published journal articles, company websites to gain knowledge. It will help us to add more facilities to our system.

3.2 Relationship with Undergraduate Studies

CSE-307 System Analysis and Design:

This course has helped to develop the overall structure of the project before even starting to work with codes. All the required analyses that were necessary to be considered such as requirement analysis, flow diagrams, UMLs, Rich picture, Functional and Nonfunctional requirements, methodology, WBS, Gantt Chart, etc. were taught in this course. Not only for the project but also the report, this course was of great help. This course has helped in planning the whole project from the beginning to the end.

CSE309-Web Application and Internet:

While working with the frontend design, this course was in help. From this course, I have learned basic HTML, CSS, Bootstrap, PHP, JavaScript. Even though we were taught raw PHP but yet it was not difficult to use a framework because of the knowledge that I have gained from this course. This course was a huge help throughout the project as I have also learned the use of colors and features.

CSE-303 Database Management:

A huge part of the project is related to the back-end. This course has given me overall knowledge with SQL. Starting from connecting to phpMyAdmin to writing queries, this course has given me the knowledge with the database which helped me throughout the project. This course made it easier for me to develop the project with all the important queries like joining two tables using the foreign key, providing the primary key to a table, etc. was known to me.

CSE-213 Object-Oriented Programming:

This course helped in working with objects, classes, inheritance, function chaining, etc. This course introduced me to Java which helped me throughout the project.

3.3 Related works

3.3.1 Global Analysis

The spread of COVID-19 has thrown the global market into a state of flux. Countries are in varying stages of coping with the pandemic and its fallout. Much of the world is currently experiencing both a public health crisis and an economic crisis due to the COVID-19 pandemic. In Bangladesh, most of the people are concerned about this virus through television and miking and send message system.

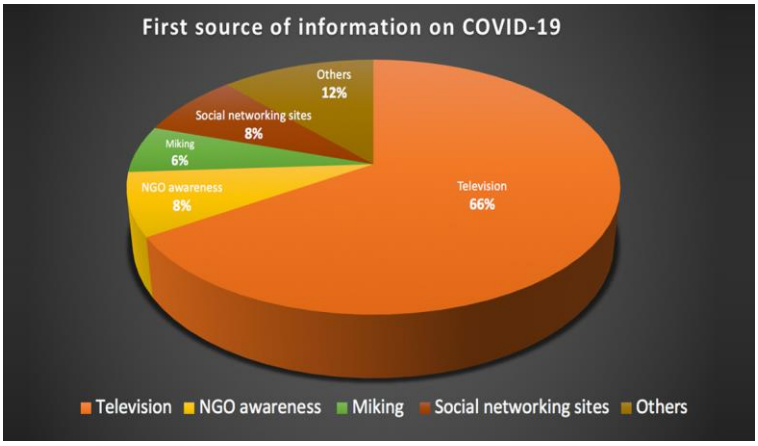

Fig 3.1: Raising Awareness

One of the ways to reduce such concerns in rural areas, while stronger awareness campaigns focusing more on treatment and management.[12]

But they are while some industries are already coming out ahead in the current situation, that success can come with significant challenges. To find out the emerging concerns of COVID-19 related issues amongst health care workers, members of a range of healthcare organizations, governmental agencies, and the media, and online survey of healthcare was undertaken by Centre for Global Health Research. There are lots of hospitals who are working under Global Health Research.

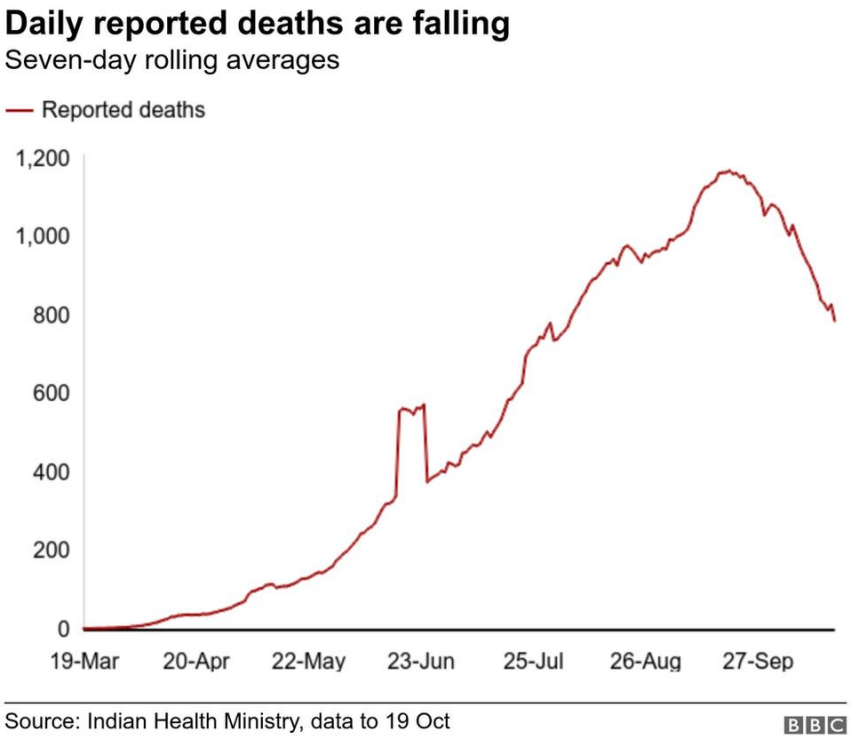

Fig 3.2: Global analysis

Even in India, people are dying more than Bangladesh. The number is increasing day by day. They are also trying to update sites daily to keep people updated.

3.1.1 Cleveland Clinic

Cleveland Clinic has launched a free coronavirus (COVID-19) online screening tool. This is a questions and answers series-based application. It’s totally based on symptoms and travel. The

responses help determine their risk of COVID-19.Afther finishing the questionnaires, They will have a solution based on their answers.. The questions are based on the Centers for Disease Control and Prevention guidelines.[2]

To access their software, users need to visit their web application. Then users need to follow some steps to learn their risk level for Covid-19.

- ClevelandClinic.org/coronavirus
- A questionnaire window will open
- Answer questions to receive the recommendation

Cleveland Clinic is the first hospital system in Ohio offering this tool, and one of a handful in the country.

3.1.2 Care Quality Commission COVID-19 inpatient survey

Care quality commission is carrying out a survey of patients in hospital during the peak of the coronavirus (COVID-19) pandemic. Care quality commission asking patients to complete the online inpatient survey questionnaire. It includes new questions about the experience of being in hospital and Covid-19 during the pandemic. Patients can complete the questionnaire online or over the phone. The results will show how safe, effective, caring and responsive patients believe that the care they received has been. They'll be available at a national, regional and Integrated Care System (ICS/Sustainability and Transformation Partnership (STP) level. We expect to report on our findings in the Autumn. These will help inform how services plan for, and respond to, any second coronavirus spike. The findings will also be used to support services in the ongoing care of those who continue to be admitted with coronavirus.[1]

3.2 Local Analysis

In Bangladesh, there is lots of organizations working under the Centre For Global Health Research. WHO has already been actively monitoring the development of novel coronavirus disease pandemic since December 2019, with particular focus on the health and well-being all

over the world. As well as Bangladesh also, Nova Nordisk, Jica, Centre For Global Health Research Centre are already continuity working on research, and hospital operations.

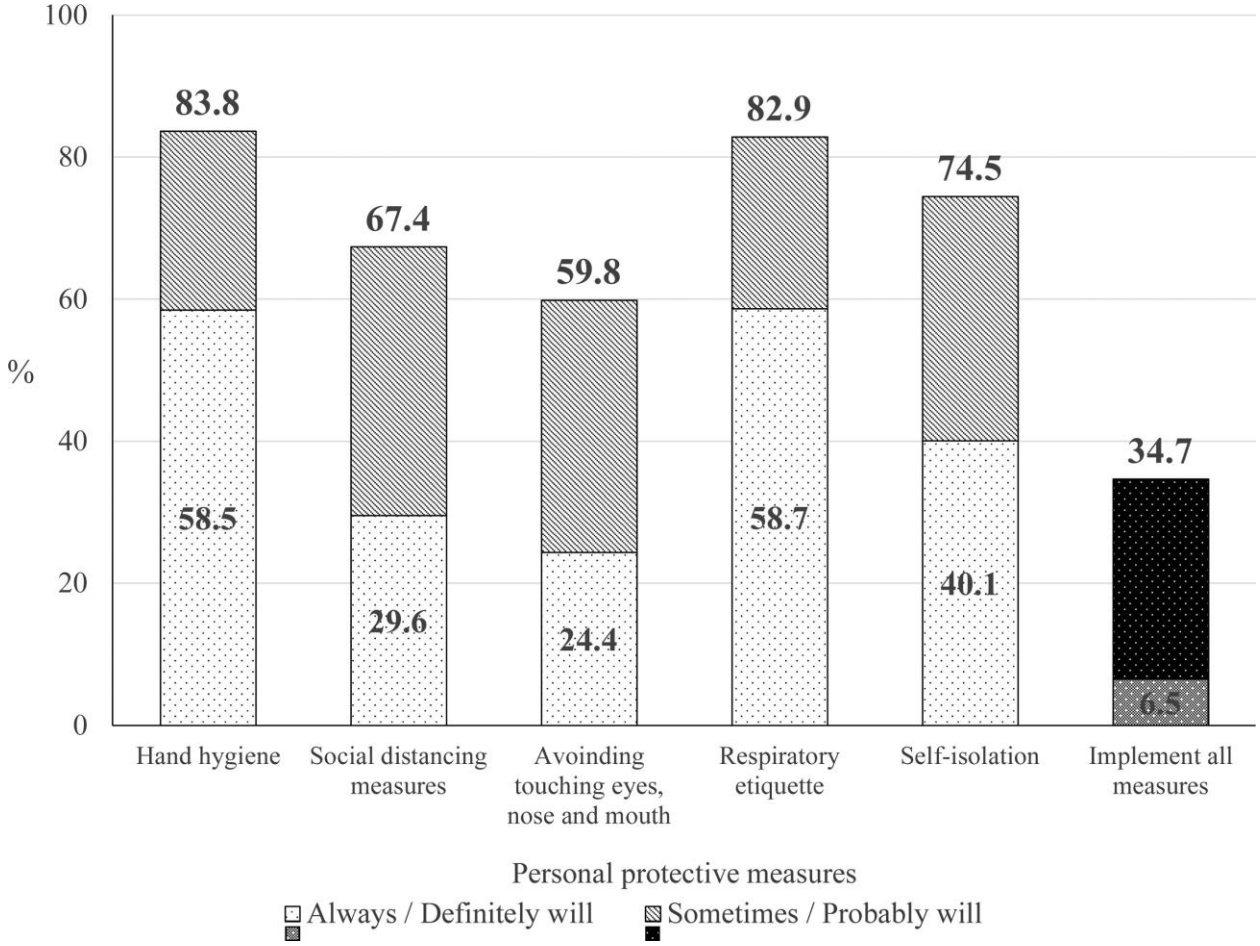

Fig 3.3: Local analysis

This was a cross-sectional study based on an internet-based survey. People were asked to complete some questionnaires. Participants were asked to indicate how often they implemented the following five personal protective measures recommended by the World Health Organization. In addition, the participants responded to questions regarding the daily frequency of hand hygiene events.[3]

There are also apps like Corona Tracer BD, DGHS to create awareness and keep the people safe from Covid-19. This apps are also keep updating the corona situation and helping them by social networks. In every application and apps, people are recommended to maintain their social

distancing, avoiding touching eyes, nose and mouth and also self-isolation. Then the number of affected people will decrease. To implement these methods, Governments are also trying hard and doing some research to solve this issue.

