# Online Lab exam system

BY

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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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**DAFFODIL INTERNATIONAL UNIVERSITY**

Dhaka, Bangladesh
Date: Thursday 14 January 2021

# APPROVAL

This project titled "ONLINE LAB EXAM SYSTEM", *submitted by Md. Ariful Islam ID No: 162-15-1073* *Md. Nazmul Alam ID No: 162-1093* and *Md. Naimul Islam ID No: 163-15-1145* Student of 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 and Approved as to its style and contents. The presentation has been held on Thursday 14 January 2021.

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# <u>DECLARATION</u>

We hereby declare that, this project has been done by us under the supervision **of Md. Mahfujur Rahman, Lecturer, Department of Comfuter Science and Engineering** in 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 of diploma.

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We are considerably thankful to our advisor Md. Mahfujur Rahman, Lecturer, Department of CSE, Daffodil International University who guide us nicely to try to this work. His patience and mentality always give us a spirit that who can we complete this work. He provides all sort of resource associated with this. So, we will get the particular theme to satisfy our work. We also thank to our Co-advisor Md. Reduanul Haque, Sr. Lecturer, Department of CSE Daffodil International University who always suggest us about our Project. Wish to thank Dr. S.M. Aminul Haque, Professor and Associate Head, Department of CSE he's one among the great people and guide us nicely for doing project work.

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Thanks to all of you!

# ABSTRACT

Online lab exam system is very useful for all engineering students. It's very complicated to maintain routine and Now covid-19 situation running that's why it's really impossible to physically attend in classroom. Online lab exam system is a Web application that help to attend in lab exam and communicate with teacher in exam time. Here our aim is to serve students the easy way to attend the lab exam and communicate with teacher as really life exam hall and teacher can manage time and routine or schedule without any problem. Every student can share their problem and chat with teacher. We try to provide a platform for both student and teacher. Teacher will be easy to monitoring all student and solve problem argent. It will be easy to manage time, because time showed on her/his screen or monitor. So student and teacher both fare at the stage of them. We thinking It will best platform for taking exam in online and all are benefited from this platform too.

# INDEX

| CONTENTS | Page No. |
|---|---|

LIST OF FIGURES                                        PAGE

# CHAPTER 1

## PREFACE

### 1. Introduction

The idea is to provided a application for students and instructor. The application provides an instructor-friendly remote monitoring of lab, effective evaluation and grading methodology. The system also provides a student-friendly remote login, software access, and problem resolution through effective help from the teacher.

### 2. Motivation

Every student and teacher can participate in the exam without any problem and any situation. Now covid-19 pandemic situation running in the whole world that's why we are trying to continue our study via the online platform. This type of platform will create a very good option for us to participate in any lab exam especially for our university.

This platform will be effective and easier for monitoring students for teachers.

### 3. Objective

- Can see list of lab experiments
- Can see list of lab exams
- Can identify copying/opening windows others than IDE
- Can chat student with teacher
- Can send a help request to instructor
- Can chat with instructor
- Marks will generate automatically after exam

### 4. Additional Features

- Generate pin number for every exam
- Student can access via pin number
- Notification about exam to very registered student

### Advantages:

For instructor: 1. To save time for not checking every student exam

2. To find grade of students very easily

For student: 1. Don't have to task a help from instructor manually

### 5.    Key Component

**<u>Frontend Tools:</u>**

- HTML
- CSS
- Bootstrap
- JavaScript

### 6.    Key Component

**<u>Backend Tools:</u>**
- Python
- FrameWork Django

**<u>Database:</u>**

- SQLite

### 7.    Expected Outcome
We will develop a dynamic system with interactive design to provide a easy and faithful system to teacher and student both.

# CHAPTER 2
# LITERATURE SERVEY

## 2.1 Introduction

Now a days everything is becoming automate and every person is trying to their work easily, automate any method for reduce time. So, Our project will be helpful for student and teachers both for reducing time and maintain routine or schedule. This platform connected student and teachers form anywhere. This Web base project is built using latest technology such as HTML, CSS, JavaScript, Python, Django that is framework of Python etc.

## 2.2 Associate work

In the field of web there are lot of work already have been done. There are some specialized system have been created by some company. Some honorable mention is basecamp and teamwork. These portals offer the simplest way to manage project and research work so easily.

