

# **DYNAMIC WEBSITE FOR DIU BNCC PLATOON**

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## **FINAL YEAR DESIGN PROJECT REPORT**

**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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**January 12, 2025**

# APPROVAL

This Project titled “Dynamic Website for DIU BNCC Platoon”, submitted by Abdul Fattah Mujtabir Samin 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 and approved as to its style and contents. The presentation was held on 12-01-2025.

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# DECLARATION

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I hereby declare that this project has been done by us under the supervision of **Md. Amir Sohel, Lecturer (Senior Scale), Department of Computer Science and Engineering, Daffodil International University**. I also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

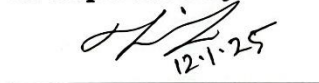
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ii

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# ABSTRACT

DIU BNCC Platoon is one of the relatively new additions of the institution of Bangladesh National Cadet Corps run at the Daffodil International University with an aim of building up leadership, discipline, and patriotism among the learners of the university. As a Tri-Service youth organization, BNCC has a role in the Student-Industrial Relations in addition to working for the defense force and in nation building. In other BNCC programs of different universities of Bangladesh, there is a lack of dynamic and easily accessible information system, thus this research paper intends to identify the concretization of an exclusive Internet-based system for the DIU BNCC program. Indeed, as suggested there is a peculiarity of the platform in an analysis of its major goal, with aims at providing the BNCC program information to the students in an understandable format that the students will be able to engage with and view training schedules, events and registration processes in a simple way. Holding sections such as Cadet Corner where specific experiences can be posted, an achievement showcase, and an honor roll on which Cadets may be thanked for boosting the sense of unity and pride among the members. From these discussions, it is clear that the current BNCC platforms lack the comprehensive tools for providing effectiveness, availability and authentic time response compared to previous static BNCC platforms. This research, therefore, establishes the need for the proposed Dynamic Website for DIU BNCC Platoon. Apart from the rather obvious matters of technique, this project was planned to enhance BNCC programme turnout among the cadets, consolidate them such that they work towards a common goal and change for the better.

# Table of Contents

<b>Approval</b>	<b>i</b>
<b>Declaration</b>	<b>ii</b>
<b>Acknowledgements</b>	<b>iii</b>
<b>Abstract</b>	<b>iv</b>
<b>List of Figures</b>	<b>vii</b>
<b>List of Tables</b>	<b>viii</b>
<b>1 Introduction</b>	<b>1-6</b>
1.1 Introduction.....	1
1.2 Motivation .....	1-2
1.3 Objectives .....	2-3
1.4 Methodology .....	3
1.5 Project Outcome.....	4
1.6 Organization of the Report .....	5-6
<b>2 Background</b>	<b>7-10</b>
2.1 Introduction.....	7
2.2 Literature Review .....	7
2.2.1 Similar Applications .....	7-8
2.2.2 Related Research.....	8-9
2.3 Gap Analysis .....	9
2.4 Summary .....	10
<b>3 Methodology/Requirement Analysis &amp; Design Specification</b>	<b>11-26</b>
3.1 Overview.....	11
3.1.1 Proposed Methodology/ System Design .....	11-12
3.1.2 Functional and Nonfunctional Requirements.....	12-13
3.1.3 Context Diagram .....	13
3.1.4 Data Flow Diagram Level 1.....	13-14
3.1.5 UI Design .....	14-24
3.2 Detailed Methodology and Design.....	24-25
3.3 Project Plan .....	25-26
3.4 Task Allocation.....	26
3.5 Summary .....	26

<b>4</b>	<b>Implementation and Results</b>	<b>27-29</b>
4.1	Environment Setup .....	27
4.2	Testing and Evaluation/Performance/ Comparative Analysis.....	28
4.3	Results and Discussion .....	28-29
4.4	Summary .....	29
<b>5</b>	<b>Engineering Standards and Design Challenges</b>	<b>30-40</b>
5.1	Compliance with the Standards.....	30
5.1.1	Software Standards.....	30
5.1.2	Hardware Standards .....	30-31
5.1.3	Communication Standards.....	31
5.2	Impact on Society, Environment and Sustainability .....	31
5.2.1	Impact on Life.....	31
5.2.2	Impact on Society & Environment.....	31-32
5.2.3	Ethical Aspects .....	32
5.2.4	Sustainability Plan.....	32
5.3	Project Management and Financial Analysis.....	32-34
5.4	Complex Engineering Problem.....	34-40
5.4.1	Complex Problem Solving.....	35-38
5.4.2	Engineering Activities .....	38-40
5.5	Summary .....	40
<b>6</b>	<b>Conclusion</b>	<b>41-43</b>
6.1	Summary .....	41
6.2	Limitation .....	41-42
6.3	Future Work .....	42-43
	<b>References</b>	<b>44</b>

# List of Figures

3.1.3	CONTEXT DIAGRAM .....	13
3.1.4	VISUAL REPRESENTATION OF DATAFLOW .....	14
3.1.5.1	HOME PAGE .....	15
3.1.5.2	ADMIN LOGIN .....	16
3.1.5.3	ADMIN INTERFACE .....	16
3.1.5.4	ABOUT SECTION .....	17
3.1.5.5	NOTICE ADD INTERFACE FOR ADMIN .....	17
3.1.5.6	ALL THE IMPORTANT NOTICES .....	18
3.1.5.7	CADET CORNER (ARMY WINGS) .....	19
3.1.5.8	CADET CORNER (NAVY AND AIR WINGS) .....	19
3.1.5.9	TRAINING DETAILS .....	20
3.1.5.10	GALLERY OF THIS WEBSITE .....	20
3.1.5.11	GALLERY UPLOADED BY ADMIN INTERFACE .....	21
3.1.5.12	REGISTRATION FORM .....	21
3.1.5.13	APPROVAL PAGE IN ADMIN SIDE .....	22
3.1.5.14	APPROVAL AND PENDING LIST IN ADMIN SIDE .....	22
3.1.5.15	DETAIL REPRESENTATION OF STUDENT INFO IN ADMIN SIDE .....	23
3.1.5.16	SLIDE IMAGE UPLOAD PAGE IN ADMIN SIDE .....	23
3.1.5.17	MORE MEMBER ADDED BY ADMIN SIDE .....	24
4.2	SYSTEM TESTING .....	28

# List of Tables

2.2	COMPARATIVE ANALYSIS WITH PREVIOUS WORK.....	8
3.4	TASK ALLOCATION OF THIS PROJECT.....	26
5.3.2	FINANCIAL ANALYSIS.....	34
5.4.1.1	MAPPING WITH COMPLEX PROBLEM SOLVING .....	35-36
5.4.1.2	MAPPING WITH KNOWLEDGE PROFILE .....	37-38
5.4.2	MAPPING WITH COMPLEX ENGINEERING ACTIVITIES.....	38-40

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

Bangladesh National Cadet Corps (BNCC) is a youth organization, a Tri-Service defense force organization comprising the Army, Navy, and Air Force. BNCC aims to develop leadership, discipline, and patriotism among its youth members. The Bangladesh National Cadet Corps (BNCC) at universities helps students build leadership skills, stay disciplined, and become more involved in their communities. Students are trained by military staff and personnel throughout their time in the program. By participating in BNCC activities like training exercises and service projects, students improve their physical fitness, learn important life skills, and develop a sense of national pride. At Daffodil International University [4], the BNCC provides students with the opportunity to grow as leaders, serve their community, and contribute positively to their nation. The goal of building this website is to make it easy for everyone to find information about the program in one place. It helps students learn how to join, stay updated on activities, and see photos and achievements of cadets. By providing clear details and updates, the website keeps everyone connected and informed, and supports the growth and success of the BNCC program.

### 1.2 Motivation

The following are some of the reasons that led to the development of the DIU BNCC Platoon project with focus on new challenges and improvement of cadet and stakeholder experiences. Today, BNCC programs utilize web pages or emails or telephone for their messaging, which proves ineffective and time consuming and disjointed. This project is still envisaged to fulfil this role and help close the information gap by creating a one-stop online tool that aggregates, among other items, training schedules, notices, and updates on events. Besides, since there is no definite requirement on how to join BNCC and the ways through which one can be updated with regards to its advantage as well as the activities being made, this

becomes tricky for the students to deal with. To overcome this issue, the platform is designed as friendly and without any restrictive elements to make interaction effective.

As the demand for technological competencies increases, the platform fosters the cadets' basic interaction and registration instrument that is innovative and functional. But it also organizes a formal way of enumerating and celebrating the accomplishments of BNCC cadets in leadership, community service and personal development thus promoting pride and motivation. By engaging the community, it fosters closeness in relations between cadets, alumni, and instructors and hence enhances the feel of the community. Other components such as Cadet Corner foster exchange of learning experiences and best practice, as well as shearing of interesting stories, which solidifies the BNCC community.

With the world turning to digital solutions for sustainable development of universities and organizations, this project will be the move towards digital change in BNCC systems for greater efficiency and relevance in future. Through addressing these motivations, the DIU BNCC Platoon project aims to transform itself as an ultimate BNCC experience for DIU, and create one of the shining examples for others on nationwide similar initiations while ultimately aiming at improving youth and nation.

### 1.3 Objectives

The primary objective of the BNCC DIU website is to create a sense of community among BNCC members by offering a dedicated space for sharing experiences, stories, and tips through the Cadet Corner. The key objectives include:

1. **Centralize Information:** To provide a single, easy-to-navigate platform where students and prospective cadets can access all relevant information about the BNCC program, including activities, registration, and updates.
2. **Facilitate Communication:** To enhance communication between BNCC members, university staff, and the broader community by offering up-to-date announcements, news, and important notices.
3. **Showcase Achievements:** To highlight the accomplishments of BNCC cadets through galleries and the honor board, celebrating their successes and

contributions.

4. **Simplify Registration:** To streamline the process for students interested in joining the BNCC, providing clear instructions and an efficient registration system.