3.2.1 Birdem General Hospital

BIRDEM General Hospital has started working under the Centre for Global Health Research. We are working on their project. BIRDEM (Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders) is the first institute of diabetes, endocrine and metabolic diseases in Bangladesh.[4]

In this Covid-19 pandemic, diabetes patients are unaware about covid-19. As this is our system, to increase their knowledge and awareness, we have a E- learning method system. In the survey system, the general people do the online survey. In in the survey, All the questions of the system are generated both Bangla and English. It prevents the problems such as understanding the questions properly. But it will be stored in our database system in English. The Centre for Global Health Researcher can view it anytime in the website and also download it. This system will help in terms of no data entry errors form. The system will keep a record of all the data. So, there is no chance of losing data. The researcher also finds any data from the system by selecting time and date. It can be easily downloaded from our system in English.

3.4 Related Articles & Journal Analysis

Mental wellbeing in the Bangladeshi healthy population during nationwide lockdown over COVID-19: an online cross-sectional survey: They aim to profile and contextualize the level of positive mental health among the healthy population during the beginning of nationwide lockdown over COVID-19 in Bangladesh. An online sample of 1404 healthy individuals were collected through the authors' networks with residents and popular media in Bangladesh. A questionnaire comprising the Warwick Edinburgh Mental Wellbeing Scale and sociodemographic information was posted to an online survey.[5] This pandemic also causing mental stress to every person. Because people are getting mixed information about Covid-19, For that most of the people are unaware of the real face of Covid-19. The Government can’t solve

this problem alone, citizens and public health workers need to come forward to improve this situation.

Chapter 4

Customer Requirement Analysis

4.1 Introduction

Requirements analysis is critical to the success or failure of a systems or software project. The requirements should be documented, actionable, measurable, testable, traceable, related to identified business needs or opportunities, and defined to a level of detail sufficient for system design. [5]

The requirements are which we have used:

- ❑ Prototype
- ❑ Surveys
- ❑ Documentation analysis

4.2 Prototype testing

A prototype is a test of the ideas in an early stage of production. It gains valuable feedback from the users before the final product is delivered to the clients. So, when we run prototypes, there are a lot of inputs that can be undertaken which improves the overall workflow of the process too. In our system, we also run prototype, found some design errors and fixed it. [6]

4.3 Surveys:

In this Covid-19 situation, it's very difficult to conduct a survey. So the Centre for global health research provides us with some survey questions. As they mentioned, they did some surveys. Based on their survey, we made the survey questions. Even in our online survey system, the questions are written in Bangla for the user. The questions are very general related to Covid-19.

So, the Centre for global health research can understand how much the people of our country are concerned about covid-19. Users can do the survey easily without login in our system.

4.3 Document analysis

Actually, the documents clear who are the users of the system and who are going to be benefit from this system. Because of the pandemic, the Centre for global health research shares with us some documents. We studied their document and we had some meetings with them. We list down some features based on their documents and meetings.

4.4 Software development process

Admin:

- ❑ Admin can login the system with valid username & password
- ❑ Admin can edit/update Website all contents and information
- ❑ Admin can create/edit/delete courses
- ❑ Admin can add lesson under course
- ❑ Admin create quizzes for the user
- ❑ Admin create courses for the user

User:

- ❑ Users can sign up & Login into the system using valid email & password
- ❑ Users recover their forget password
- ❑ Users must be login before enroll any course
- ❑ Users must participate pre quiz & post quiz to complete the course
- ❑ Users can participate survey without login
- ❑ Users must complete all lessons to get certificate
- ❑ User can view all enrolled courses from their profile
- ❑ Users can join the webinar through zoom.
- ❑ Users can chat with admin support team through WhatsApp

Chapter 5

Project Management & Financing

5.1 Work-breakdown structure

Work breakdown structure (WBS) is a method that breaks a project down into a hierarchy of deliverables, tasks, and subtasks. It's a helpful tool that defines a detailed cost or time estimate and provides guidance for schedule development and control.

Essentially, using a work breakdown structure enables take a top-down look at the project and break it into the tasks and subtasks to completion. It's a simple, yet methodical, way of organizing and understanding the project scope in smaller, manageable components.

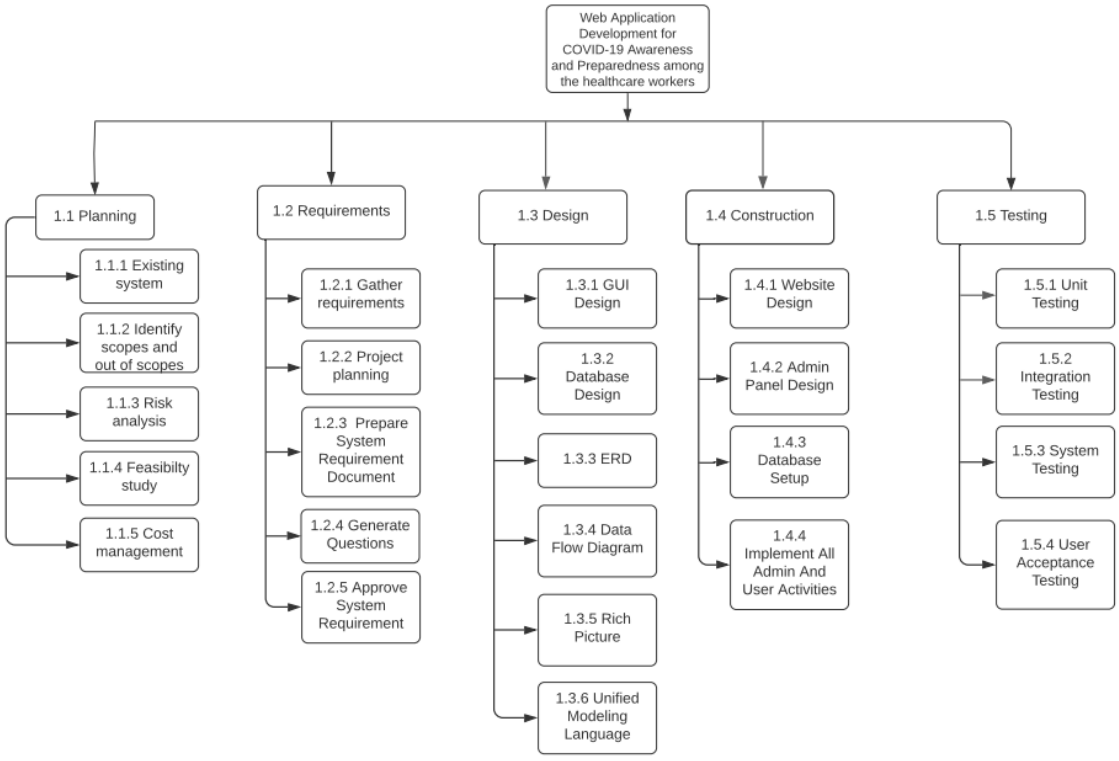

Fig 5.1: Work-breakdown structure

5.2 Process/Activity wise Time Distribution

The estimated time required to end a project successfully defines process wise time distribution. This helps the developers create a mind map as to how efficiently they need to work in order to meet the deadlines. Time distribution is greatly needed to complete any project.The timeline designed below in a Gantt chart shows the developers what processes are completed, which are behind schedule and what is yet to be completed.

5.3 Gantt chart

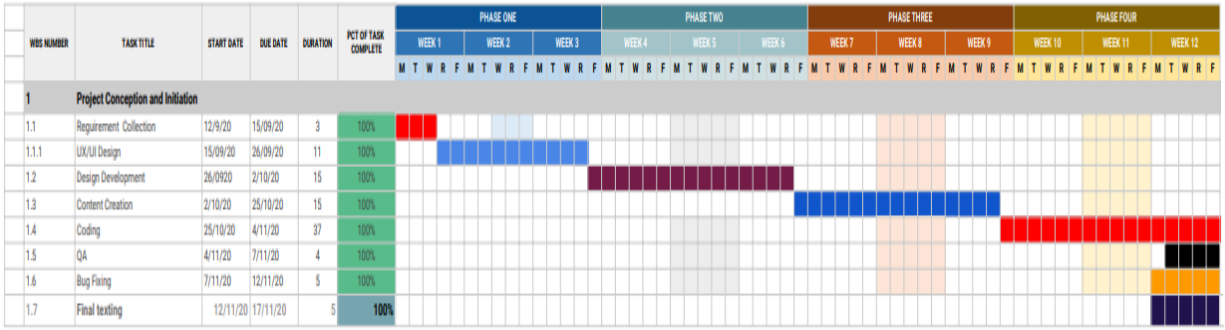

Fig 5.2: Gantt chart

5.4 Process/Activity Wise Resource Allocation:

Generally, a project is divided into many divisions and allocated to the designers, developers and testers. My project manager helped me to plan, design and develop the project. Besides, we used computers, laptops, browsers, some provided documents and videos to build up our project.