## 2.3 Comparative Studies

Purpose: The motive of the paper was to lead the other software's around who are working in online exam system and online exam system related works as well.

Design/Methodology/Approach: The paper presented descriptive way managing online lab exam system using Web platform.

## 2.4 Scope of the problem

Maintaining the lab exam, Question, pin number for individual exam and there is no memory Requirement. This project created a opportunity to solve problem bellow.

- ➢ Maintain data table
- ➢ Chat between student and teacher
- ➢ Maintain the application in cloud server
- ➢ Maintain Database
- ➢ Manage media files in cloud server
- ➢ Manage static files in cloud server

## 2.5 Challenges

Usability is foremost challenge of our web application. Still now this system is not familiar to the students. They have to cope it up with this.

Internet is needed to run this application through a browser, Without internet the system will not run. So internet is must need to use this system and that's why our project title is online lab exam system, it's impossible to use without internet.

English is used as a language to use this system.

Maintaining and updating processes are the special challenges for our web application.

# CHAPTER 3

# Requirement Specification

## 3.1 Requirement collection and analysis

This is Online lab exam system. This application is created and develop in line with necessity. Demand of a system classified in two categories (Computer code and hardware needs). We tend to get all the date for this technique.

## 3.1.1 Admin Requirement

- This project between students and teachers friendly site. So here admin can add, edit and even delete from database according to need.
- Only permitted person to entrance the appliance. When the user logs in to the system, the user must enter his/her login details within the valid username and password fields then student ID need for Identify real student properly. The user clicks on the login button and if id and pin number measure valid, then the user is given access to the appliance and user profile will be displayed.
- Whether the users overlook the pin number, it very well may be recovered by option forgot password button. A tick on this catch can let to a security question and if the arrangement is confirmed. The message with the right pin number is given to the client.
- He can also add question and any solution
- If any user can't update their profile that time admin help them for their profile update.

- **3.1.2 Student Requirement**
  - Ability to edit own profile
  - Ability to follow others user profile
  - Ability to submit her/his problem and solution
  - Ability to edit solution within limited time
  - Ability to meet with others student

### 3.1.3 Requirement Component

To carry our project we need hardware and software and those are given below

## Hardware

- 1 GB ram
- 1 CPU Core
- 24 GB SSD Storage
- 2 TB Transfer
- 40 Gbit Network In
- 125 Mbit Network Out

## Software

- Python 3.x
- Pip
- Git
- Virtualenv
- Django
- Database
- Project related Packages

### 3.1.4.1 Hardware Requirement

To run this Project we need pc or mobile phone and internet connection must.

### 3.1.4.2 Software Requirement

A website developed and maintain to needed many types of software and tools these are given below

- ➢ `beautifulsoup4  4.9.3`
- ➢ `Django  3.1.4`
- ➢ `django-bootstrap-form  3.4`
- ➢ `django-bootstrap4  2.3.1`
- ➢ `importlib-metadata  2.1.1`
- ➢ `Pillow   8.1.0`
- ➢ `Pytz  2020.4`
- ➢ `Soupsieve  2.0.1`
- ➢ `Sqlparse  0.4.1`
- ➢ `Zipp  3.4.0`

## 3.2 Use Case Modeling

Use case diagram could be a behavioral UMl Diagram kind and often accustomed analyze varied system. They allow you to see the various kinds of roles during a system and the way those roles act with the system. A **use-case diagram to** present a **model** of how different types of users interact with the system to solve a problem.