5. **Promote Engagement:** To inform and encourage participation in BNCC training activities and events, ensuring that current and prospective cadets understand the benefits and opportunities available.

## 1.4 Methodology

The creation of the website of the DIU BNCC Platoon was done by a systematic procedure to address the purpose of the two facets of the learners separate from the administrative side of the varsity. Laravel based platform programmed in PHP, with a MySQL database, offers two-tier views for users and administrators. The BNCC members have the ability to self-enroll and students can sign up for the program, the BNCC administrators can manage the memberships, add content and oversee the activities. The system follows Laravel's Model View Controller design pattern that separates the business logic from template layers and includes extra features like a flexible notice board and a multimedia section and a secured online payment gateway. Unit, integration and user acceptance, testing was being done on the platform in order to ensure it is reliable. After the deployment, the website gets updated for more content and further expansion to serve the DIU cadets a better, effective and highly modernized platform.

Here I have both the user and admin interface where the users, who are the students of the university, can add themselves as a cadet member. Also the Admin can add people as both user and admin. When a user sends a request admin can approve them or cancel by analysing details that the person mentioned in the form. They can see the approved students list and pending students list also. As well as the members can see all the notices that the admin post through the admin section. So that the members can track all the important notices. Nobody can access the admin interface unless the person is admin or has the permission to access through the admins.

## 1.5 Project Outcome

The official website of DIU BNCC Platoon has been developed as a groundbreaking tool, which has completely changed the existence of Bangladesh National Cadet Corps (BNCC) in Daffodil International University. This project has improved the organization of the program's multiple components and management of its information on a centralized, user-friendly online platform. The platform gives easy access and navigation to training schedules, notices, events updates, which will enable the students to be up to date in real time.

Another of the project deliverables is the proposed mainly integrated membership scheme. Self-registration of students allows its members to join BNCC with minimal modalities while the admin interface for managing cadet data provides for easy approval/rejection of requests. As a result of this structural change, the administrative burden has been lessened and the likelihood of errors resulting from manual labor eliminated.

Further, the more fluid responsive design elements of the website, particularly the Cadet Corner and various multimedia galleries, have well developed a spirit of camaraderie among the cadets. These features promote exchange of information, knowledge sharing, plus sharing of success stories which reinforce their loyalty with the BNCC and amongst themselves. The honor board acts to reward them on management as well as service, this encourages motivation and pride amongst the individuals.

In addition, the fact that the university has added an online payment portal has made the registration of fees easy since students can directly pay from the website. This modern payment integration is safe and convenient for all clients in terms of paying for service.

Therefore, the purpose of the website for the DIU BNCC Platoon is not only to solve the current problems of communication and organization of the BNCC's memberships but also to lead the way to a more enhanced, intelligent, and innovative experience of the BNCC of Bangladesh. This work will be a revolution in the development of the new improved outlook in BNCC in tune with the modern world as a reference institution for other institutions aspiring to embrace the prospects of an advanced youth transformative agenda in the digital era.

## **1.6 Report Organization**

This report is structured to provide a clear and systematic overview of the DIU BNCC Platoon project, detailing its development, design, implementation, and impact.

### **Chapter 1: Introduction**

This chapter begins by presenting the context and idea for the DIU BNCC Platoon project with a brief on the BNCC and the rationale for the development of a digital platform for effective communication and management of membership and engagement. This paper outlines why the project was deemed necessary, its goals and scope of the work, how the platform was built, and final results.

### **Chapter 2: Background**

This chapter provides an understanding of the context in which the BNCC program is being implemented at Daffodil International University, a discussion of prior applications and various related studies. It also draws out what currently needs to be addressed by the BNCC systems and provides the background for the following proposed solution.

### **Chapter 3: Requirements analysis and design specifications**

In this chapter, information on the system design and the functional and non-functional requirements of the website under development is described, as well as the context diagram, data flow diagram, and the User Interface design. An outline of a project plan, how the tasks are to be assigned, and a detailed focus on the design and implementation aspects are also pointed out.

### **Chapter 4: Implementation and Result**

This chapter primarily discusses the environment to set up, testing scenario and assessment of DIU BNCC Platoon website. It describes the operation of the platform, reports on the outcome of sample trials, and offers a discourse on the efficiency of the deployment.

## **Chapter 5: Engineering Standard and Design Challenges**

This chapter discusses the software, hardware, and communication standards compliances. It draws out social, environmental and sustainability implications of the project and examines ethical issues about the project. Not only does the chapter also involve life cycle management such as project management and financial analysis but the chapter also presents difficult engineering issues faced during the development stage.

## **Chapter 6: Conclusion**

Chapter seven offers a summary of the project to give an account of the limitations of the thesis and directions for future research. The final chapter recapitulates on how the change management project has impacted the BNCC programme at DIU and presents suggestions for future implementation.

# CHAPTER 2

## BACKGROUND

### 2.1 Introduction

The Bangladesh National Cadet Corps (BNCC) at Daffodil International University is part of a national initiative aimed at developing leadership and discipline among young people. Established to strengthen the connection between the public and the military, BNCC offers university students a unique opportunity to gain valuable skills and experience through structured training and community service. Till now there is no dedicated BNCC website for any university in Bangladesh.

### 2.2 Literature Review

The literature review focuses on a comprehensive and rigorous examination of the current projects of different organization's BNCC. It presents a summary of noteworthy facts, arguments, and knowledge gaps in this field. The literature review critically assesses earlier studies, which pinpoint the gaps that call for more research and remain unresolved issues. The development of a comprehensive and dynamic platform for the Bangladesh National Cadet Corps (BNCC) stems from the need to address existing gaps and build upon prior initiatives undertaken by various institutions. Previous works in this domain, such as BNCC [1], BNCC SUST [2], and BNCC JU [3], have laid the groundwork for digitizing BNCC activities but have also revealed significant limitations and areas for improvement.

#### 2.2.1 Similar Applications

The development of a dynamic, user-centric platform for the DIU BNCC Platoon can draw parallels with various applications and systems that have been implemented in similar domains. These systems serve as inspiration and benchmarks for creating a more efficient and interactive platform. Here are some relevant applications and portals similar to your project that provide functionalities tailored to cadet training and management:

## 1. NCC India Online Portal

The National Cadet Corps (NCC) in India operates an online portal that provides cadets with access to information, event updates, and training schedules. The platform supports online registration and emphasizes community engagement, offering features similar to those envisioned for the DIU BNCC Platoon. It serves as a model for integrating diverse functionalities to support cadet activities effectively.

## 2. ROTC Platforms in the USA

Reserve Officers' Training Corps (ROTC) programs in universities across the United States utilize digital platforms to manage their cadet programs. These platforms often include registration systems, event scheduling, and access to training resources. They prioritize ease of use, strong authentication mechanisms, and scalability to cater to a large user base.

### 2.2.2 Related Research

The section is dedicated to the presentation of a general introduction and the comparison of the previous work in the field which will emphasize on the general key aspect and contributions of each research. Through analyzing existing research, I focus on filling the gaps, and highlighting the potential opportunities that can be exploited by our current exploration to provide new findings and innovations.

TABLE 2.2: COMPARATIVE ANALYSIS WITH PREVIOUS WORK

Sr No.	Criteria	BNCC [1]	BNCC SUST [2]	BNCC JU [3]	Proposed Model (BNCC DIU)
1.	Target Consumer	All kinds of students	SUST students only	JU students only	Dedicated for DIU students
2.	Registration	Online registration exists	Online registration doesn't exist	Online registration doesn't exist	Students can register online
3.	Gallery	Exists	No Option	No Option	Gallery exists

4.	Notice Board	Exists	No Option	No Option	Exists
5.	Online Payment	Available	Not Available	Not Available	User can pay registration fees online
6.	Authentication	Strong authentication system	Doesn't exist	Doesn't exist	Strong authentication
7.	Type	Dynamic	Static	Static	Dynamic

## 2.3 Gap Analysis

There are existing BNCC platforms like BNCC SUST and BNCC JU that have drawbacks in the aspect of functionality, design and activity. As for the BNCC, it SUST serves Shahjalal University of Science and Technology students in its absence some important elements like online registration, special gallery section for displaying the cadet achievement, online notice board for updating the news etc. This static and minimalistic approach reduces user interaction and the effectiveness of teaching a lesson to the students.

In the same way, BNCC JU is only for Jahangirnagar University students, but it provides even less to the users, such as no online registration, no multi-media and no dynamic communication options. The lack of these components creates a system that is not meeting the customer's expectations in today's digital age. Neither of them offers good solutions for authentication or online payment systems which causes problems of protecting user data and handling payments. The lack of dynamics of these platforms additionally hinders polymorphic and expansive expansion as well as the capacitive challenge of addressing the dynamic requirements of cadets and administrators.

Therefore, there is dire need to fill these gaps by putting in place a dynamic BUCC system like the proposed DIU BNCC system to boost the cadets' experience.

## 2.4 Summary

Background and gap analysis describe the changing needs of the BNCC platform in Bangladesh. Such systems as BNCC, SUST and BNCC JU currently exist though they are not comprehensive in addressing the needs of cadet interaction as well as lacking features of online registration, dynamic areas such as the notice board, multi-media gallery and a strong authentication system. These platforms are mostly read-only and require features that the current dynamic user environment and business processes require.

The proposed DIU BNCC system aims at filling these drawbacks by enabling some dynamic features like a better interface design, online payment gateways and enhanced communication system making DIU BNCC system to be more effective in comparison to present day technological yearning of cadets and administrators. Besides improving user experience, this attempt has also established a standard for future digital changes in BNCC systems of other institutions.

# CHAPTER 3

## METHODOLOGY/ REQUIREMENT ANALYSIS & DESIGN SPECIFICATION

### 3.1 Overview

This chapter describes the methodology adopted to design and implement the DIU BNCC website. It focuses on analyzing user and system requirements, designing the platform architecture, and implementing features that meet functional and non-functional demands. It also includes visual tools like diagrams to represent system flow, user interactions, and interface designs.

