BUKIDNON
STATE UNIVERSITY
MALAYBALAY CITY, BUKIDNON

Fortich Street, Malaybalay City,
Bukidnon 8700
Tel (088) 8013-5661 to 5663; TeleFax (088) 813-2717
www.buksu.edu.ph
buksupressoffice@buksu.edu.ph

BUKSU COMELEC Mobile App

Version 1.0

Date: May 9, 2025

Authors:

Ybañez, Jhon Lester : Project Manager

Macalutas, Rey Rameses Jude III : Lead Developer

Canque, Denesse : Documentation

Onal, Ma. Clarizza : Quality Assurance

Contact: 1901102366@student.buksu.edu.ph

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1. Document Overview

1.1 Scope

This document describes the various components of the BUKSU COMELEC mobile application, namely, how it functions (functional), how it is constructed (technical), how it is perceived and experienced (design), and how it would be tested prior to its release (testing). It serves as a complete guide for the development and launch of the app. However, this document does not cover the setup or management of the server infrastructure, nor does it include any tools or processes used for offline registration. These are considered outside the scope of this project.

1. 2 Audience

This document is for anyone who will be involved in the creation and development of the BUKSU COMELEC mobile application. It is also meant to serve as an instruction for the developers who will code, the designers who will design the app's look and feel, and the testers who will ensure everything works well. It is also for project stakeholders like COMELEC officials, school administrators, and faculty members who have a vested interest in the success of the app. It is also helpful for project managers or coordinators who are tasked with monitoring the timeline, progress, and overall direction of the project.

2. Project Overview

2.1 Executive Summary

The COMELEC BUKSU mobile app is developed to enhance the voting experience through ease of access of essential election services via mobile phone. The app offers a seamless and friendly interface where voters can get current updates on the election, register as voters, and read information on candidates, such as their platform and background. By using this app, the gap between voters and COMELEC officials can be reduced, helping everyone stay informed and involved. The main goal is to make the election process more accessible, transparent, and modern by using digital tools that meet the needs of today's voters, especially students and the BUKSU community.

Objectives:

The primary goals of the BUKSU COMELEC mobile application are to enhance voter accessibility through the offering of election-related services anytime and anywhere and enhance voter turnout through the constant notification and engagement of the users with the electoral process. It also aims to ease voter registration and make it more convenient through digital forms. It also aims to empower voter registration and make it simpler through electronic forms. The application is designed to make access possible through different platforms and devices, thus being more inclusive for all. Lastly, it helps to bring modernity to the BUKSU election process by offering technology that improves transparency, efficiency, and communication between electoral officials and voters.

Main Features:

The BUKSU COMELEC mobile app includes several important features to support the voting process. It provides real-time election updates so users can stay informed about important events and announcements. The app also offers voter registration services, allowing users to register or update their information directly from their mobile device. Additionally, it gives access to detailed information about candidates, including their profiles and platforms, to help voters make informed decisions.

2.2 Problem Statement

The current way of handling elections at Bukidnon State University is slow, confusing, and hard to access for many students. Problems like long lines, unclear instructions, and lack of information can make it difficult for students to take part in elections. This results in slow service to voters.

The BUKSU COMELEC Mobile App assists in solving such issues through technology that accelerates, simplifies, and expands the elections. Through the app, students are able to register to vote online, view candidate information, and log in securely with their accounts. More students are able to participate in the elections with ease and take part in selecting their student leaders more.

User Needs:

Voters need easy access to reliable voting information so they can stay informed and make confident decisions. Many students and members of the BUKSU community may not have the time or resources to look for updates manually or visit offices physically. By offering an easy-to-use mobile application, the voting process is made easier, and more individuals are likely to participate and remain interested.

The voters should also be enabled to register and update themselves without waiting in lengthy queues or conducting paperwork manually. By providing the digital registration and update capabilities, the application can minimize delays, avoid errors, and speed up the overall procedure for everyone, particularly students and busy people.

Market Analysis Summary:

The BUKSU COMELEC mobile app is aimed primarily at students and voters in the BUKSU community, their need for a more convenient and efficient means to participate in the electoral process. There are currently few digital options for election services, so the app has a chance to fulfill that void. With its offering of a modern, digital system, the app offers a competitive edge, simplifying the process of the election for the people of BUKSU.

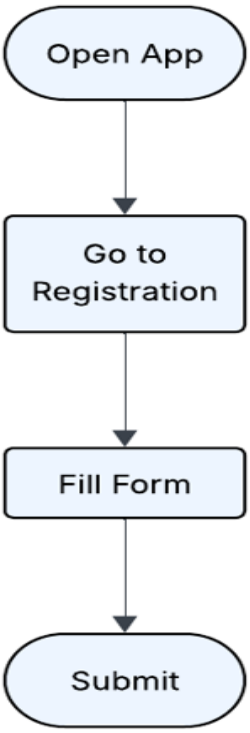
3. Functional Specification

3.1 Feature List

1. Voter Registration

Voter registration is one of the key features of the BUKSU COMELEC mobile app, which allows users to register or update their voter details easily using the app. The process of registration is simplified and made easy so that voters will not have to wait in queues and fill out forms. The users can view the registration form, enter the required details, and submit their application with few taps. This capability seeks to make registration quicker, easier, and available to every student and voter qualified within the BUKSU population.