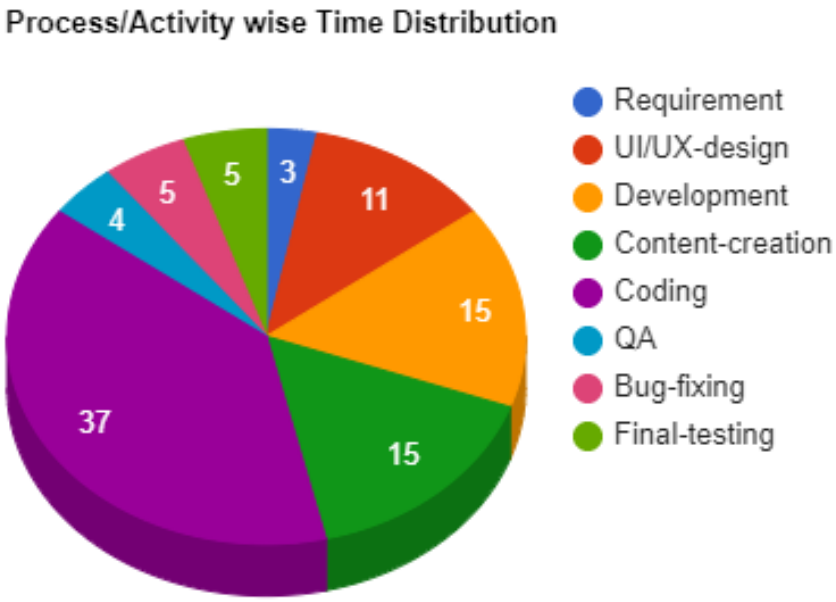

Fig 5.4: Time Distribution

5.5 Estimated Costing

For developing a project there are some costs needed. Sometimes it is less and sometimes it is huge. As we are only developer, we make some lists what we need to complete this project. We also provide them so estimated time. Budget is a major issue to every project. Everything related to the project and needed for the project is included in this costing section.

Table 5.1: Cost Estimation table

Requirements	**Amount (BDT)**
Electricity bill (3months)	**13000**
Transportation cost	**5000**
Mobile bill	**3000**
M2 SSD	**3500**
MONITOR	**15000**
DOMAIN/SERVER/HOSTING	**5000**
DESKTOP CORE I5	**45000**
Total	**89500**

Chapter 6

Methodology

6.1 Introduction

A software development methodology is the procedure of a software development work into distinct phases containing activities with the intent of better planning and management. It is also known as development life cycle. There are various types of software development methodologies. Such as-

- Agile
- Waterfall
- Prototyping
- Iterative and incremental development
- Spiral development
- Rapid application development
- Dynamic system development model
- Extreme programming

For this project, we have decided to select the agile methodology. Agile methodology is best for modify the process to fit in their needs. Our project is developed for the Centre for global health research. The health workers and diabetes patients are the user of this application, In this pandemic, their data is very important for researcher work to improve Covid-19 awareness. So, we have sorted that agile software development would be the best use.[10]

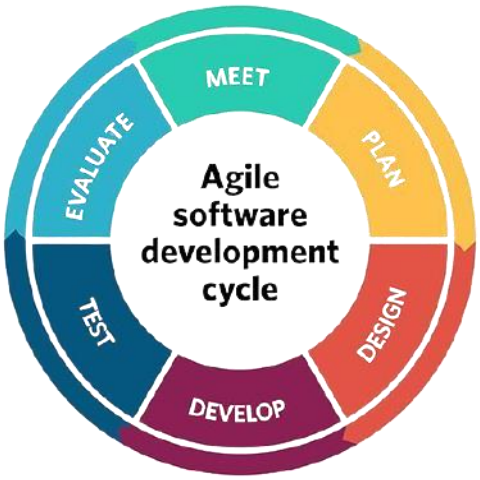

Fig 6.1: Agile Methodology

Why was Agile Methodology picked?

Agile was picked because our web application needs to be developed for the diabetes patients, health workers to close interaction with the users. Although this is a slowdown process, it has been seen that the requirements are being met. We used agile so that we can detect bugs at an early stage. Whereas Waterfall required everything to be defined in the beginning. In agile methodology, clients and the team converge on the best possible outcome. Any problem can be solved anytime. We have the chance to let our clients see the developing item, react to it, and change it as they want. Our clients also asked to change the survey and pre-test questions for that they provided us some documents. Our client also wanted to fix their report system for their fast data researching work. As this project is under the Government, Agile was the best for it. Agile also fixes time, cost, and quality and gives us the tools to change the business and specialized extent of the arrangement. You probably won't get all that you sought after, however you can believe what was delivered.

Chapter 7

Body of the work

7.1 Description of the work

This project is related to Jica, Nova Nordisk, Centre For Global Health Research, NCDC and Government of Bangladesh. Centre for Global Health Research is the possessor. Their main purpose is to conduct a survey and E-learning system for the Health workers and diabetes patients to create awareness among them for their research purpose. This web application is created for those who are working with health organizations like nurses, doctors, medical students, interns etc. In this pandemic situation, all the people of Bangladesh are unaware about covid-19. To trained the health workers, there is a online learning system. To get this course, user need to sign in first ,then user needs to enroll the course. In this learning method, it's easy to analyze the measurement of the knowledge about covid-19. If the doctor is not aware of this, this going to be hard for the Government to control this situation. There is also a survey management system for every person to measure the knowledge about covid-19. The is a covid-19 tracker to keep updating the covid-19 situation. Even users will get short term solutions by completing some questionnaires.

7.2 System Analysis

To identify the objectives of a system, system analysis is conducted for the purpose of studying it and its parts. This is a problem-solving process that determines how efficiently the system is running to accomplish their purposes. This contains some phases like planning, analysis, design, deployment and maintenance. It is a process of interpreting and collecting facts, finding out the problems and splitting up the system into its components.

7.2.1 Six Elements Analysis:

Table 7.1: Six Elements Analysis

Process	Human	Non Computing Hardware	Computing Hardware	Software	Database	Network and Communication
Visit website	All users	N/A	Pc,Laptop, Smartphones and tabs	All browser	MySql	WAN
Register	All users	N/A	Pc,Laptop, Smartphones and tabs	All browser	MySql	WAN
Login	All users	N/A	Pc,Laptop, Smartphones and tabs	All browser	MySql	WAN
Admin panel	Users who have access	N/A	Pc,Laptop, Smartphones and tabs	All browser	MySql	WAN
Survey	All users	N/A	Pc,Laptop, Smartphones and tabs	All browser	MySql	WAN
Quiz	All users	N/A	Pc,Laptop, Smartphones and tabs	All browser	MySql	WAN

7.2.2 Feasibility Analysis

The analysis of a proposed project to determine whether it is feasible and should go ahead is called feasibility analysis. Confirmation of design, plan and strategy makes sense or not is the main priority of this analysis. This can be used to validate assumptions, constraints, decisions and approaches. There are some main parts of feasibility analysis. They are -

- **Technical Feasibility:** In technical feasibility, evaluation of the software, hardware and the other technical requirements of the proposed system are performed. This

evaluates the details of how we intend to deliver a product or service to customers. Labor, think materials, transportation, where our business will be located, and the technology that will be necessary to bring all this together.

Our system has been developed using the current technology. Though PHP, XAMPP server, Mysql Database, HTML, CSS, BOOTSTRAP are existing from the past times, but still many applications are being developed with these throughout the world. Moreover, these technologies are very popular in the modern industry and are being used thoroughly.

- **Operational Feasibility:** Operational feasibility is a measure how well a proposed system solves the problems and satisfies the system requirements identified during the scope definition and problem analysis phase. It is dependent on human resources available for the project and involves projecting whether the system will be used if it is developed and implemented.

  Our web application has been developed in such a way that it can be conducted very easily. Health workers will accept it without any doubt. It is a well-planned system. People from all ages, especially health related organizations will be benefited from here. Their data will be used for research work. It reduces physical and technical hardships. Users do not need to have a lot of technical knowledge to run this system. Every instruction is very clear to the users. We hope this system will be able to fulfill the requirements of the users.

- **Economic Feasibility:** In economic feasibility costs and benefits are identified. It determines cash flow and assigns values to costs and benefits. Development costs and production costs are included in economic feasibility.

  This system has nothing but If this system can reach the users it will definitely bring benefits. On one hand it will reduce the costs of wasting pens and papers. On the other hand benefits will come depending on the uses.

7.2.3 Problem Solution Analysis

This system has nothing but If this system can reach the users it will definitely bring benefits. On one hand it will reduce the costs of wasting pens and papers. On the other hand benefits will come depending on the uses.

- **Eye strain:** As harmful radiations are emitted from the pc, laptop and mobile screens then it may cause some eye strain problems while using it for a long time.

- **Internet:** As this system will require stable internet connection once it is launched. So during giving quizzes no internet may cause problems to the users who will be giving quizzes and surveys.

- **Load shedding:** If anyone uses desktop and wifi-routers then load shedding may create problems while using this system.

Solutions: While there is a problem, there is a solution also. Now I am going to discuss about the solutions of the problems mentioned above -

- Eye strain solution: Brightness of the device should be maintained while using this system.
- **Solution to the internet problem:** Nowadays internet data is not so costly that we cannot afford that. So, users can purchase data when they will appear for any quiz or survey. Our system will not consume a lot of data as well.

- **Load shedding solution:** As this system can be run from laptop and mobile that do not require continuous electricity connection so users can use them very easily.

7.2.4 Effects and Constraints Analysis

Our web application will play a great role for Research work. It will save costs, minimize physical hardships and moreover it will make lives easier than before. As discussed earlier, our system has some constraints. As in our system, the user can use their name and phone number independently so it's not possible to translate it. All types of survey, Test and Pre-test questions can be uploaded in this system by admin. As it is a big project that is why we are planning to add some features.

7.2.5 Functional Requirements

Functional requirements represented the form of input to be given to the system, the operation performed and the output expected. They are basically the requirements stated by the user which one can see directly in the final product.

Table 7.2: Functional Requirements

Functions	**Input**	**Process**	**Output**
Visit website	Enter the website domain	Load data from the server and database	Show website
Participate online Survey	Enter the website domain	Load data from the server and database	Show online survey
Participate Online courses	Enter the website domain	Load data from the server and database	Show online Courses
Get involved webinars and facebook live	Input api key or password	Match with the api and password	Show webinars
view results of all quizzes and courses by admin	Input email and password in report system	Match with the registered email and password	Show report dashboard

7.2.6 Non-Functional Requirements

Non-functional requirements are basically modifiability, performance, reusability, comprehensibility and security, are often crucial for software systems. They should be addressed as early as possible in a software lifecycle.

Performance:

This defines how smoothly the Web application works in result and how much the system works in higher workloads. After launching our system, we checked the performance speed by gtmetrix. For image optimization, we used Tinypng for the fast speed load. We will do more research for the best performance. As the system is being used by the Health workers and general people, so we are going to make some plans for fast performance.

Compatibility:

The usage of the Web application is very simple, we just want to make the web application user friendly as possible for the users. However, there are a few minimum requirements needed to run the application. The requirements are common.