#### 3.1.1 System Design

The system is built using the Laravel framework, a PHP-based platform renowned for its robust architecture and scalability, making it an ideal choice for developing reliable and efficient applications. The design ensures a clear separation between data management, business logic, and the user interface. This structured approach simplifies future modifications and facilitates modular expansion of the system.

Here the system includes both user and admin interfaces:

##### **User Interface:**

To be able to register themselves as cadet members for the students of the university. Users can input their registration form, read notices, and follow every post made by the admin.

##### **Admin Interface:**

The forum that has been developed for the Bangladesh National Cadet Corps of Daffodil International University contains both User Instrument and Admin Instrument for the registrations of the members and for the control of other activities of the systems. The target users of the User Interface will be the students who can/cannot register as cadet members, submit registration forms, view notices and track all updates posted by the admin. This user centered approach ensures

that students continue to be in advance informed about events and activities of BNCC. However, the Admin Interface provides several significant features to the administrators: create new users and admins, accept or refuse users' membership when they submit the details, and have lists of accepted and refused membership applications. Email also enables professional administrators to superpose protecting announcements seen by all registered individuals once they join the BNCC community. For security purposes the admin interface is locked with a reliable authentication mechanism, only those who are authorized are allowed to make adjustments on the system.

#### **Database:**

MySQL database is used to create the systems database which stores important data and information such as: Users' login information Registration data Multimedia content linked with BNCC functions Payment data concerning registration fees needed for BNCC. Such aspects consist of features where data management can easily incorporate the changes to be made, an effective user's security system, and the registration should not be problematic when payments are to be made online. The amalgamated plan of this design is quite vast, inclusive of artistic defragmentation of BNCC to enhance ability and software security, and enhanced administrative effectiveness in its operations.

### **3.1.2 Functional and non- functional requirements**

Functional and non- functional requirements are further discussed below:

#### **Functional Requirements:**

- User Registration: Student Membership: Through this feature student can register then follow their status of membership.
- Admin Management: Post notices can be created or edited, registrations can be approved, rejected or managed by the Admins.
- Dynamic Notice Board: Return information about BNCC activities and events.
- Gallery: Infomercials to disseminate achievements/occurrences.
- Secure Online Payment: Let the users pay fees in a safe manner.

#### **Non-Functional Requirements:**

- Performance: It's rapid in loading and it processes the user requests quickly and efficiently.

- Scalability: Expansion of its capacity through coping with the growing users/uses volume and mass/data.
- Security: Authentication and data encryption are some of the important measures in the process of initiating the use of E-commerce between the two firms.
- Usability: An easier and interactive layout for students and admin to access and control.
- Maintainability: Modularity for alterations of features and errors fixing.

### 3.1.3 Context Diagram

The context diagram represents the interactions between the system and its external entities (users and admin). For example:

User: Register, view notices, and access multimedia.

Admin: Manage users, post updates, and oversee activities. draw a context diagram

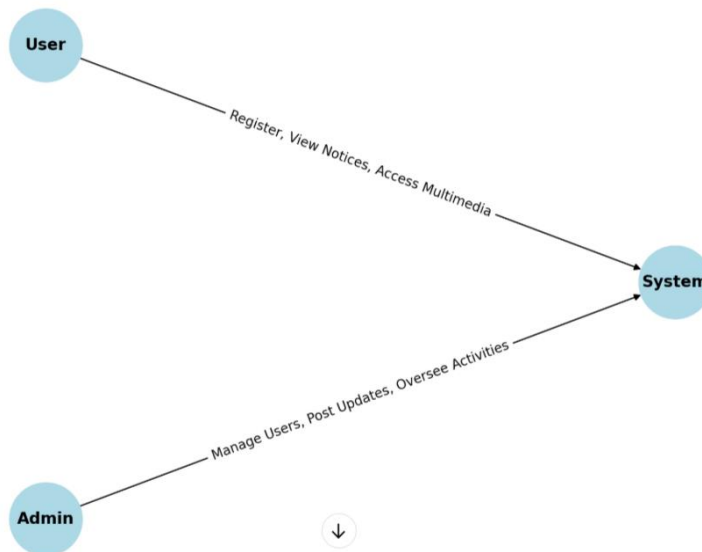


FIGURE 3.1.3: CONTEXT DIAGRAM

### 3.1.4 Dataflow Diagram

The Data-Flow diagram for the system may include:

1. **User Registration:** Information flows from the user to the database via the registration interface.
2. **Notice Management:** Admin will upload a notice, which is then displayed to users on the notice board.

3. **Membership Approval:** Admin reviews user-submitted details and updates the membership status.

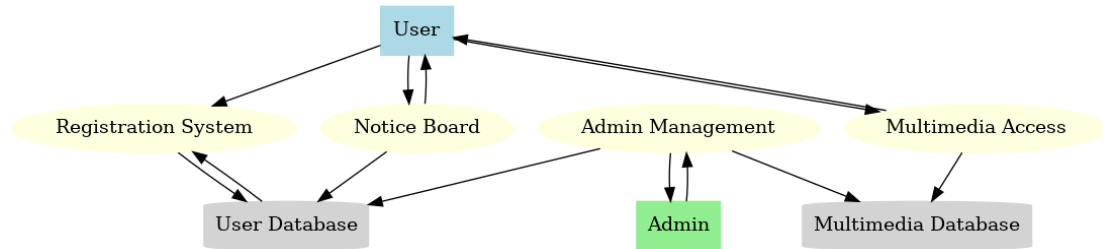


FIGURE 3.1.4: VISUAL REPRESENTATION OF DATAFLOW

### 3.1.5 UI Design

The user interface is designed to cater to the specific needs of both students and administrators, ensuring an intuitive and efficient user experience. It is structured into two main components:

- **Student Dashboard:**

This part of the tool is simple and intuitive in order not to create potential difficulties for the usage for students signing into the platform.

- **Admin Dashboard:**

This profile is convenient for the administration and provides an ability to control and monitor all the processes on the site. It guarantees the availability of a rich range of options for administrators.

This is the visual representation of my Dynamic Website for DIU BNCC Platoon. There I have Home page, About, Notice, Cadet corner, Gallery.

#### **Home Page:**

On the home page There is some information about Our DIU's Platoon Commander. and other members can be seen also from there. There are some other two buttons for joining in BNCC and Admin sign in from where admin can login

themselves on that platform for other access which cannot be seen by general members of platoon.

**Bangladesh National Cadet Corps**  
Daffodil International University

Home About Notice CadetCorner Gallery

**Officer Info**  
Engr. Md. Zahirul Islam, Assistant Professor of Department of Electronics and Telecommunication Engineering appointed as platoon commander of Daffodil International University BNCC platoon on May 2015. Later he participated in "Pre-employment" course in January 2016 in regimental training and achieved "Best PUO" award in that course. Later he was selected to join "Pre-commission" training of 12 weeks at Bangladesh Military Academy and achieved "Best Under Officer" award in June 2017. After this training he was also appointed as Company commander of C company under 3 BNCC battalion of Ramna Regiment.

**Join BNCC**  
To register as a Cadet/PUO/TUO/BNCCO/Serving Military Officer kindly use this link.

**Admin Sign In**  
This link is only for the admins

**BNCC STRENGTH**

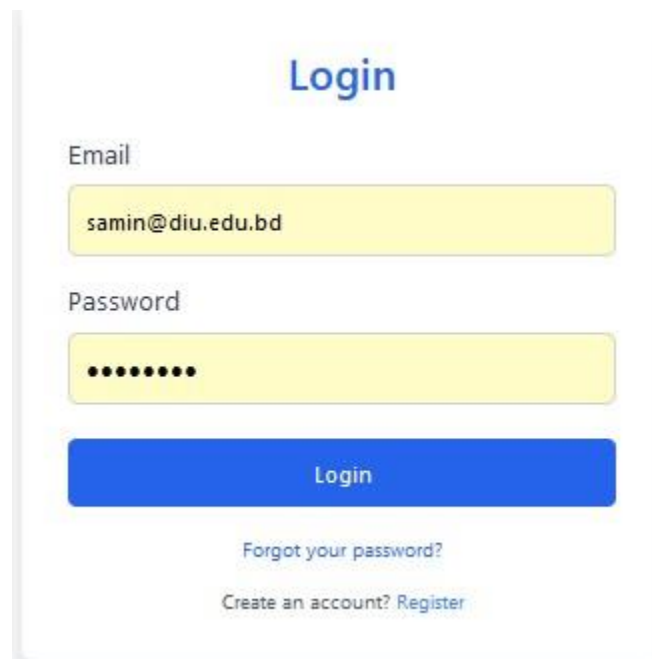
40 Cadet	45 Cadet Lance Corporal	45 Cadet Corporal	120 Cadet Sergeant	2 CUO
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FIGURE 3.1.5.1: HOME PAGE

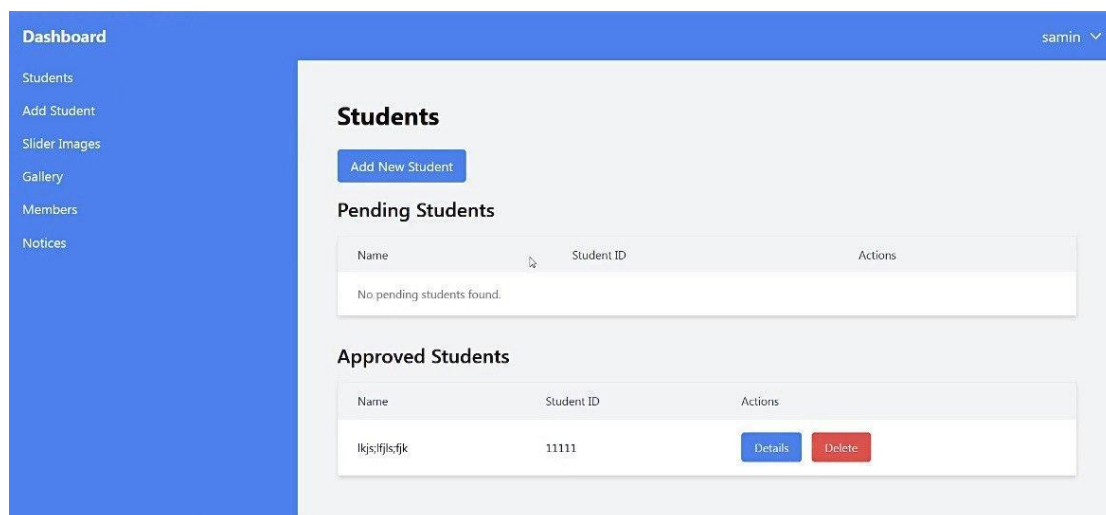
### Admin Login:

The admin has some extra permission for access which can only be seen by specific email and password. The activities are to add or approve students, upload slide images of home and gallery of achievement or activities, add members with their ranks. they can add important notices also.