## 3.2.1 Use Case Model
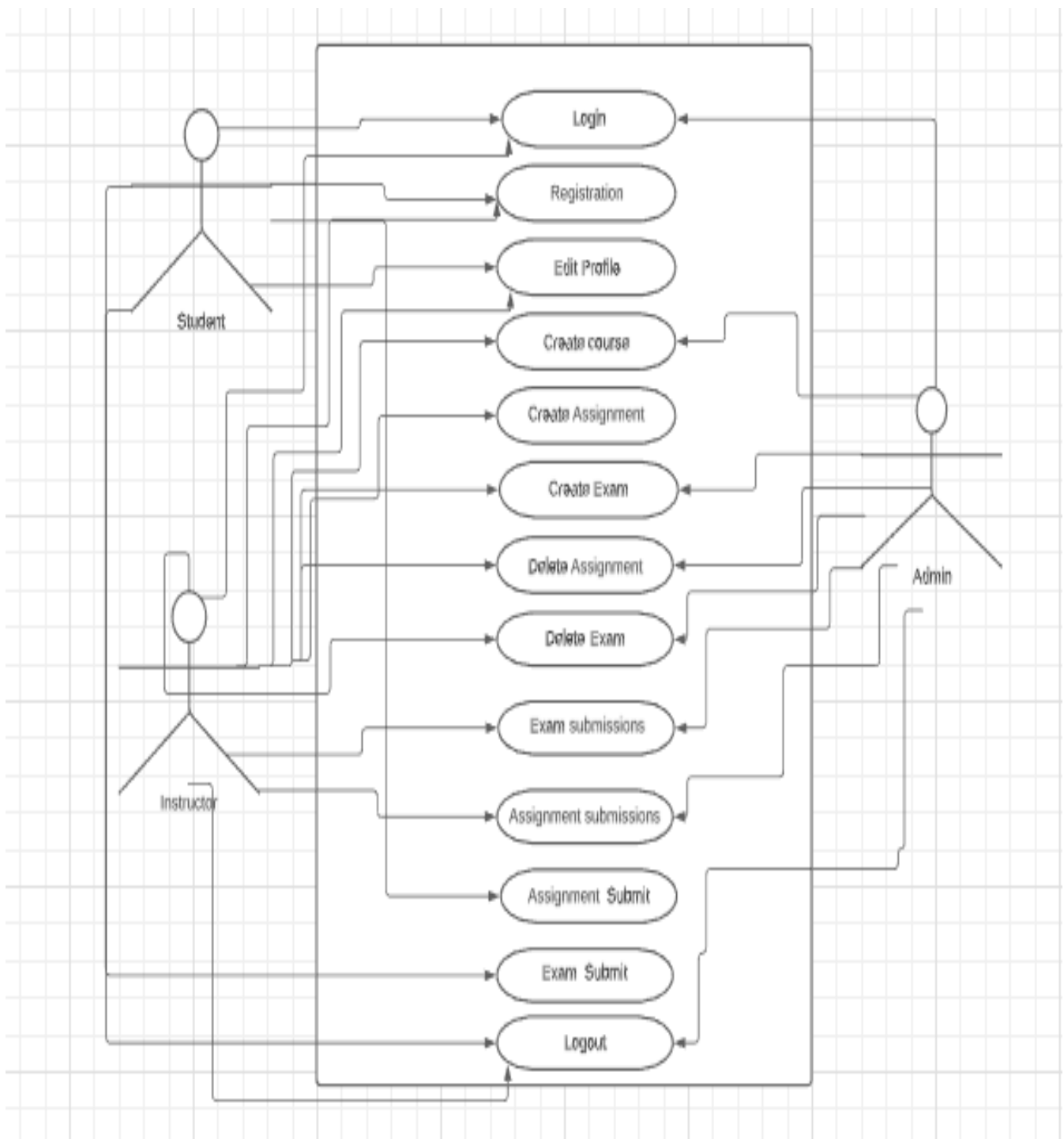
## 3.2.2 Entity Relationship Diagram
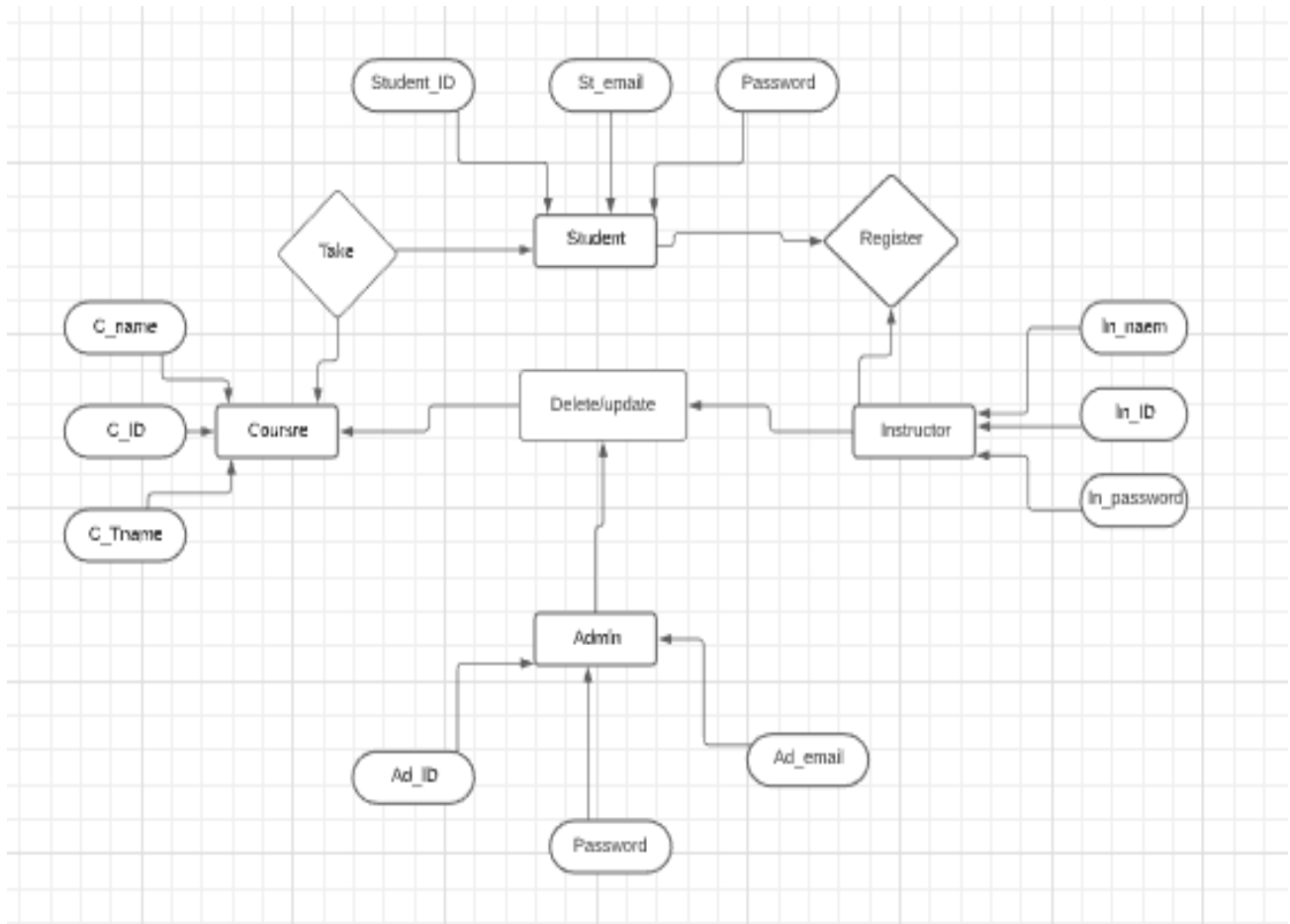
### 3.2.3 Use Case Description