Hardware requirements:

- ❑ Pentium 5,1.4GHZ or above
- ❑ 512MB RAM or more
- ❑ Standard color display
- ❑ LAN/WIFI Network
- ❑ Any smartphone/Laptop/Desktop
- ❑ Keyboard & Mouse

Security: How are the web application's data secured against any kind of attacks. As our data is very important in this Covid-19 situation for the research work. For this, we have validated everything.

Usability: Usability is how easy the system is for the user. Our application is already user friendly. So, there is no problem running the application for any user.

7.3 System Design

7.3.1 Data Flow Diagram:

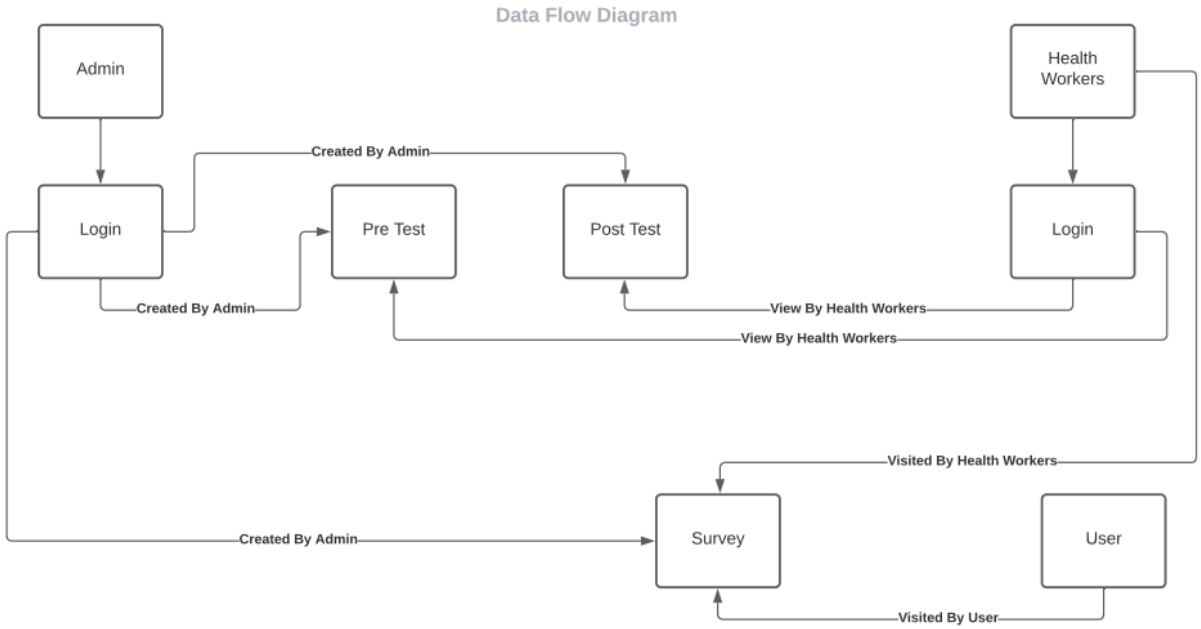

Fig 7.1: Data Flow Diagram

7.3.2 Rich picture

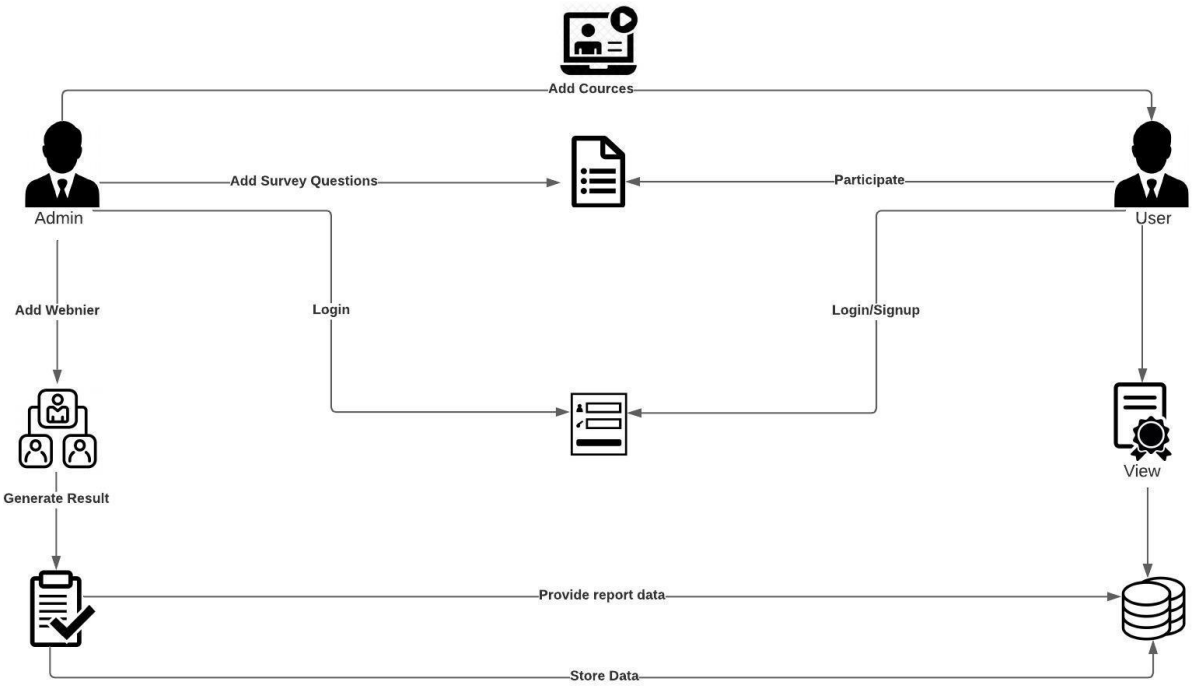

Fig 7.2: Rich Picture Diagram

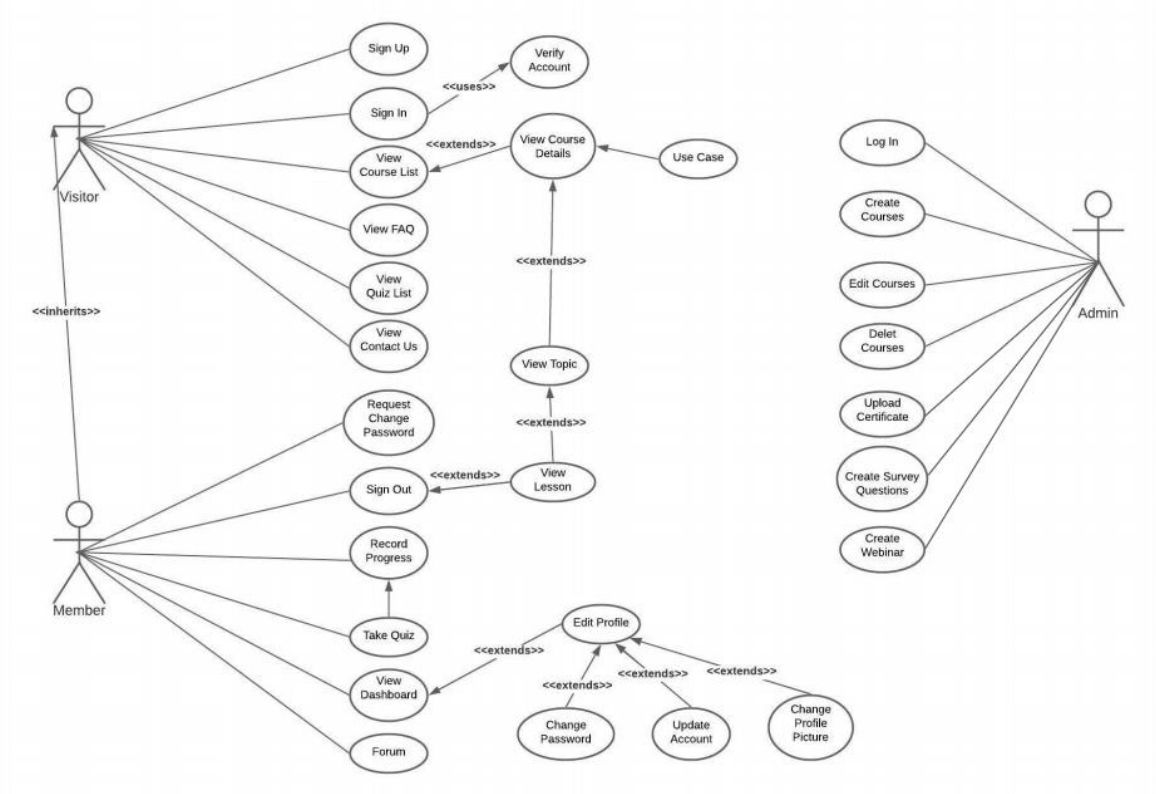

Fig 7.3: Use Case Diagram

7.3.4 UML Diagrams

Activity Diagram

The activity diagram is basically an advanced version of the flow chart which models the flow from one activity to another.

The admin UML diagram shows the activities and limits that the admin have in the system. Firstly, Admin cannot do his/her tasks without logging in.