Flow:



To register via the BUKSU COMELEC mobile application, users only need to launch the app and proceed to the registration page. They will then be asked to complete the registration form with their details. Once they fill in the form, users can simply submit their information for processing. With this streamlined process, registration becomes fast and convenient, eliminating the

need to register personally and available directly from a smartphone.

Use Cases:

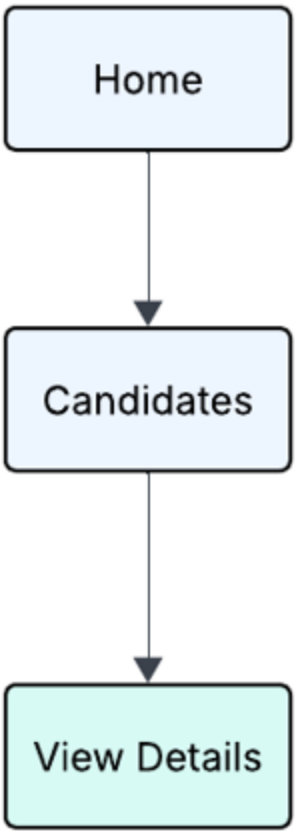
Primary: The main application of the voter registration component is for first-time voters who want to register for the very first time. Such users will use the app, fill out the necessary registration information, and send the form in order to finalize their voter registration. Such an operation provides a quick, simple way for new citizens to register without needing to go to an office, and the registration is therefore made more convenient and easier.

Alternate: The secondary application allows registered voters to make changes to their registration information. In the event of a person relocating, changing their name, or changing any aspect of information, he/she can make use of the application in amending the existing registration. It makes voters update their data and avoid the potential problem arising in the casting process and become qualified to cast ballots without seeking office visits.

2. Candidate Information

The Candidate Information feature of the BUKSU COMELEC mobile app offers users an extensive list of candidates participating in the election. Each candidate profile features pertinent information about their background, platform, and major policies. With this feature, voters are able to make well-informed choices by having easy access to candidate details and knowing where they stand on pressing issues from the comfort of their mobile phone.

Flow:

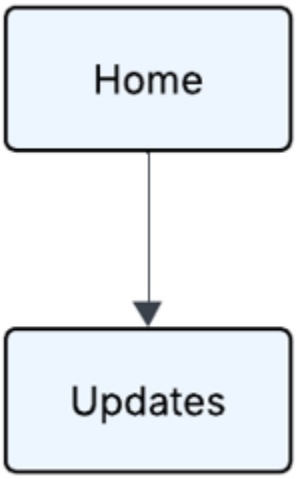


To access candidate information, users begin at the home screen of the app and navigate to the "Candidates" section. Once there, they can browse the list of candidates running for election. By selecting a candidate, users will be able to view detailed information about the candidate's background, platform, and policies, allowing them to make well-informed voting choices.

3. Real-Time Updates

The Real-Time Updates of the BUKSU COMELEC mobile application gives the users actual, real-time information on election events. They are crucial announcements, voting timetable, and election outcomes as they are happening. By keeping the voters continuously updated in real time, the feature notifies the users on significant happenings during the whole course of the elections, thus facilitating their participation and interest.

Flow:



In order to see the current election updates in real-time, users begin on the app's home page and merely proceed to the "Updates" page. This takes them to a live stream of updates, including important announcements and updates related to the election. Users can quickly scan the latest news and stay abreast of everything that transpires during the election period.

3.2 User Stories & Requirements

One of the key user stories for the BUKSU COMELEC mobile app is, "As a voter, I want to register through the app so I will not have to wait in line and complete the registration process quicker." This user story accentuates the need for a quick, comfortable, and efficient voter registration system that allows the people to register without the hassle of waiting in long lines at the registration centers. The application will aim to provide a smooth and simple registration process, which will enable voters to participate in the electoral process easily.

What the App must do (Acceptance Criteria):

The application must ensure that the voter registration form contains error checks to identify missing or incorrect fields prior to submission. Any change made to the registration form must be saved at once, with users being allowed to see their changes in real-time. The app should also be completely mobile-responsive, such that it works smoothly across different screen sizes and devices, delivering the best user experience regardless of how the app is accessed.

Other important things (Non-functional Requirements):

The app must be designed to support large numbers of users at a time, making it reliable and usable even during heavy usage times like election time. The app has to ensure utmost security of the personal data by adhering to best practices of data protection and privacy to ensure that user information is not accessible to unauthorized individuals. In addition, the app must provide instant loading to allow users to access the app in a seamless and responsive manner, without any lag.