We are trying to present our project one page or one slide by Use case diagram. We have three actors Admin, Instructor and Student. This project trying to present lot of feature like login option for all users individually then registration for Student and Instructor. For Instructor have many task Create course, create assignment, Exam Question, check assignment submissions, Check exam submissions etc. From student account, student can submit assignment and exam paper etc. Admin have access to update course, delete course and then he has access to modify all work and solve problem. This all information presented by the use case diagram.

## 3.2.4 Add Course

**Only Instructor have right to create course for student and admin have access to modify course. From varsity provide right which subject create by Instructor**

Dhaka, Bangladesh          info.onlineLab@gmail.com                                    f  ✗  G⁺  in  ℗

**OnlineLab**                                                                  HOME    👤 AB ˅

### Create Course

**Course Name**

Enter Course Name

**Image**

Choose File  No file chosen

**Teacher Name**

Teacher Name

**Teacher Details**

Teacher Details

**OnlineLab**                                                                  HOME    👤 AB ˅

**Description**

Description

**End Date**

Create

21

## 3.2.5 Create Assignment

**Only Instructor have right to create course for student and admin have access to modify course. From varsity provide right which subject create by Instructor**

## 3.2.6 See Course

## 3.2.7 See Assignment

**OnlineLab**

**Instructor :** Md. Mahfuzur rahman raju

About Instructor

In publishing and graphic design, Lorem ipsum is a placeholder text commonly used to demonstrate the visual form of a document or a typeface without relying on meaningful content. Lorem ipsum may be used as a placeholder before final copy is available