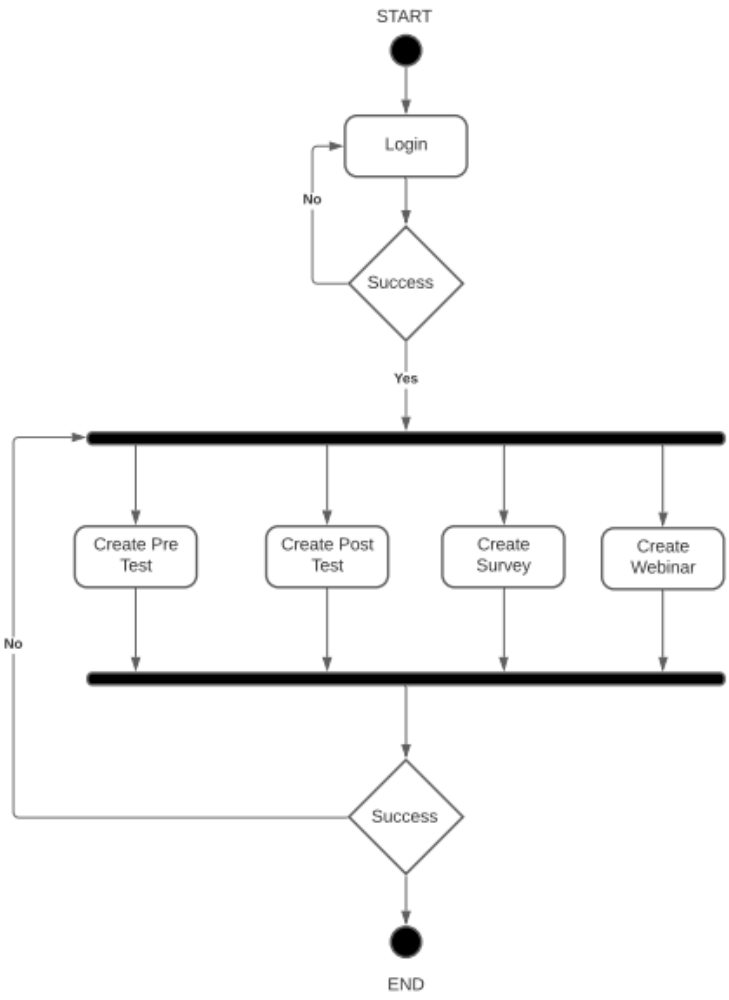

Fig 7.6: Activity Diagram of Admin

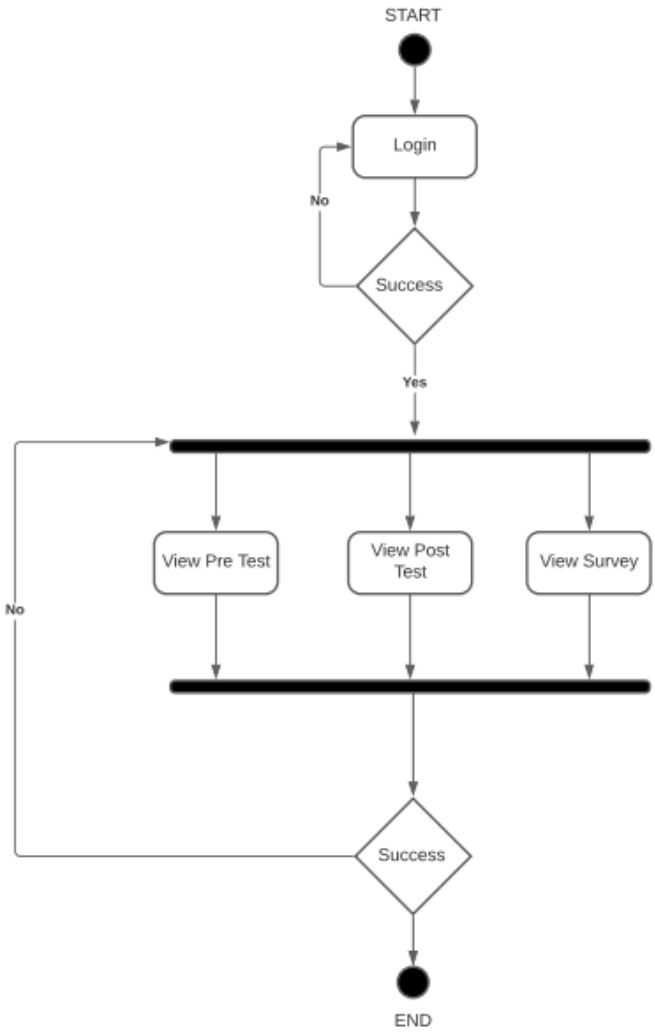

Fig 7.7: Activity Diagram of Health Workers

7.3.5 Process Flow Diagram

Questions generated by admin

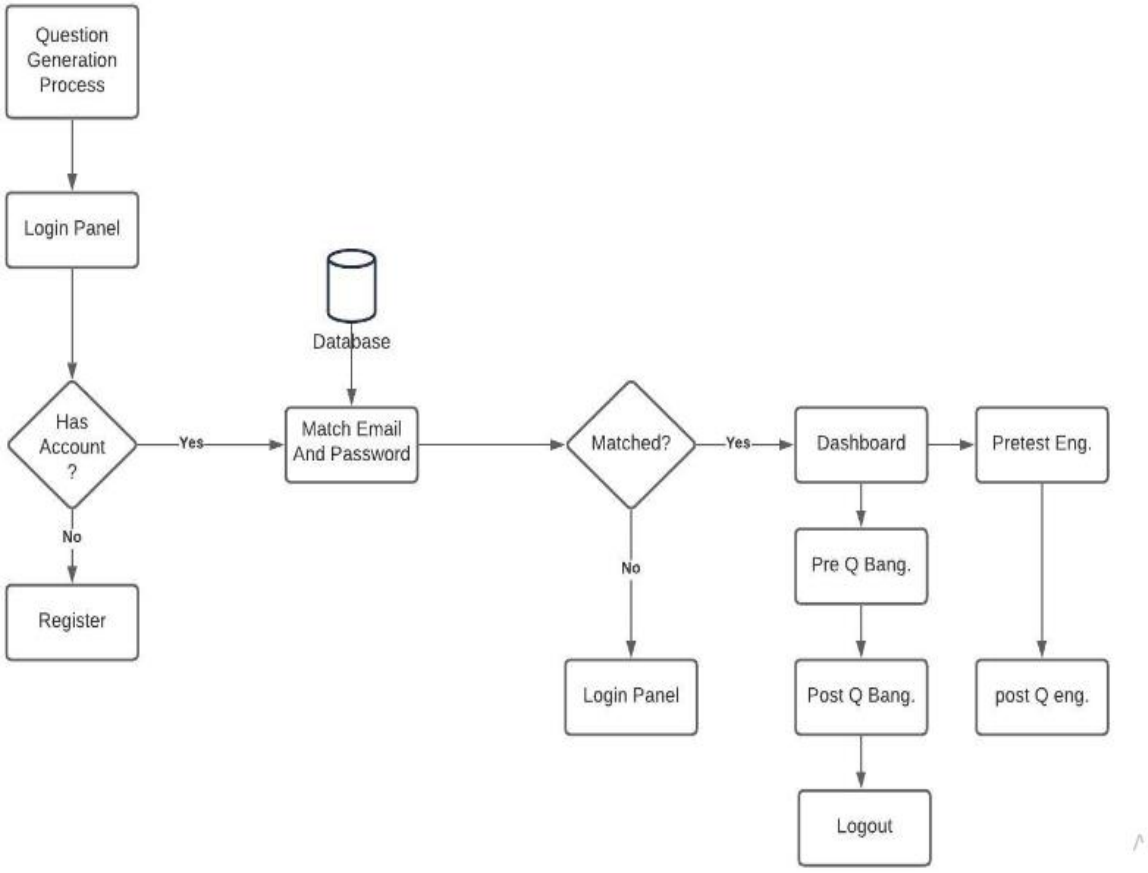

Fig 7.5 : Process Diagram

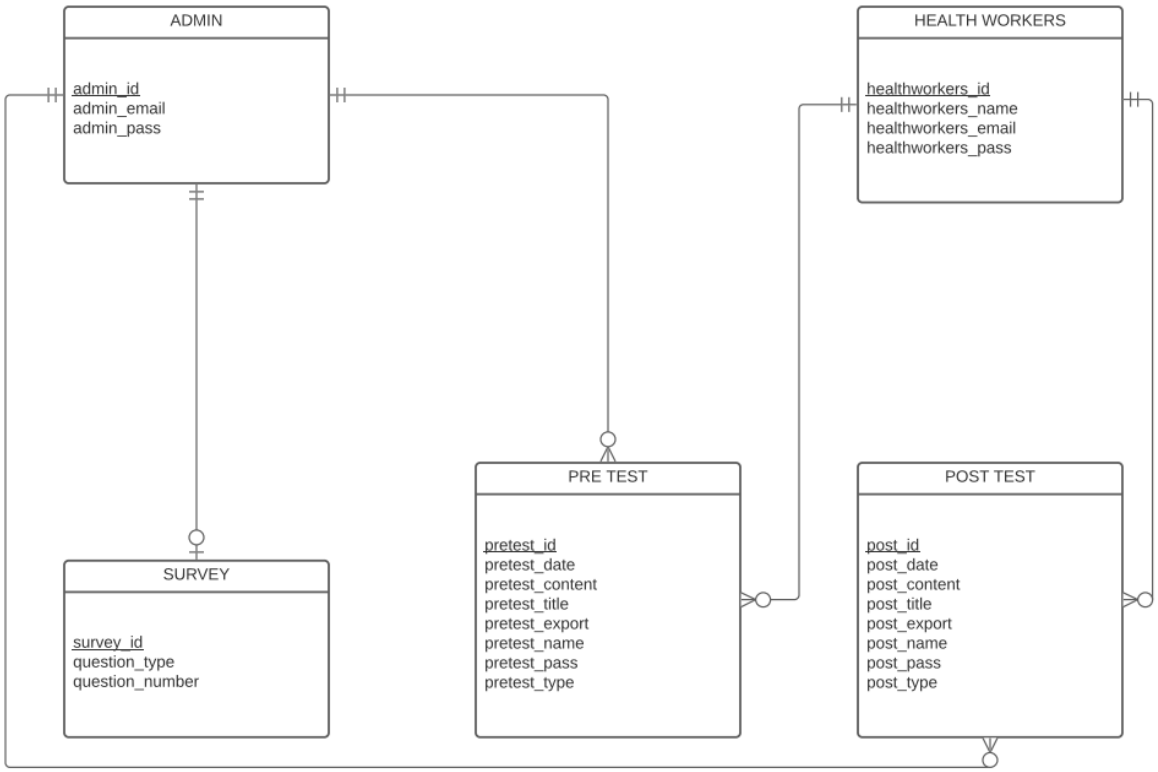

Fig 7.4: Entity Relation Diagram

Chapter 8

Product Features

8.1 Input, output and architecture

Input, output and architecture are mandatory to develop a system. With this, the designer can understand the overall behavior of the system. Before designing a system, the designer must know, what are inputs? and how should be the outputs? and how is the architecture of the system?[9]

Our web application has inputs like password, email, courses questions, survey questions, some personal information, Bangla or English quizzes. Admin can input the csv file to upload the pre-test quiz English, post-test quiz English, pre-test quiz Bangla, post-test quiz Bangla. This method for uploading many questions all together.

The outputs are the generated survey questions, pre-test English questions, post-test English questions, pre-test Bangla questions, and post-test Bangla question, webinars for meeting, password, dynamic website and so on. For all these, we will need a browser.

Chapter 9

Result and Analysis

9.1 Overview

When we are working on any projects, we always do our best for the good result. In this pandemic, our web application is going to play a vital role in our country. Our survey system is will save the cost of pens, paper and many other things. This system is very user friendly for the user. The user can also do the survey easily because the questions are generated in Bangla. Any user can do the survey anytime. The admin can easily set the survey and online learning courses. The users who are registered in our system can easily participate in online courses. This course will help the users, especially the health workers to increase the knowledge about Covid-19. There is scope for the registered user to do the online course in Bangla or English whatever they want.

When the online course is done, the user will get a certificate for completing the course. There is a report system, where the admin can download the survey and online courses result by up to date. The pre-test and post-test results are merge into one file. This method will help the admin to research faster than before.