The image shows a login form titled "Login". It contains two input fields: "Email" with the value "samin@diu.edu.bd" and "Password" with masked characters. Below the fields is a blue "Login" button. At the bottom, there are two links: "Forgot your password?" and "Create an account? Register".

FIGURE 3.1.5.2: ADMIN LOGIN



The image shows the admin interface dashboard. On the left is a blue sidebar with a "Dashboard" menu and sub-items: "Students", "Add Student", "Slider Images", "Gallery", "Members", and "Notices". The main content area is titled "Students" and includes an "Add New Student" button. Below this are two sections: "Pending Students" and "Approved Students". The "Pending Students" section shows a table with columns "Name", "Student ID", and "Actions", and a message "No pending students found.". The "Approved Students" section shows a table with columns "Name", "Student ID", and "Actions". One student is listed with Name "lkjs:lfjls:fkj", Student ID "11111", and "Details" and "Delete" buttons.

FIGURE 3.1.5.3: ADMIN INTERFACE

### About:

There is some basic information about BNCC and the history of it which helps the students to know about Bangladesh National Cadet Corps in more detail.



## About BNCC

Bangladesh National Cadet Corps (BNCC) is a Para-Military Defense force, a Tri-Services Organization comprising the Army, Navy and Air Force. BNCC is entrusted with the task of grooming the future leaders and finding the hidden potentials of youths. BNCC is an organization consisting of Defense services officers, Junior commissioned officers (JCOs) and Non-commissioned officers (NCOs) civilian officers & staffs, teaching staffs and students from different educational institutions. Ministry of Defense administratively controls this organization. Daffodil International University has BNCC Army wing since 2015. Daffodil International University BNCC platoon under Ramna Regiment 3 Battalion.

## History of BNCC

After the establishment of Dhaka University (1921) the Corps initiated its activities under the provisions of the Indian Territorial Forces Act, 1923. Captain E. Groom was the first adjutant of the Corps, he imparted military training to 100 students and 16 teachers in November 1927. Later University Training Corps was officially founded in June 1928; in 1943, the name of the Corps was changed to University Officers Training Corps (UOTC). The members of this Corps took part in the liberation war of Bangladesh in 1971, after independence, Bangladesh Cadet Corps comprising college students, and Junior Cadet Corps comprising junior students, were formed in addition to University Officers Training Corps. On 23 March 1979, University Officers Training Corps, Bangladesh Cadet Corps and Junior Cadet Corps were all merged to Bangladesh National Cadet Corps (BNCC). The Training Activities of BNCC Cadets are sub divided into Army, Navy and Air Wing. At present, its headquarters is located in Sector 6, Uttara Model Town, Dhaka-1230. There are three type of Cadets in BNCC and divided under two broad heads namely, Senior Division and Junior Division cadets. Senior division again has two categories of female and male cadets of various levels of education, the Bangladesh Government Cabinet approved a proposal to bring BNCC under a legal framework and department. The proposal was titled Bangladesh National Cadet Corps Act-2016, the separate department would be under the Ministry of Defense. Bangladesh Bangladesh National Cadet Corps has Youth Exchange Programme (YEP) with India, Singapore, Nepal, Maldives and Singapore. Every year total 56 BNCC Cadets get the opportunity to visit those Countries under YEP and equal no of foreign cadets also visit Bangladesh to join our Independence Day Celebration Programmes. The benefits of this programme have been widely acknowledged. By these visits cadet know each others' culture, heritage and which help to develop strong bond between them.

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FIGURE 3.1.5.4: ABOUT SECTION

**Notice Posting:** There is also the admin panel where simple tools to create and publish notices that are immediately seen by all users, including members, are provided. This feature helps in making certain regular interactions with the cadet community.

The screenshot shows a web interface for adding notices. It features a form with three input fields: 'Title', 'Description', and 'File Link'. Below the form is a green 'Add Notice' button. Underneath the form is a section titled 'All Notices' which displays a single notice: 'Registration - Registration Form For Spring 25' with a 'View File' link. Below the notice are two buttons: a red 'Delete' button and a yellow 'Edit' button.

FIGURE 3.1.5.5: NOTICE ADD INTERFACE FOR ADMIN

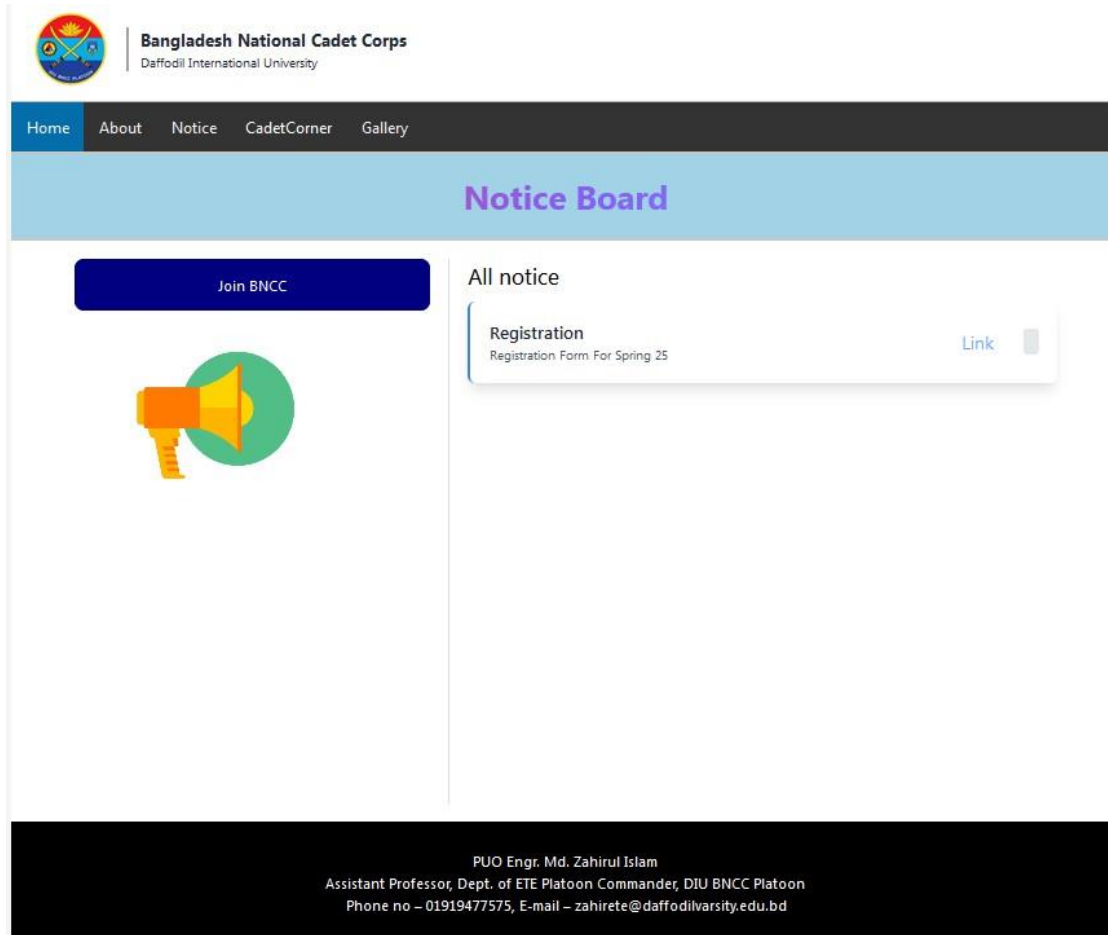


FIGURE 3.1.5.6: ALL THE IMPORTANT NOTICES

### **Cadet Corner:**

Cadet corner represents Army wings, Navy wings, Air wings, Training detail information. For example, army wings include- Ramna regiment, Mainamati regiment, Karnaphuli regiment, Mahasthan regiment, Sundarban regiment.



## Army Wings

### RAMNA REGIMENT

After the formation of Bangladesh National Cadet Corps (BNCC) on 23 March 1979 The Ramna Regiment was raised and named after Ramna which was one of the historical places of Dhaka. To bring Dynamism in BNCC Ramna Regiment started its activities under five Battalions with the cadets of different Institutions of Dhaka, Munshiganj, Gazipur, Mymensingh, Jamalpur, Sherpur, Netrokona, Narayanganj, Kishorgong. At present there are total 110 Educational Institutions with 152 Platoons and 5659 Cadets under Ramna Regiment.

### MAINAMATI REGIMENT

Mainamati Regiment was raised in 1979. To extend the activities of BNCC, Mainamati Regiment started its curricula with the Cadets of different Institutions of Cumilla, Sylhet, Sunamganj, Hobiganj and Moulvibazar. At present there are 100 Educational Institutions with 122 platoons and 3608 Cadets under this Regiment.

### KARNAPHULI REGIMENT

Karnaphuli Regiment was raised on 28th November 1979. From the very beginning Karnaphuli Regiment started its activities with the cadets of different Institutions of Chiattagram and Cox's Bazar districts. At present there are 59 Education Institutions with 86 platoons and 3413 Cadets under this regiment.