About Course

In publishing and graphic design, Lorem ipsum is a placeholder text commonly used to demonstrate the visual form of a document or a typeface without relying on meaningful content. Lorem ipsum may be used as a placeholder before final copy is available

Assignments

Exams

Course Duration

Jan. 11, 2021 - 12-12-12

## 3.2.8 Edit Student Profile

Dhaka, Bangladesh    info.onlineLab@gmail.com    f   ▾   G+   in   ℗

**OnlineLab**

HOME   AB ∨
Nazmul

### Edit Profile

**First name**

ab

**Last name**

c

**Email**

abc@gmail.com

Update

### 3.2.9 Design Requirement

➢ HTML
➢ CSS
➢ Saas
➢ Bootstrap
➢ JavaScript

### 3.3.1 Student Requirement

➢ Their valid ID in this system
➢ Prepare their course code and collect access from teachers
➢ Add this ID and Username

### 3.3.2 Admin Requirement

➢ Add student, edit delete.
➢ Add position, edit delete.
➢ Add solve, edit delete.
➢ Manage user id

### 3.4 DIU ERP

In our web site we added additional for DIU ERP and DIU site. DIU ERP means DIU Student Portal. By this site Student can easily login student portal and if they click DIU login our web site, This time automatically entire the Daffodil International University site. For this benefit which student login our web site their doesn't need install app in mobile phone or doesn't need save bookmarks in their browsing site. Our web site can use other organization.

# CHAPTER 4

## Design Specifications

### 4.1 Front-end Design

With a view to finishing front-end improvement, we've utilized three primary languages for my project.

- HTML
- CSS
- Bootstrap structures
- JavaScript Programming
- Ajax

### 4.1.1 Hypertext Markup Language(HTML)

HTML elements unit of measurement in the building blocks of Web pages. It permits the client to make and structure areas for web site design purpose, sections, heading, connections and square statements for website pages and applications. HTML components square measure diagrammatical by tags, written exploitation angle brackets.

### 4.1.2 Cascading Style sheet (CSS)

It is a decent practice to isolate page structure from its plan and maintain web page. To do as such, CSS is utilized as a styling dialect. It characterizes format, shading, estimate and different traits of page components. CSS report is a content record containing and arrangement of CSS rules, where rule comprises of selector and presentation square. Each standard influences page content indicated in selector guiding either toward: All components of one kind in a DOM.

### 4.1.3 JavaScript

JS is deciphered programming language which is commonly utilized at client side to control client input, control the program activities, load extra substance to a program and make changes to the DOM. In short, it gives functionality to a page [10]. JS code can be added to HTML document in two ways:

- Inline JavaScript, JS code is written as content of HTML document between opening and closing <Script>tag.
- External JavaScript, JS code is written in external file and reference to the file is defined in <script> tag Attribute. Any content enclosed by the <script> tag is not executed.

When HTML <script> element is reached, during parsing of HTML document, the JS code defined by the tag is immediately executed in a browser using built-in JS interpreter.

## 4.2 Back-end Design

### 4.2.1 Python

Python is a general-purpose coding language for back-end perform, which means that, unlike HTML, CSS and beside web development. That includes back and development, software development, data science and writing system scripts among things.

Python is a much more powerful language that can be used to create machine learning, artificial intelligence, deep learning, robotics, web application, desktop application, web site etc.

### 4.2.2 Django

There are many frameworks (flash, fug, cubic web, Django, falcon etc) to create web applications among them Django is popular now.

Django has some great features. This feature is useful for APT, by using this we can easily build a web base project that's why we choose Django for our project.

Django works with MVT(Model-View-Template). It is a software design pattern for developing a web application.

Django framework is to allow developers to focus on components of the application that are new instate of spending time on already developed components.

### 4.2.3 Database (SQLite3)

Database management system all perform the same basic task which is enable users create, edit and access information in databases in easy way. Significantly each management system can differ with its additionally the features, functionality and support associated. There are many popular databases in web application.

1. PostgreSQL: PostgreSQL is open-source and free, yet a very powerful relational database management system.

   If you require your database to perform custom procedures, PostgreSQL, being extensible, is the better choice.

2. MySQL: MySQL is the most popular one of all the large-scale database servers. Web application can simply work on MySQL, despite the constrains, flexibility and scalable tools easy to use an manage which proves very useful in the long run.