In the admin panel, the admin can add pre-test, post-test quiz both Bangla and English. The admin also edits or updates the survey questions easily.

Our web application is user friendly and looks very good. Only the admin can change everything if they want. everything related to the website can be added, edited, updated and deleted.

As we are living in a digital world, we all want to do everything at our home. So, our system can help a lot by saving time and costs.

Chapter 10

Project/Work as Engineering Problem Analysis

10.1 Sustainability of the product/work

Software sustainability is one part of software engineering. Sustainability should usually be considered from the first software stages of the development process. This process is not always feasible, because it is not easy to change how developers work. When any product can not sustain and fulfil the requirements of the end users in future times, it becomes a total waste of time, cost and hard work. That is why, before starting a project proper planning and analysis should be done.[12]

In our project we have tried to continue working with proper planning so that it exists for a longer period of time. In this Covid-19 situation, it's really hard to take survey from people manually. As our survey system is online based so this system will work great once it reaches every user. People are also very comfortable to do online surveys and courses In our system, the user does not need to login to participate in the survey system. There is an online course system to train the health workers how they have knowledge about Covid-19 before and after the course. As our system is totally online so if proper resources of different topics can be maintained then we hope it will run for a longer period of time.

10.2 Social and Environmental Effects and Analysis

Every work has some positive or negative social and environmental effects. Social and environmental should be highly maintained in every work. For sustainability of any projects social and environmental fact are very important. Our system will help the people, especially diabetes patients and health workers to increase their knowledge about Covid-19 by giving the survey and quizzes. Our system basically creates awareness among the general public, diabetes patients and health workers like nurses, doctors, medical students etc. If the health workers are trained well about covid-19 so they can play a vital role to general people to increase their knowledge, what

are the symptoms, what to do in covid-19 situation. People are gonna benefit as they don't need any physical hardships. This system will save costs over pens and papers and their making processes will help our society.

10.3 Ethics and Ethical Issues

Ethics is the discipline dealing with what is good and bad and with moral duty and obligation. Actually, ethics determines the characters. Projects that are beneficial for the users contain all the things that remain under positive ethics. Our system is totally secured. All the users data is preserved in such a way that others can not see them. General people can give the survey anytime without login. The passwords can not be decrypted as it is properly encrypted. As a whole we can say that our system will work for the welfare of the users maintaining all ethical issues properly.

10.4 Test Case

Test Case acts as the starting point for the test execution, and after applying a set of input values, the system has a definitive outcome and leaves the system at some end point. Even though the test cases are widely used by testers across the world, process oriented organizations get unit test cases prepared by developers also the testers have a clear picture of what expectations need to be achieved in order to give a final sign off.[7]

10.4.1 Test Case Analysis

The items which need to be tested-

- ❑ Login of the CGHR
- ❑ Add online courses(admin)
- ❑ Add survey questions(admin)
- ❑ Add Webinar(admin)
- ❑ Upload survey questions
- ❑ Upload Quiz questions
- ❑ View survey results
- ❑ View Quiz reports
- ❑ Change password

- ❑ Download quiz reports
- ❑ download survey reports
- ❑ Report merge (Bangla and english)
- ❑ Reset
- ❑ Logout

10.4.2 Test table

Table 10.1: Test table

Sl no	Test case name	Test case description	Precondition	Test steps	Expected result	Aual result	Status	Remarks
1	Login	The login is working	User must add same details to the login criteria	i)Add user_email and password ii)Click on the login button to get access to the account	i)If user input is correct, the website will login successfully. ii)If user input is wrong, the website will show"Unknown username. Check again or try your email address."	Login successfully done	Pass	None
2	Add courses	Admin can add courses	i)Must login to the system ii)User must to be admin	Input the accurate information in the interface.	i)User can upload the courses (pre-test quiz english, post-test quiz english, pre-test quiz bangla, post-test quiz bangla ii)Click on the submit button	Course add successfully	pass	None
3	Add survey questions	Admin can add survey questions	i)Must login to the system ii)User must to be admin	Input the accurate information in the interface.	i)Admin can create questions and upload them.	Survey questions added successfully	Pass	None
4	Add webinars	Admin can add webinars	i)Must login to the system ii)User must to	Input the accurate information in	Admin can create zoom meeting	Webinar added successf	Pass	None

			be admin	the interface.		ully		
5	View survey reports	Only admin can view the survey reports	i)Must to login ii)File must be uploaded	i)Click on the survey type and download it from date to date	Success if survey is done	View survey report	Pass	None
6	View quiz English	Only admin can view the quiz English report	i)Must login to the system ii)User must to be admin iii)ii)File must be uploaded	i)Click on the quiz type and select it quiz english. ii)Admin can download it from date to date.	Success if Pre-test English is done	View quiz English report	Pass	None
7	View quiz Bangla	Only admin can view the quiz Bangla report	i)Must login to the system ii)User must to be admin iii)ii)File must be uploaded	i)Click on the quiz type and select it quiz Bangla. ii)Admin can download it from date to date.	Success if Pretest Bangla is done	View quiz View report	Pass	None
8	Change password	Check the password is accurate	Internet connection	i)Click lost your password ii) type email and click send for a code verification	i) Notification "new password approved". ii) Error if not approved.	i)Pendin g	pendi ng	None
9	Logout	Make sure that Logout function works correctly	i) All users can do this ii) Login first	i) Click Logout	i) Notify " Logout Successful"	i) notificat ion showed	Pass	None

10.4.3 Test result

The test is done successfully. But there are still some errors. We will fix it as soon as possible. A lot of medical students and doctors have already done the courses. Users can view the numbers who successfully completed the courses. The testing team will prepare different documents that help to explain the easy and complicated tasks, procedures, methodologies, etc. relevant to the testing process.

Chapter 11

Future Work

During the internship, I worked on a website which is related to Covid-19 and diabetes. We have tried hard to build the system beneficial to the general people and health workers. In our project, We are focused on general people especially diabetes patients and health workers. We have some plans to improve our system, as our system merges the pre-test and post-test reports, we want to add a graph analysis system to the report. So, the researcher can understand the difference in knowledge about covid-19 before and after completing the test. We also want to add information about vaccines. So, the general people will keep updated.

11.1 Conclusion

Our web application is going to play a vital role in our country. This system is very user friendly. By measuring knowledge about Covid-19, The government can understand the current situation. How are the health workers aware about this covid19 and train them to give the proper knowledge. Our survey system will save the cost of pens, paper and many other things. This system is very user friendly for the user. The user can also do the survey easily because the questions are generated in Bangla. Any user can do the survey anytime. The admin can easily set the survey and online learning courses. This online courses is mandatory for every doctor to get the covid-19 certificate. The users who are registered in our system can easily participate in online courses. As the situation is still worse, We have some plans to update the system more fast and research work.