### MAHASTHAN REGIMENT

Mahasthan Regiment was raised on 30th march 1979 and named after the name of Mahasthan garh, a historical place of Bogra. To accelerate the expansion of BNCC, Mahasthan Regiment started its activities with the Cadets of different Institutions of Rajshahi, Pabna, Bogra, Rangpur, Dinajpur, Sirajgonj, Natore and Lalmonirhat districts with its five Battalions. At present there are 102 Education Institutions with 130 platoons and 4086 Cadets under this regiment.

### SUNDARBAN REGIMENT

Sundarban Regiment started its activities from the very beginning of the institution of BNCC in 1979. SUNDARBAN REGIMENT was named after the name of world's largest mangrove forest Sundarban. From the very beginning of raising Sundarban Regiment started its activities for the expansion of BNCC with the Cadets of different Institutions of Khulna, Bagerhat, Shatkhira, Jessore, Narail, Magura, Chuadanga, Meherpur, Kushtia, Faridpur, Rajbari, Gopalganj, Shariatpur, Madaripur, Barisal, Pirojpur, Bhola, Patuakhali, Borguna and Jhalokhathi. At Present there are 99 Education Institution with 114 Platoons and 2201 Cadets under this Regiment.

FIGURE 3.1.5.7: CADET CORNER (ARMY WINGS)

## Navy Wings

After the formation of Bangladesh National Cadet Corps on 23th March 1979, the Naval Wing was raised. The Naval wing started its activities with the Cadets of different Institutions of Dhaka, Chattogram, Cox's Bazar, Khulna district, Rajshahi, Kustia, Barisal, Patuakhali and Bangura districts. It is Organized into three Flotillas. Under Dhaka Flotilla there are 11 Educational Institutions with 16 Platoons and 868 cadets ; under Chattagram Flotilla there are 08 Educational Institutions and 15 Platoons with 470 cadets ; under Khulna Flotilla there are 16 Educational Intuitions and 25 Platoons with 824 cadets .

## Air Wings

Air wing was raised after the formation of BNCC on 23th March 1979. Air wing started its activities since its raising with the Cadets of different Institutions of Dhaka, Cumilla, Sylhet, Chattagram, Rajshahi, Kustia and Jeshore District. It is organized into three Squadrons. Under Dhaka Squadron there are 13 Institutions , 17 Flights with 1153 Cadets. Under Chattagram Squadron there are 05 Institutions, 07 Platoons with 641 Cadets. Under Jeshore Squadron there are 09 Institutions , 09 platoons with 1000 Cadets.

FIGURE 3.1.5.8: CADET CORNER (NAVY AND AIR WINGS)

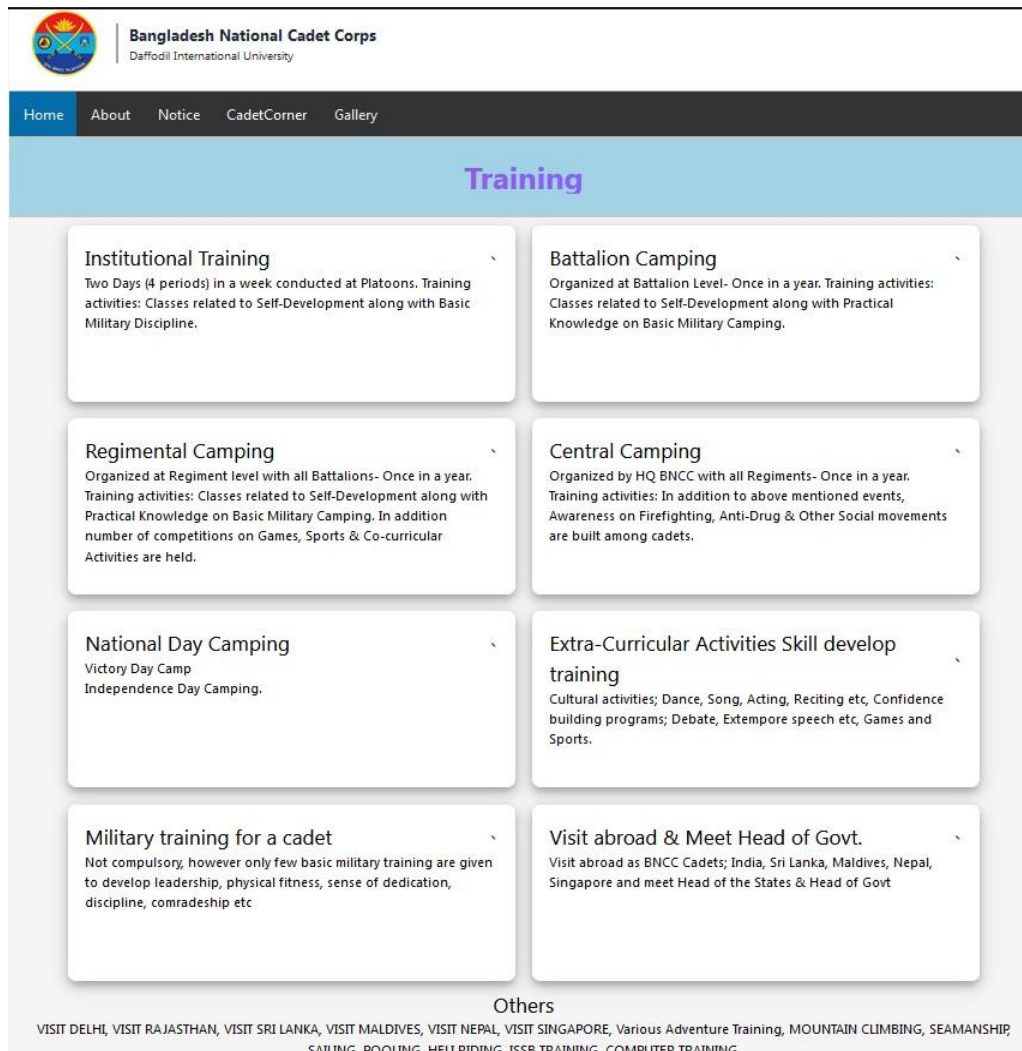


FIGURE 3.1.5.9: TRAINING DETAILS

### Gallery:

Admin may upload picture/ photo and/or videos for the gallery as they update the BNCC activities and/or achievements.

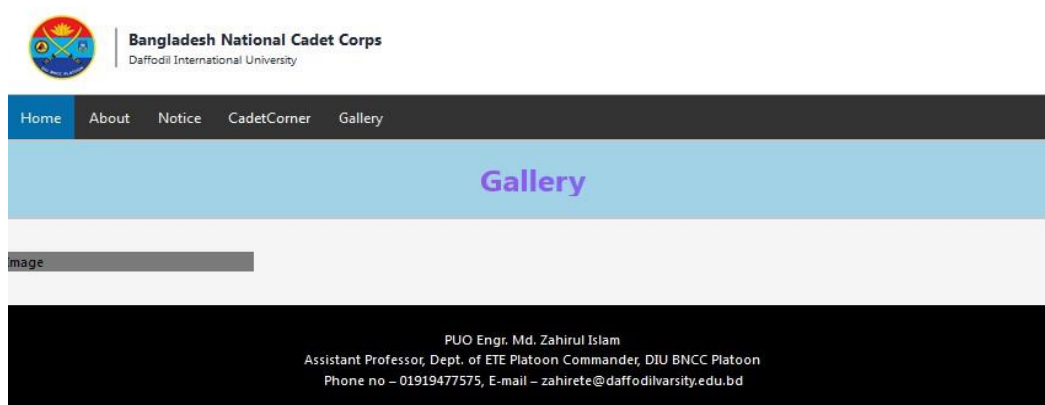


FIGURE 3.1.5.10: GALLERY OF THIS WEBSITE

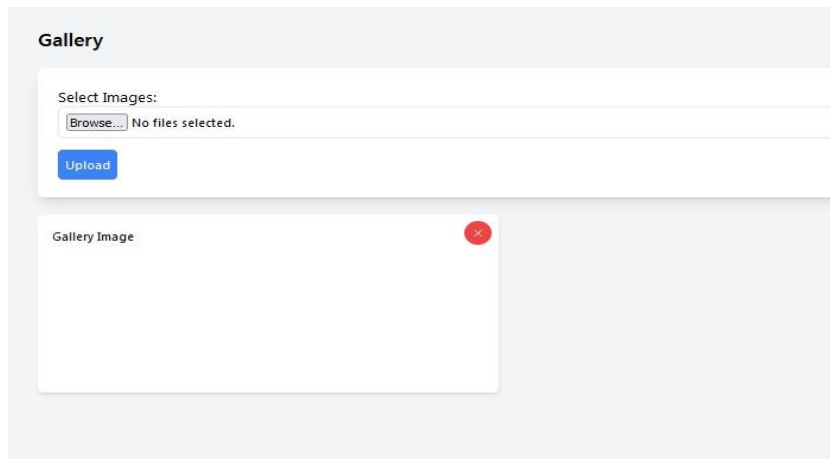


FIGURE 3.1.5.11: GALLERY UPLOADED BY ADMIN INTERFACE

**Add Students:** Students can be added as a cadet by two different ways

- Through Registration form
- By Admin

**Registration Forms:** Self registration can be carried out by the students for cadet membership by completing some registration forms though simple and detailed. Again, depending on the Interface, the student is led through by filling in the submission process to minimize errors.