3. SQLite3: In certain times when SQLite can be more efficient than others. We use SQLite3 if we were to work with XAMPP localhost for our website, we would have to create a separate database site and manage it separately and we have to keep it open always. So, we use SQLite for our web site. As if it's a demo project and we are not doing it commercially, this is create only for our varsity web site. For this site more-then 1000 data and SQLite is enough for this data.

### 4.2.4 Django API

API stands for Application Programming Interface.

API means there is an application in a site like google map this google has created. Now I want to create a new map likes google map but it is very complex and hard working too. So I want to bring the information that google use in his site and show it in my interface. Basically that's process called API. We have use API in our project.

How does APT work?

As such we are fetching information from UVA and Codeforces.

At first, we send a HTTP Request to UVA and Codeforces to give us link, because we take information through the link. So, we say give us the information against the link. For this we will send an API request and against this request they will send a response. That is called JSON Response.

JSON is a dictionary that contains a lot of information and we can get information from this what we need

Through API request, when we asked CodForces and UVA to give their users information then they sent big packet/list through JSON response. The packet contains may the username, how much problem has been solved, what is the ranking position, when was the last he/she won the competition, number of problems solved, number of solving acceptance etc. Since this is a demo project, we only use 3 information (username, total submission, ranking position) to API generate.

After getting JSON response, we work with API management. API management is the sorting or rearranging the information. By JSON, the provide the information we are sorting or decorating very well and this process is called API management.

## 4.2.5 Crontab

Basically, the Crontab run Unix based on Operating System and it is closely similar to Windows Task Scheduler. It Allowance for post your own "magic rules" for the useful and time sparing automation of any scripts which you will be working with.

For executed commands and performs scheduled tasks at a specific date or time the Corntab is a long running process.

Cron Is uers Schedules Job which run automatically at a certain date or time and administration of perform system.

## 4.2.6 Fcntl Module

The fcentl module provide an interface to ioctl and fcntl function on Unix. All are used for I/O device handles and operations on file handles. This includes things likes controlling blocking, reading extended attributes, modifying terminal behavior.
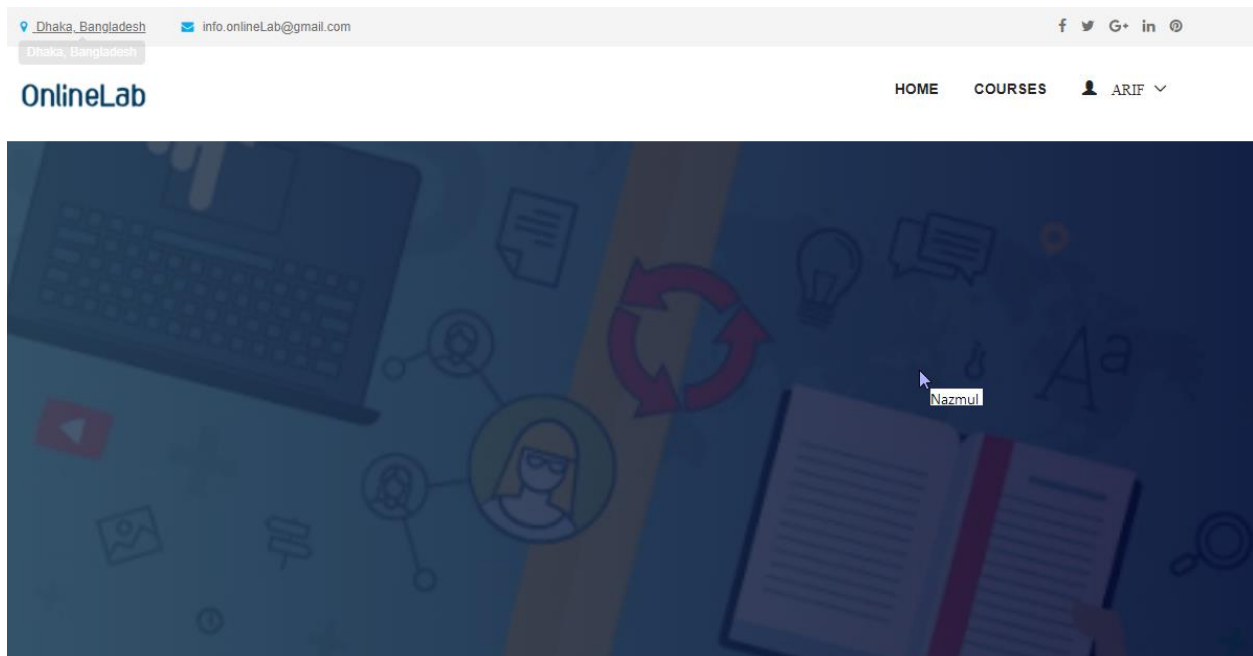
# CHAPTER 5