Appendix

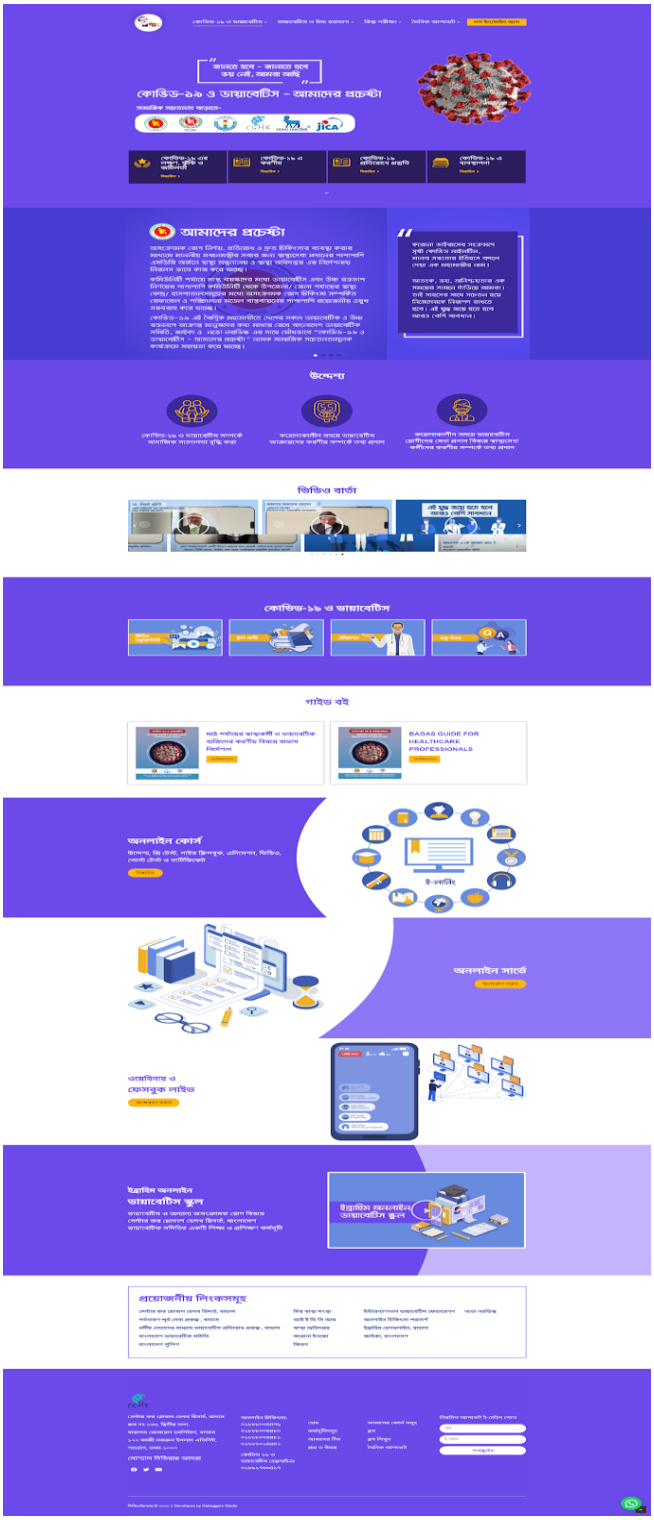

Fig: Home Page

Fig: Diabetes And High Blood Pressure

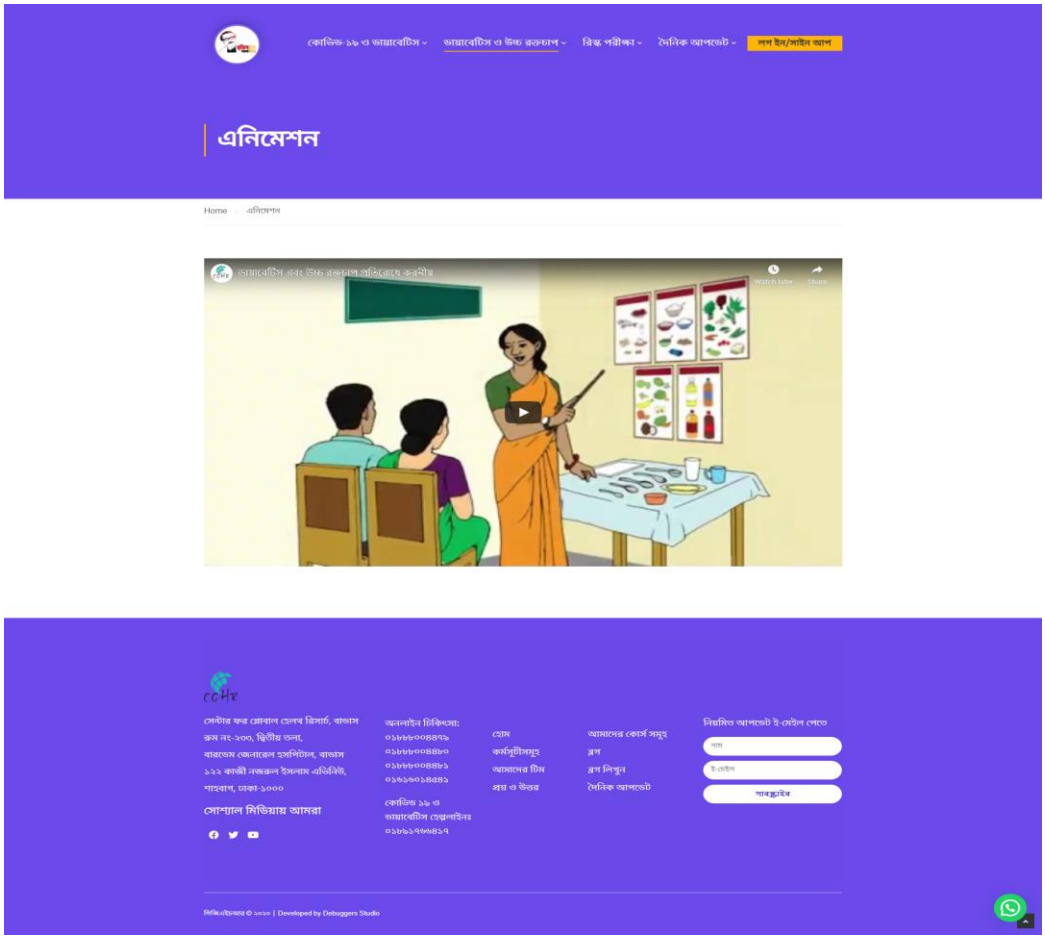

Fig: Animation

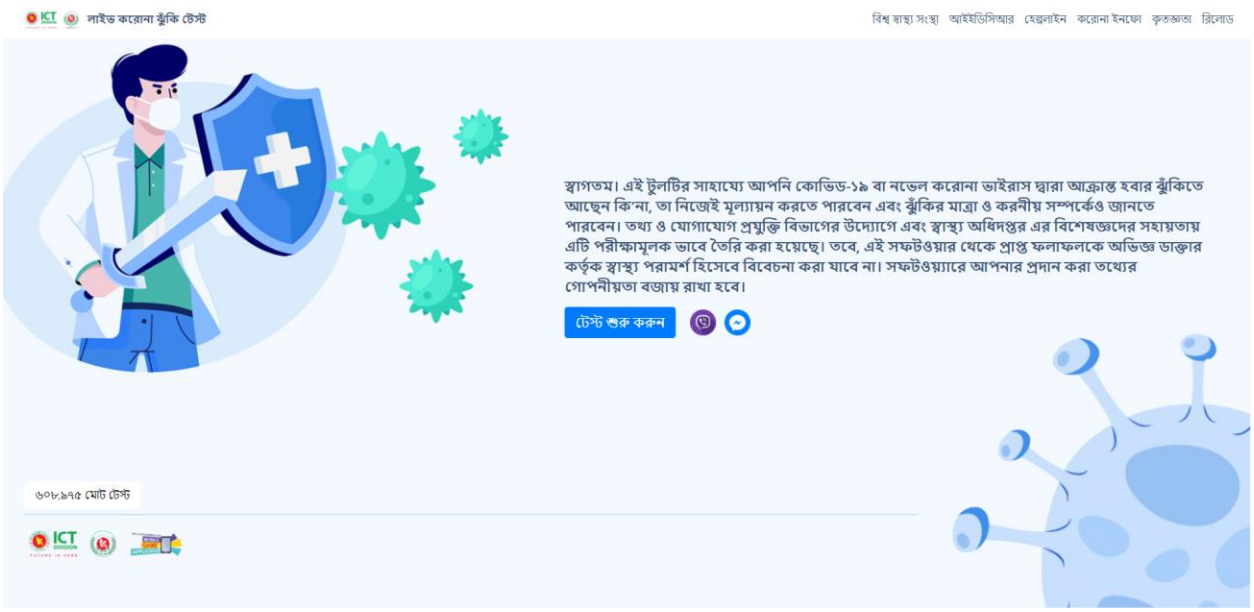

Fig: Live Corona Test

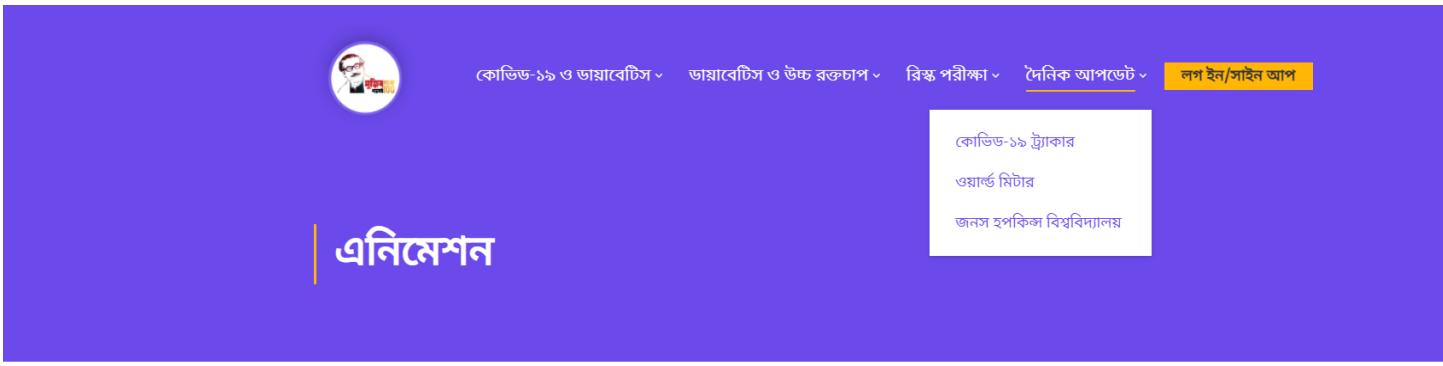

Fig: Daily Update

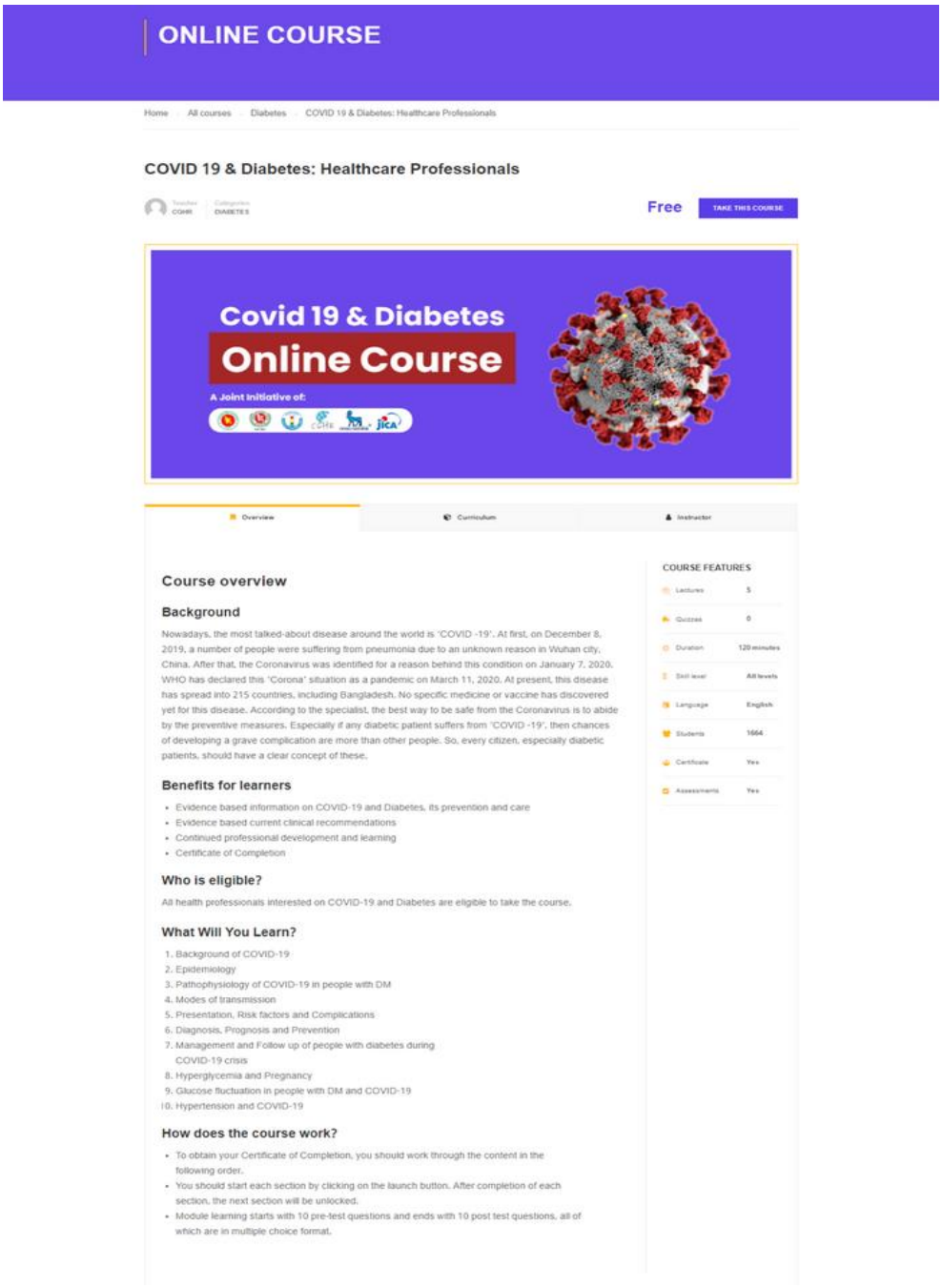

Fig: Online Courses

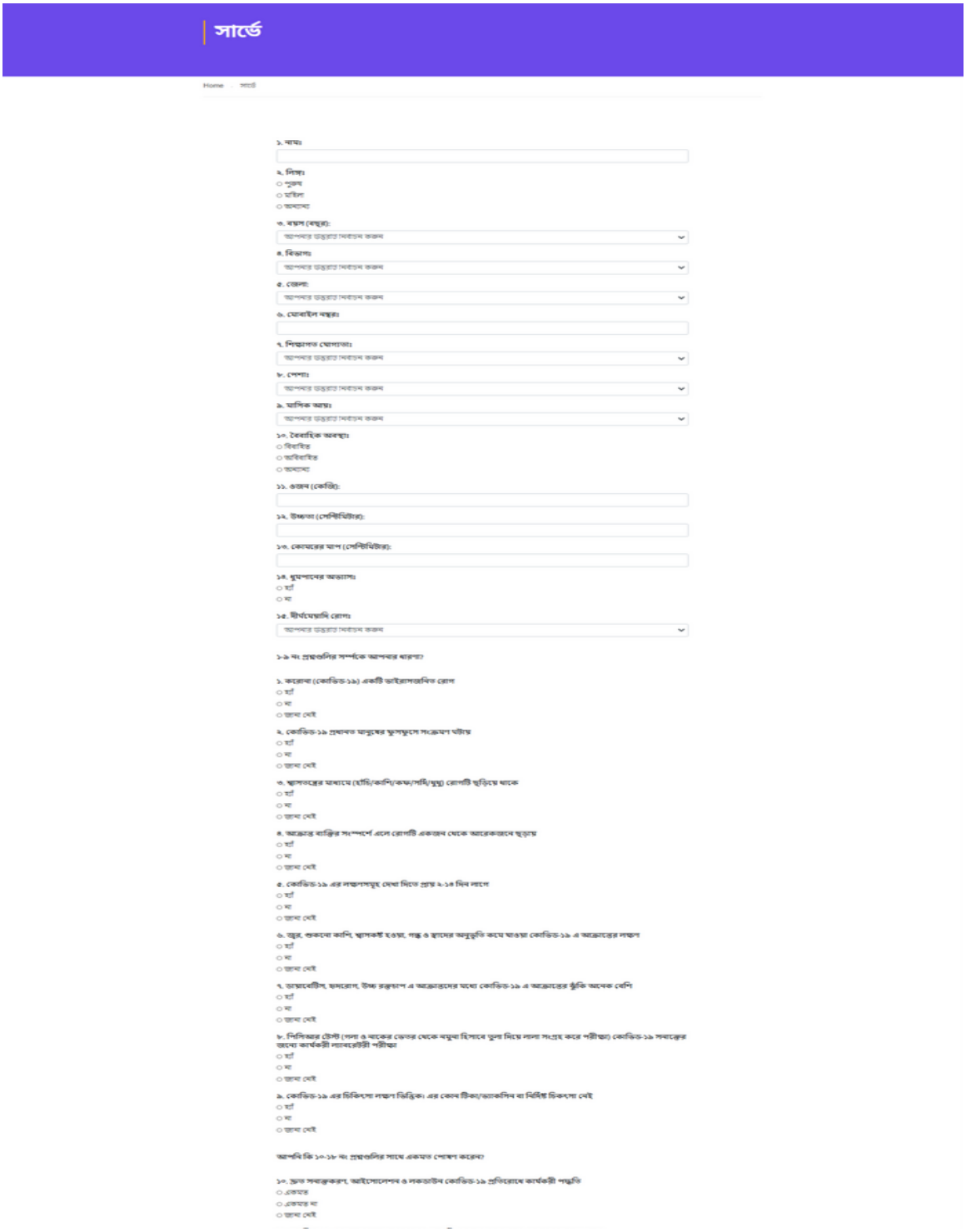