FIGURE 3.1.5.12: REGISTRATION FORM

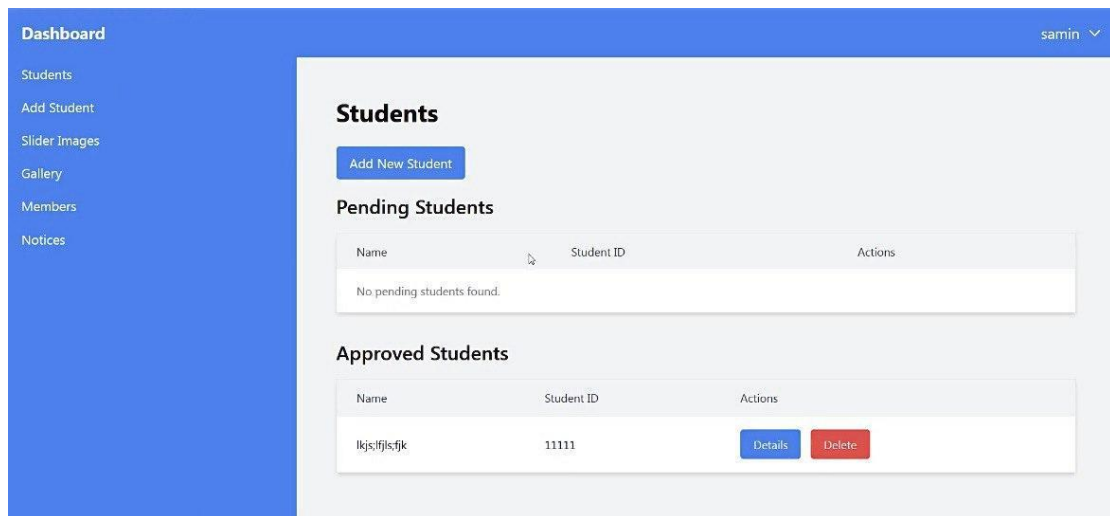


FIGURE 3.1.5.13: APPROVAL PAGE IN ADMIN SIDE

**Member Management:** The details entered in the registration forms can be viewed by the admins for the purpose of accepting or rejecting a person’s registration. They can keep a clean record of approved and pending applications and even add users directly as cadets or administrators.

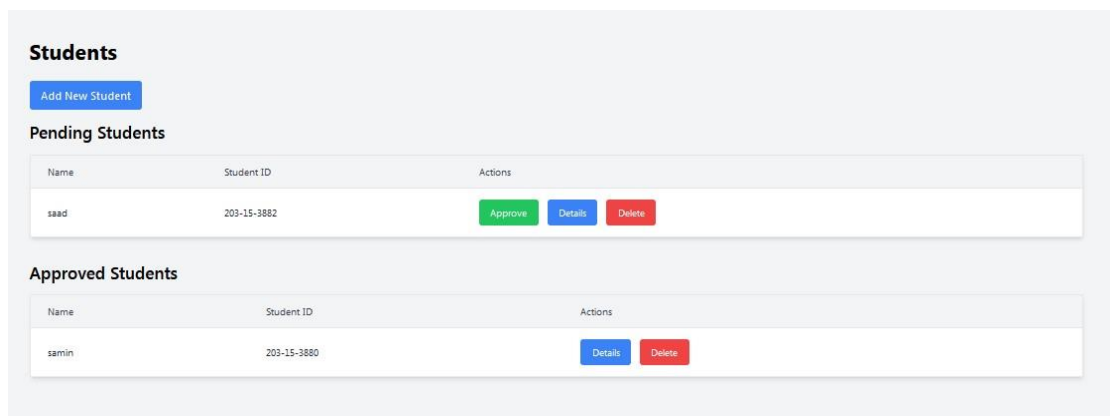


FIGURE 3.1.5.14: APPROVE AND PENDING LIST IN ADMIN SIDE



FIGURE 3.1.5.15: DETAIL REPRESENTATION OF STUDENT INFO IN ADMIN SIDE

**System Monitoring:** They monitor the system activities and make go or no-go decisions about their activities based on an analysis of their adequacy or otherwise. They can also limit any one's access to their platform that means an admin can make another admin.

**Slide Image:** A special part of the website presents photos and videos of cadet work, accomplishments, and various events. This feature also builds interaction and motivates the new members by displaying the active performance of the DIU BNCC in the home page. These are also uploaded by admin.

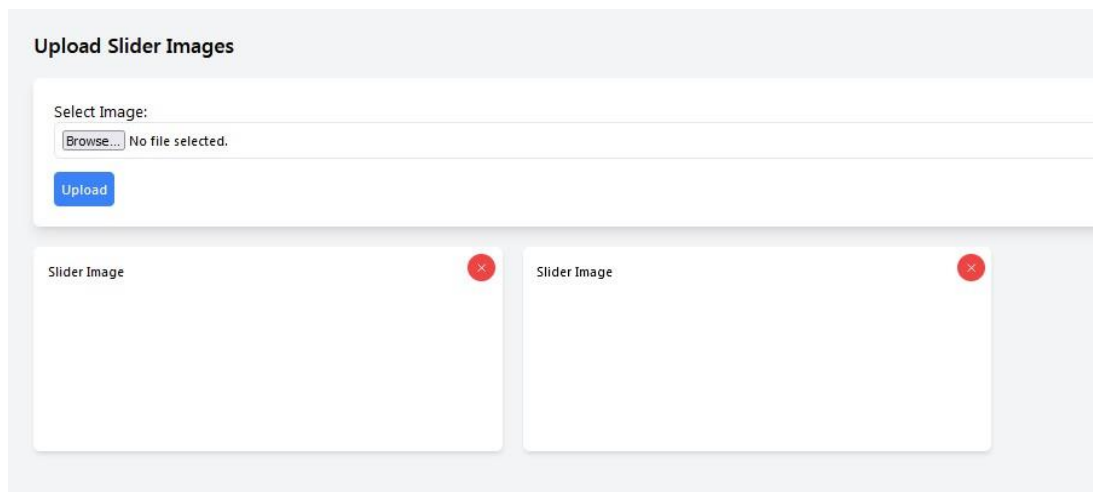


FIGURE 3.1.5.16: SLIDE IMAGE UPLOAD PAGE IN ADMIN SIDE

### More Members:

On the home page there is a more member button. These are uploaded by admin by including their name, rank and picture which the students can see from the home page button.

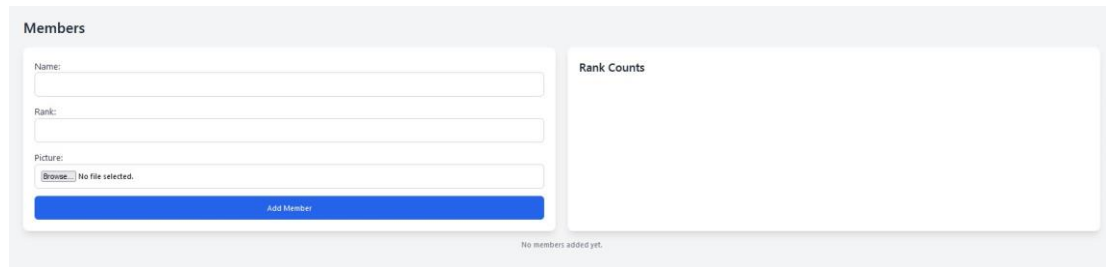


FIGURE 3.1.5.17: MORE MEMBER ADDED BY ADMIN SIDE.

## 3.2. Detail Methodology and Design

This has been designed using Laravel framework, a PHP composed web application development framework. This design self-element of Laravel has many benefits in that complex processes are simpler by LPatterns while at the same time maintaining a strict and organized structure. With Laravel at its helm, the task of development became streamlined and the result was scalable and easily maintainable.

### Requirement Analysis

Since the principle of stakeholder satisfaction is important in developments of these kinds of systems in order to meet user and administrative expectations, interviews and questionnaires were employed. These inputs were used in building the project objectives of, for example, facilitating cadet registrations, implementing a notice board system, and handling multimedia galleries. To support the development process, key features and Seven-Step workflows were recorded.

### System Design

Laravel framework has been designed according to the requirements of the BNCC website. The system was divided into components such as Controllers of request handling, Models of database operations and Views of the UI. Some of the applications of middleware observed in the undertaking included security architectures like user authentication and any other data validation to be in place.

Laravel was used to create the schema through migrations and such features like cascading, relations and sub relations between tables was implemented.

### **Frontend Implementation**

The frontend of the website was created using Laravel Blade templates which allows for content that may be more dynamic, as well as templates that may be used over and over. HTML and CSS were used to layout and design or format and design respectively of the interface and JavaScript was implemented for functionalities such as form validation and updates. Ease of use is incorporated in the development of the user interface for both students and admins facilitating easy use.

### **Backend Implementation**

On the backend, Laravel routing was used for the routing of the user's request to the particular controllers. They handle such fundamental activities as student registration, posting of notices and user management. Laravel's validation aspects were used to validate all data input to meet the required standard for the database. Laravel Eloquent ORM system made it easy to manage databases and their queries like one to many for user control.

### **Testing and Maintenance**

This made it possible to provide a comprehensive test of other functionalities of the system to discover more about its performance. For unit and feature tests, the framework's in-built testing tools were employed; for the user acceptance test the trial feedback was taken from BNCC members and administrators. This procedure prescribed rational update schedules and range checks, so the system can respond to changed needs.

With the help of Laravel's powerful features, it was possible to create the BNCC website that provides easy, protect, and effective tools for students and administrators. Even more importantly, this approach is more structurally sound and sustainable that is flexible in the long run.

## **3.3 Project Plan**

The project is planned in multiple phases to ensure a structured and time-efficient development process is given below:

- Step 1: Requirement gathering and prototype design has been completed.
- Step 2: Other front-end features include registration forms, and the operation of digital boards (ongoing).
- Step 3: Different dynamic implementation and linkage to databases.
- Step 4: They include: Extensive testing/Debugging activities.
- Step 5: Implementation and feedback from the stakeholders for the final touch.