# IMPLEMENTATION AND TESTING

## 5.2 Implementation of database

The database utilization or game plan is the technique of foundation of database programming, arrangement and customization, running, testing, planning with application, and setting up the clients.
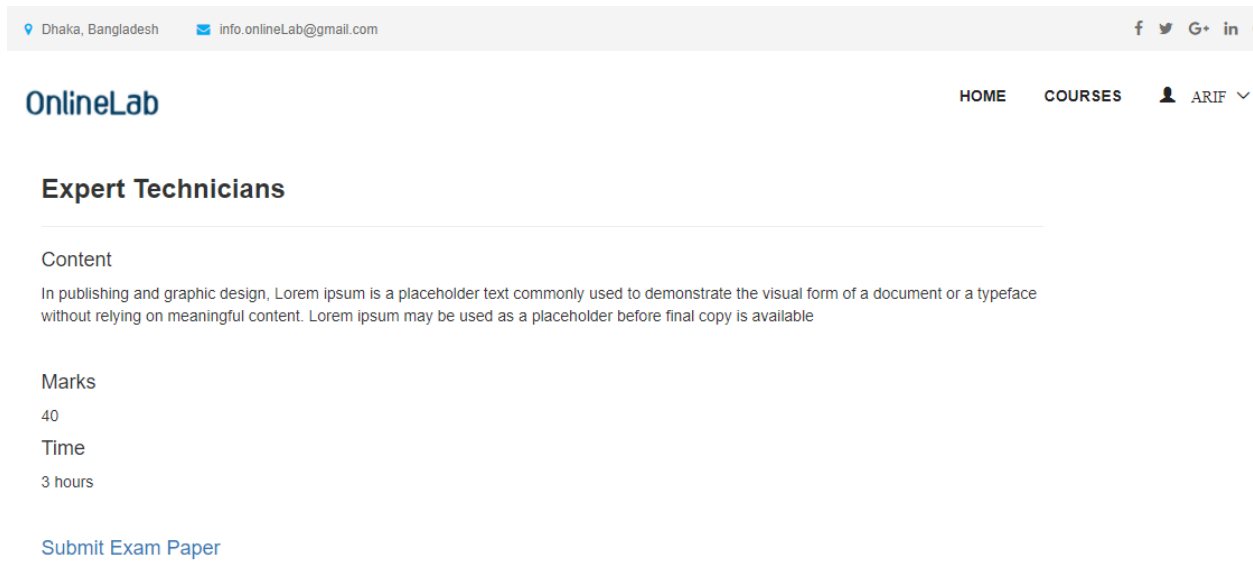
## 5.2 Implementation of Front-end Design