Fig: Covid-19 Online Survey

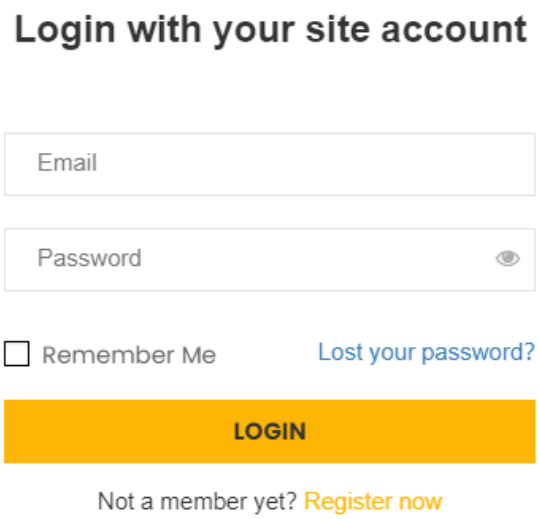

Fig: Login page

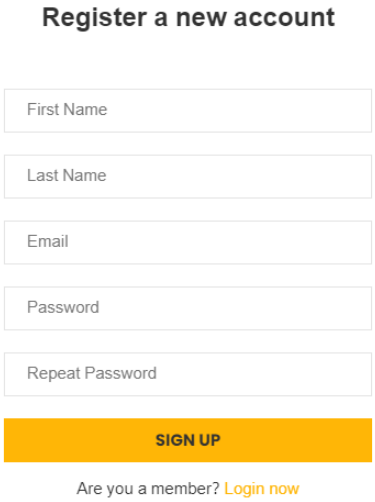

Fig: Signup

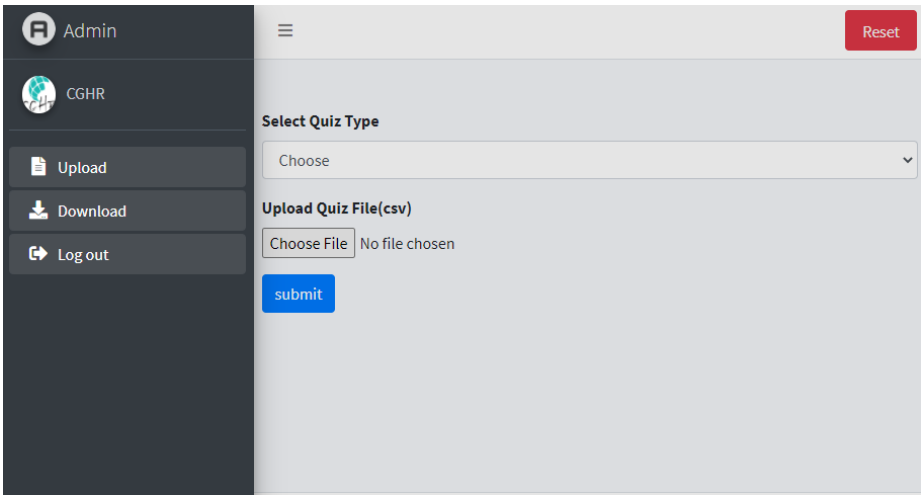

Fig: Admin Report Page

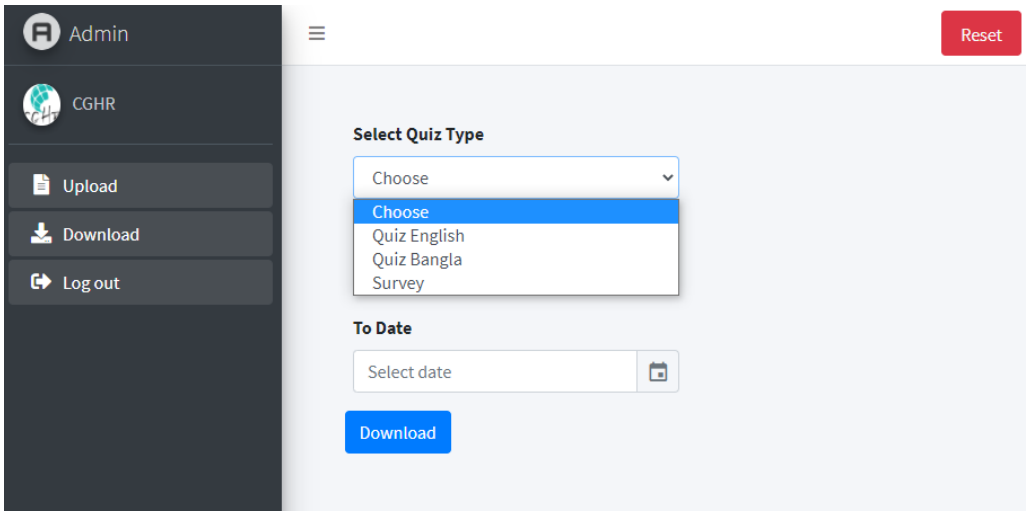

Fig: Report Download Page

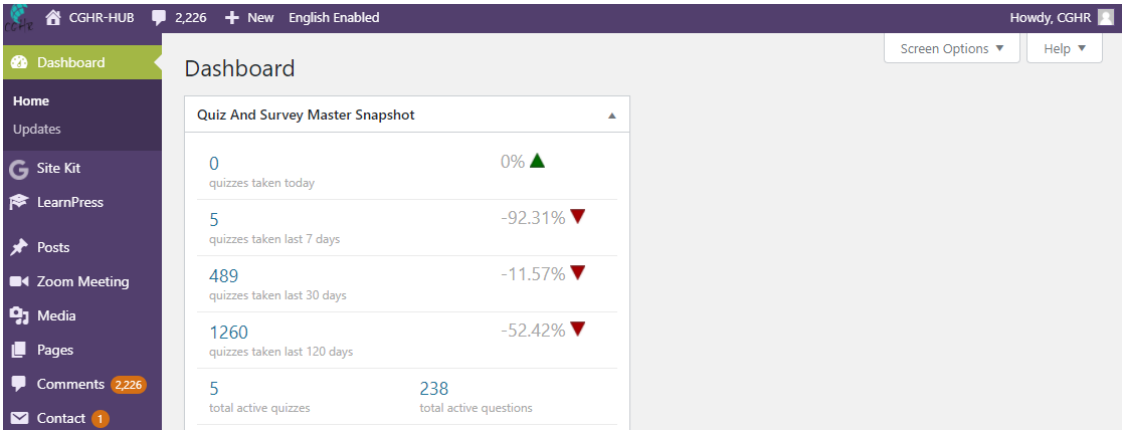

Fig: Dashboard Page

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