Estimated timeline for completion:

Frontend integration: October 2024

Backend integration: November 2024

System testing: November 2024

Final deployment: December 2024

### 3.4 Task Allocation

TABLE 3.4: TASK ALLOCATION OF THIS PROJECT

Task	Deadline
Prototype Design	October 2024
Front-End Development	October 2024
Backend Development	November 2024
Database Setup and Integration	November 2024
Testing and Debugging	December 2024
Final Deployment and Feedback	December 2024

### 3.5 Summary

The BNCC website development requires a proper approach of the project in order to meet the users and all the stakeholders' necessities based on the set methodology. That is, using today's advanced technologies like Laravel, PHP, MySQL, etc. The registration of cadets, notices, and multimedia sections of the site are created in order not to have incongruous interfaces. The successful coordination of work, distribution of tasks, and round-robin feedback makes certain that the project is on track toward a functional final output.

# CHAPTER 4

## IMPLEMENTATION

### 4.1 Environment Setup

The development and deployment of the BNCC website required a robust and well-configured environment to ensure optimal performance and compatibility. Below are the details of the setup:

#### Development Environment:

- **Operating System:** Windows 10
- **IDE/Editor:** Visual Studio Code with extensions for PHP, Laravel, and MySQL.
- **Framework:** Laravel (PHP-based) version 9.x.
- **Languages Used:** PHP, HTML, CSS
- **Database:** MySQL version 8.x for efficient data storage and retrieval.

#### Server Configuration:

- **Web Server:** Apache2 with PHP 8.x enabled.
- **Database Server:** MySQL installed on localhost during development, later migrated to a cloud-based server for deployment.
- **Tools:** Composer for dependency management, Node.js for frontend asset compilation using Laravel Mix.

#### Version Control:

Git was used for version control, with regular commits pushed to a private GitHub repository for collaboration and backup.

#### Deployment Environment:

- Hosted on a shared hosting platform with Laravel support.
- HTTPS enabled for secure communication.
- Server settings optimized for Laravel applications for cache management and database migrations.

## 4.2 Testing and evaluation:

To ensure the system's robustness and reliability, a comprehensive testing approach was adopted, encompassing the following types of testing:

- **Unit Testing:** Every module like user registration and posting of notices was tested one at a time using Laravel PHP-Unit.
- **Integration Testing:** Ensured form submission and how frontend and backend communicates such as handling database update.
- **Functional Testing:** Made sure that the system fulfilled the functional specifications including user login/registration, data validation, and error messages.
- **Usability Testing:** Done in a group, with selected students and admins, to determine how easy it is to find information and move through the site.
- **Performance Testing:** Checked the good performance of the website at different loads with help of such tools as Apache JMeter.

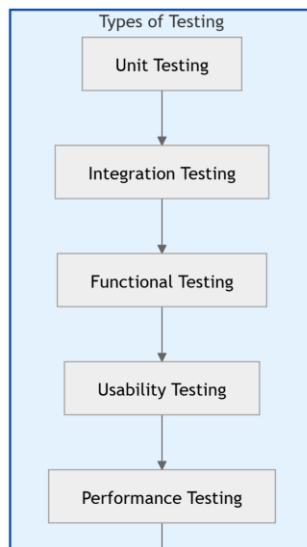


FIGURE 4.2: SYSTEM TESTING

## 4.3 Result and Discussion

It can therefore be said that the establishment and the deployment of the BNCC website went on to meet the primary goal that was set in the first step of requirement analysis. Designing a strong and powerful platform was developed to meet the demands of the BNCC program user groups primarily the students, the administrators and other stakeholders who are connected with the program.

The User Registration module was implemented satisfactorily so as to enrol students as cadet members of the institution. This results in the incorporation of a rigid validation procedure that makes the difference set to be equipped with standard validation means so as to acknowledge data accuracy and integrity in order to enhance user satisfaction. The Notice Management helps the administrators to efficiently post update messages that become available to all users on their dashboard. This guarantees BNCC members are always updated with any vital announcement and any happening within it. Also, through the Membership Management system, the administrators are able to conduct an assessment of membership. These applications can be approved or rejected by the admins depending on some details presented and they will also have a properly arranged database of approved and pending members for organizational control and accountability.

### **Discussion**

It is also possible to specify which pieces should be addendums to a larger system, including extras like activity monitoring or linking with other systems. Stakeholder input pointed to such aspects as the system's ease of use and elegant design. Few modifications were recommended also for other enhancements, such as filtering the notices by category.

## **4.4 Summary**

This chapter described the environment created, the testing approach used, performance assessment criteria, and outcome obtained for the BNCC website. System testing was a well-organized process that made it possible to meet the functional as well as non-functional requirements. The goal was reached despite some minor difficulties and the project offered a manageable and functional base for the members and the administrators of BNCC. Further developments may relate to the broadening of the options and to the optimization of the interface.

# CHAPTER 5

## ENGINEERING STANDARD AND DESIGN CHALLENGES

### 5.1 Compliance with Standards

Like any normal web application, every functionality of BNCC website is coded in compliance with industry standards to promote reliability, security and scalability. Great effort is put into the design of the software, making it easy to modify in the future and maintain. The hardware standards guarantee optimum performance in terms of traffic capability and utilization of typical server architectures. Minimizing leakage of users' data and safeguarding safe communication between users and the platform is enhanced by applying encryption techniques. These measures put in place a strong and flexible building system that is indicative of current and future needs.

#### 5.1.1 Software Standards

The application for the BNCC website was designed following the generally acceptable principles in the software engineering practice. The PHP framework Laravel was implemented since it has a solid structure and supports the secure and easy scaling of MVC apps according to the ISO/IEC 25010 model. The concept of PHP and MySQL makes it conform to universally acceptable web development procedures. Also, usage of the MVC model in the Laravel framework gives an opportunity to work with clean and modular code. Moreover, these standards will be useful in the future when new additions to the site such as forum, chat room, and alumni section will be implemented.

#### 5.1.2 Hardware Standards

The BNCC website is intended to be operated on standard server configurations which conform to the ANSI/ISO/EIA standards for data processing. The website backend specifications for the website to perform effectively should be, the system should have a minimum of 8 GB of RAM and 256 GB of SSD. These specifications

guarantee the system sustains a large traffic for registration of users and posting of notices.

### **5.1.3 Communication Standards**

This website ensures the use of HTTPS in communication as a way of ensuring secure communication between a user's browser and server. This commits that all users' credentials and other personal details entered in the gadget are guarded by TLS encryption. Furthermore, OAuth2 for authentication is properly implemented and guarantees the user's identity if the web application meets the required security standards. Integration with other social media platforms in the future will also follow the API associated security measures to foster safe seamless contact.

## **5.2 Impact on Society, environment and Sustainability**

Through the new BNCC website, these registrations, announcements, and access to resources, which may have required a lot of time to be accomplished, are made easier and efficient. It increases collaboration by providing equal access to information and minimizes the effects of documents on the environment, and protects user data security and privacy. It is important not only because it makes the platform usable in the longer perspective, but also because it allows making the BNCC experience more organized, environmentally friendly and ethical.

### **5.2.1 Impact on Life**

It offers students or the administrators a one-stop shop where they can register students for the BNCC cadet program, make announcements and disseminate pertinent information as well as use it to access important resources. As a result, time is saved, enhances organization and reduces manual work input which increases the efficiency of the operations of BNCC. For the users it creates interest and makes everything easy and beneficial to their academic and co-curricular activities.

### **5.2.2 Impact on Society & Environment**

This area shows how digitization of BNCC operations lowers the difficulty of operations carried out through paper material, thus conserving the environment through less wastage. Further, it enables equitable access to knowledge for all its

users irrespective of their location physically or geographically. Since one of the key strengths of the system is that it breaks barriers of communication among the stakeholders and links them together, the community is hence well informed.

### **5.2.3 Ethical Aspects**

The platform was created with an emphasis put on ethical issues starting with data protection and privacy. Users have their personal data and preferences stored securely and encrypted into GDPR compliance level in case of any violation. Ethical standards of openness and responsibility that cover the use of this data were maintained to make users understand how their information is used.

### **5.2.4 Sustainability Plan**

The goal was that the system must be scalable and easy to maintain in the long run. This is to ensure the software application is constantly current with its functions as well as secure free from the hackers around the world who are in constant search of software weaknesses to exploit. This is again possible when the website's architecture is module, and new-age technologies like Laravel are employed so that there is no need for redesigning most of the website in the future.

## **5.3 Project Management and Financial Analysis**

### **5.3.1 Project Management**

In development of the BNCC website the project management procedures were used thus making the development to be systematic and efficient and fully meeting the needed specifications. Below are the key aspects of the project management process:

- **Planning and Initiation:**

**Goal Setting:** The main goal was to create a convenient, safe, and easily scalable environment for both members and administrators of BNCC.

**Requirement Gathering:** The context review during the initial interviews and competition study yielded understanding of the functional and technical specifications.

- **Task Allocation and Timeline:**

The project tasks were distributed to very specific stages, which made the assignments' purpose completely clear and facilitated workflow organization. The individual phases included in the development process of the live advertising platform were all given deadlines for the accomplishment of particular tasks within the course of the project. This method ensured that there was progressive improvement on the website and ensured that every part of the website was developed to completion, excluding features that could be added based on feedback from users at a later stage.

- **Resource Management:**

**Hardware Requirements:** 8 GB of RAM and 256 GB SSD minimum configurations were comfortable for development and testing.

**Software Tools:** Organization and practicality of coding frameworks, databases, and debugging tools to the working procedure.

**Team Coordination:** Roles were assigned and interdependence was promoted so that every person in a team is held responsible for their duties.

- **Risk Identification and Mitigation:**

It also shows that potential challenges including having unclear, incomplete or missed requirements, technical issues in integration, as well as time constraints, were considered right from the start. The said risks were well managed by the use of such approaches as; the iterative feedback collection, collaboration, and adapting to timelines.

- **Budget Management:**

The project cost consideration was split over different stages in the development of front end design, back end implementation, integration of databases and testing. This strategic allocation enabled all sections of the work to be well supported to offer the quality and performance required on the website. The organization of the total budget was indicative of the size and the nature of the project and primarily concerned with the cost-recovery analysis.