Improvement of the customer side of WA is called front-end advancement and front-end(FE)itself if them comprehended as each substance client can see and can connect within a program. It is commonly a mix of Hypertext Markup Language(HTML), Cascading Style Sheet (CSS) and JavaScript(JS). Every one of these dialects is deciphered and controlled by an internet browser bringing about a website page-interface client can cooperate with. Set of all accessible pages is called site.
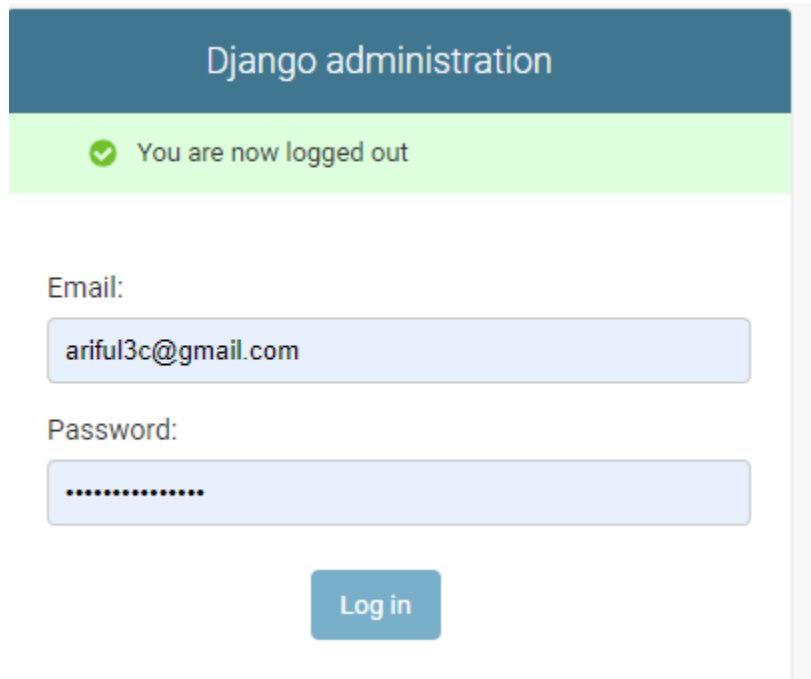
## 5.2.1 Home Page



## 5.2.2 Question



### Expert Technicians

Content

In publishing and graphic design, Lorem ipsum is a placeholder text commonly used to demonstrate the visual form of a document or a typeface without relying on meaningful content. Lorem ipsum may be used as a placeholder before final copy is available

Marks

40

Time

3 hours

Submit Exam Paper

### 5.2.3 Admin Login



**Django administration**

✓ You are now logged out

Email:

ariful3c@gmail.com

Password:

•••••••••••••

Log in

## 5.2.4 Instructor Registration

OnlineLab                                        HOME    REGISTER ∨    👤 LOGIN

### Instructor Registration

**First Name**

Enter First Name

**Last Name**

Enter Last Name

**Email**

Enter Email

**Password**

Enter Password

**Confirm Password**

Confirm Password

Register

## 5.2.5 Student Registration

**OnlineLab**                                              HOME    REGISTER ∨    👤 LOGIN

### Student Registration

**First Name**

Enter First Name

**Last Name**

Enter Last Name

**Email**

Enter Email

**Password**

Enter Password

**Confirm Password**

Confirm Password

Register

## 5.2.6 User Login



## 5.2.7 User Edit Profile



## 5.3 Implementation of Interaction

Online lab exam system made as nowadays winding up increasingly extreme, by and by and tremendous they tend to forsake the shopper to deal with fluctuated idea of the system alone. Actualizing the product bundle style into the code and type style is that the most significant a piece of the product bundle. This can be the occasion some portion of the apparatus. During this part codes are composed and fundamental needs

are collected to make the product bundle. There's a major interest for systems with singular, setting sensitive encourage.

## 5.4 Implementation of Testing

The project is completed using Python, Django the other technology like html, css, bootstrap etc. For ensuring usage and other technology feature assurance white box testing and black box testing.

## 5.4.1 Main System Testing

Being the – landing page of the readying entry was tried for acceptable network to the info. Inappropriate suggested linkage to the info was instantly corrected and confirmation was created to visualize that info were created enough recovered and exhibited while not mistakes.

## 5.5 Test Result and Report

The standard of the framework was awfully near the required outcome. Throughout this structure, the advancement was drained modules. Each module was dead severally and tried. Extraordinarily prepare involves troubleshooting, that was done and every one blunder settled. The total framework was coordinated by connation each module to figure with the principle framework" At the end of the mixture, the total framework was tried and confirmed Ok.

## 5.6 Future Plan

We are keep continuing our concentration of study that our web site will add in our "DIU ERP and BLC". And when teacher and student pace any problem then they inform to admin. Admin try to serve all problem solution. This site it's automatically send all CSE Department Student.

# Conclusion

Now a day's whole world is running depend on web base and each business just as different stages are relying upon it. In this trend we following and think our application play a great role to ensure working possibility for university and school, college level and this will be effective for academic purpose. Using this platform, it is possible to take exam 100% properly for student and teacher both site and then Using this platform it's very easy to manage time. This project makes ensure to add extra layer of security. This will add position or solution without any concern. Future Scope ensure is necessary for a project.

So, We tried to keep future opportunity to enhance this project.

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