- **Monitoring and Control:**

Reporting of achievements and feedback from the stakeholders made it easy to align to the goals. Methods made it possible to search for possibilities of change during the development of the project.

- **Completion and Evaluation:**

The project was completed successfully to the attainments of its objectives and net of the financial and time costs estimated for the project. The testing and feedback received showed some minor changes that should be further implemented with a future release.

### 5.3.2 Financial Analysis

TABLE 5.3.2: FINANCIAL ANALYSIS

Sr No.	Details	Estimated time	Cost
1	Designing front end	40 hrs.	50,000
2	Implementing server-side	61 hrs.	75,000
3	Building and connecting with database	10 hrs.	75,000
4	Testing	10 hrs.	25,000

### 5.4 Complex Engineering Problem

The creation of a website for the BNCC posed several complex issues from a technical, critical and a planning standpoint. These were due to the need to accommodate multiple stakeholders needs, interconnect varied systems, and maintain independence and immunity in a fixed time frame.

By overcoming these challenges, the project team not only provided a workable system to the business but also provided a means for the system to be further enhanced in the future. This experience underlines the benefits of structured approach in solving problems and elevates the role of engineering methodologies in the context of rather heuristic situations.

### 5.4.1 Complex Problem Solving

Table 5.4.1.1: Mapping with complex problem solving

Category	Justification	Rationale
EP1: Depth of Knowledge	Knowledge required spans web development, cloud services, UI/UX design, and database optimization.	The project demands expertise in Laravel (PHP), MySQL, frontend design principles, and cloud-based services. Key knowledge includes MVC architecture, security protocols, and responsive web design.
EP2: Range of Conflicting Requirements	Conflicts include balancing user engagement with administrative control, ensuring scalability while maintaining simplicity, and integrating multimedia features without performance loss.	The project must reconcile diverse requirements: creating a simple interface for users while equipping administrators with robust tools, and enabling real-time updates alongside low-latency performance.
EP3: Depth of Analysis	In-depth planning for user interface design, secure authentication, multimedia handling, and administrative efficiency.	The project focuses on creating an intuitive interface, implementing secure registration processes, managing multimedia content (e.g., galleries), and ensuring seamless interaction between users and admins.
EP4: Familiarity of Issues	Common issues include secure authentication, database optimization,	Challenges are typical in web development, especially in

	media rendering (images/videos), and dynamic user interaction design.	maintaining secure and responsive systems while ensuring seamless handling of multimedia uploads and real-time updates.
EP5: Extent of Applicable Codes	Utilizes Laravel's MVC architecture, PHP best practices, MySQL database standards, and modern web security protocols.	The project follows established coding practices and security guidelines in web development, ensuring compatibility, maintainability, and scalability across future updates.
EP6: Extent of Stakeholder Involvement	Involves users (students, cadets), administrators, and external service providers (e.g., payment gateways).	Stakeholder involvement is central: students use the platform to register and stay informed, administrators manage content and memberships, and external services ensure seamless payments and security integration.
EP7: Interdependence	The user interface is closely tied to backend services (MySQL, Laravel), while user authentication influences registration and admin approvals.	Significant interdependence exists between system components, with the success of the interface, multimedia features, and notifications relying on backend efficiency and real-time data updates.

## Mapping with Knowledge Profile for EP1

This table 5.4.1.2 is designed to map the EP1 to the Knowledge Profile.

Table 5.4.1.2: Mapping with knowledge Profile.

Category	Justification	Rationale
K3: Engineering Fundamentals	Basic knowledge of web development, database management, and UI/UX principles. This includes a foundational understanding of programming languages, security protocols, and web storage.	Your website relies on fundamental engineering knowledge of web development, using Laravel (PHP), MySQL, and UI/UX principles to create an engaging, secure platform for users and administrators.
K4: Specialist Knowledge	Expertise in Laravel, MySQL, MVC architecture, security protocols, and advanced UI/UX design for web applications.	Specialist knowledge in Laravel for building the backend, MySQL for database management, and UI/UX design for creating intuitive and efficient user experiences while ensuring secure and scalable data storage.
K5: Engineering Design	Designing user interfaces, creating intuitive navigation flows, and handling data management and multimedia content in a web application.	Involves designing the website's layout, navigation, and media handling (e.g., PDFs, images) from the database, ensuring a seamless experience while maintaining usability, security, and performance.
K6: Engineering Practice	Practical application of frameworks, libraries, and APIs, such as Laravel, MySQL, and security protocols for web development.	Applying engineering practices by utilizing Laravel for MVC architecture, MySQL for data management, and secure authentication for user management, ensuring efficient and reliable backend functionality.

K8: Research Literature	Research into web development frameworks, cloud storage services, security practices, and best practices for UI/UX design.	Staying up to date with the latest research, documentation, and best practices for web development frameworks (Laravel), database management (MySQL), security protocols, and UI/UX standards to ensure a modern and secure platform.
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### 5.4.2 Engineering Activity

The engineering activities involved in this project were diverse, including designing the website layout, coding the front-end and back-end, database configuration, and testing. The front-end design focused on a user-friendly interface that allows seamless navigation, while the back-end development ensured a secure and efficient process for user registration, membership management, and notice updates. The testing phase included performance evaluations, security audits, and usability assessments to ensure the system meets its goals and performs well under load.

Table 5.4.2: Mapping with complex engineering activities.

Engineering Activity Category	Justification	Rationale
EA1: Range of Resources	Involves using resources such as Laravel (PHP), MySQL for database management, cloud services for storage, and web frameworks (e.g., Bootstrap) for front-end design.	The project uses a range of technological resources, including Laravel for backend development, MySQL for database management, and cloud services for media storage, alongside web frameworks like

		Bootstrap for frontend design.
EA2: Level of Interaction	The website requires significant user interaction, especially with the registration process, notifications, media viewing (e.g., images and achievements), and admin interfaces.	High user interaction is needed, from students signing up for the BNCC program to receiving real-time notifications and interacting with the Cadet Corner, galleries, and other interactive elements like the honor board.
EA3: Innovation	Implementing dynamic content updates, interactive features like the Cadet Corner and honor board, and seamless integration with cloud storage for multimedia content (images, PDFs).	Innovation is reflected in dynamic website features that engage users, such as real-time updates, media galleries, and interactive elements that foster community and participation, along with cloud storage for multimedia content.
EA4: Consequences for Society and Environment	The website contributes to a more organized and efficient BNCC program, promoting leadership and community among students, while reducing the reliance on paper-based systems.	The platform has positive social implications by improving communication and engagement among students and administrators. Environmentally, it reduces paper usage and promotes a digital-first approach for BNCC activities.
EA5: Familiarity	The engineering activities involved are common in web development, but the	Familiarity with standard web development tools

	integration of multiple interactive elements, user roles, and secure payment processes requires specialized knowledge.	(Laravel, MySQL, etc.) is essential, but the integration of multiple dynamic features, such as secure payment systems and real-time user interactions, requires specialized knowledge.
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## 5.5 Summary

This chapter discussed engineering standard compliance, the positive impacts of the system on society and environment, as well a green approach towards developing the system. Sustaining ethical principles and project feasibility, the BNCC website was created on the basis of strictly adhering to requirements of its client and solving many different problems concerning project management. It was analyzed that due to successful resolution of engineering challenges and integration with industry standards a high quality of system has been developed which has a positive impact on its stakeholders.

# CHAPTER 6

## CONCLUSION

### 6.1 Summary

The establishment of the BNCC website can be considered as one of the major undertakings to enhance digitization and streamlined orderly dispensation for its stakeholders. Through the registration, membership and Communication features that the website offers, both efficiency and effectiveness have been achieved eliminating the challenges of implementing manual methods. Intended security measures explain user trust and data protection, and the format of web application should consider ethical standards; furthermore, modularity allows for future growth and enlargement of functionality.

The project had several hurdles initially but achieved what was expected of it: designing a solution that suits the users and the organization. Not only does it make administrative work far easier, but it also increases member participation. Lasting innovation is established by this website and it can be taken as a reference model for future settings to advance technology supported solutions in entities like this.

### 6.2 Limitation

There are some limitations in DIU BNCC website, which is given below:

- **Limited Interactivity:** Despite including such features as registration and management of notices, it at the moment lacks the number of interactive features like forums, chat or meeting initiation, which might help to increase user interest.
- **Dependence on Internet Connectivity:** For users to engage with the functional aspects on the website, the site needs to have a steady supply of internet connection. In areas where internet connection is a problem, this may in some way reduce usability and interactivity.

- **Single Authentication Mechanism:** It uses the standard login processes, but for more security requirements like the two factor login in the future, it may not be enough.
- **Limited Offline Features:** There is no offline mode so the users can not view notices or access any other resources if there is no connection to the Internet.
- **Lack of Language Localization:** It has only the mother language support and has not facilitated the multiple languages for that this site may not be preferred by the users who do not have that kind of language.

### 6.3 Future work

There are several opportunities to further enhance the BNCC website for Daffodil International University:

- **Interactive Features:**

Incorporate interactive elements such as forums or chat rooms where cadets can discuss experiences, seek advice, and share ideas. This would strengthen the sense of community and facilitate peer-to-peer support.

- **Mobile Optimization:**

Ensure that the website is fully optimized for mobile devices, allowing users to access information and register from smartphones and tablets easily.

- **Regular Updates:** Implement a system for regular content updates, including news about recent events, training activities, and achievements, to keep the site current and engaging.

- **Integration with Social Media:** Connect the website with social media platforms to broaden reach and enhance communication. Sharing updates and highlights on platforms like Facebook, Instagram, and Twitter can attract more interest and engagement.

- **Feedback Mechanism:** Introduce a feedback system where users can provide suggestions and report issues, helping to continuously improve the

website and address user needs.

- **Alumni Network:** Develop an alumni section to keep former cadets connected with the program, offering them a platform to mentor current members and share their experiences.

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## Pre-defense BNCC

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