4. Technical Specifications

4.1 Architecture Overview

The mobile application keeps the frontend and backend strictly separated. The frontend, developed with Java for Android, provides an easy-to-use and responsive interface. The backend is powered by a MySQL database, with the REST API facilitating smooth data transfer between the server and the app. Google tool integration like sign-in, calendar sync, and CAPTCHA provides added security as well as user convenience. The architecture of the app is based on the MVVM (Model-View-ViewModel) design pattern, which structures the code for better maintainability and scalability.

4.2 Platform-Specific

The app follows Android's UI/UX guidelines to ensure a uniform and user-friendly experience, with standard design components and navigation patterns that make it easy to use. This way, the app is intuitive and easy to use for users. It is designed to run on Android 8.0 and above, ensuring compatibility with a wide array of devices and access to the latest Android features and optimizations.

4.3 Data Management

Cloud-Based Storage (Firebase)

The app uses Firebase Cloud Firestore or Firebase Realtime Database to store and retrieve all user data in real time. This includes voter registrations, candidate profiles, announcements, and other dynamic election-related information. Since the app requires internet access at all times, no local storage is used.

- API Endpoints:

  POST /register → This route enables the app to store fresh voter details, including registration information. It passes the registration form data to the backend, which securely stores it in Firebase's cloud-based database.

  GET /candidates → The GET /candidates API returns a list of candidates from the backend database. As soon as the request is placed, the app retrieves the information regarding each candidate, including his or her name, party, platform, etc. The same data is then shown to the user on the candidate details page of the app. Thus, voters are provided with the most recent information about the candidates in the election.

  GET /updates → GET /updates API is called to receive the current updates related to the election from the backend. By sending this request by the app, it retrieves the most current news, declarations, and live statistics of the election, including voting schedules, polling station updates, or top announcements by the election commission. These details are then reflected in the updates area of the application, which tells people about important happenings and reminders during the course of the elections.

4.4 Security & Privacy

Sign-in system. The app utilizes Google OAuth as its sign-in system, providing safe and hassle-free login through the ability of users to log in using their Google account. Not only does this simplify the process of logging in, but it is also made more secure based on Google's trusted authentication systems. All data exchanged between the app and the server is encrypted using HTTPS and SSL to protect user information from unauthorized access. The app complies with the Philippine Data Privacy Act, guaranteeing that personal information is handled responsibly and securely, with no user data being sold or misused.

Secure connection. The app provides a secure connection through the implementation of HTTPS and SSL encryption across all data exchanges. This safeguards sensitive data, including personal data and registration information, against interception and alteration during transmission. Through these security measures, the app safeguards user confidentiality and data integrity and creates a secure environment in which users can interact with the app.

Data privacy. The app is compliant with the Philippine Data Privacy Act, taking utmost care that all personal data gathered is processed with the highest degree of protection and privacy. It provides data collection, storage, and processing guidelines, ensuring that user information is safely kept and utilized solely for its stated purpose. The app values user consent and openness in how data is handled, protecting the privacy of all users in accordance with local law.

Privacy policy. The app operates a strict privacy policy that will never disclose or sell user information to third parties. All collected personal information is only utilized to offer the services within the app, e.g., voter registration and election information. The app is dedicated to upholding user confidentiality and building trust by protecting all personal data.

4.5 Third-Party Integration

The app integrates several third-party SDKs and libraries to enhance functionality and improve user experience.

One of the key integrations is Google OAuth for secure sign-in. These integrations are aimed at improving the usability and security of the app. OAuth provides the ability to sign up securely on the basis of their Google accounts without going through the hassle of creating a new username and password. This integration simplifies the sign-in and ensures that user authentication is processed efficiently and securely.

The app also uses the Google People API to retrieve basic user profile information when users log in. The data is used to personalize the user experience and safely authenticate identities in the system.

In addition, integration with the Generate Report API allows the system to generate downloadable reports in PDF or CSV format, such as voter registration summaries or election results, dynamically. This functionality assists administrators in effectively managing and auditing election data.

5. UI/UX Design Specifications

5.1 Wireframes & Mockups

Includes screen designs for:

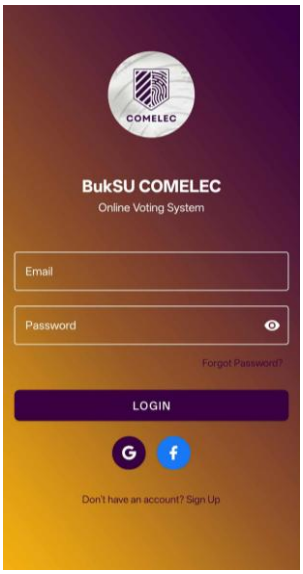


Figure 1. Home Screen.

The Home Screen is the central dashboard of the application, giving users easy access to all major features like registration, candidate details, and live updates. It offers a friendly interface with minimalism, using simply labeled icons or buttons for every section.

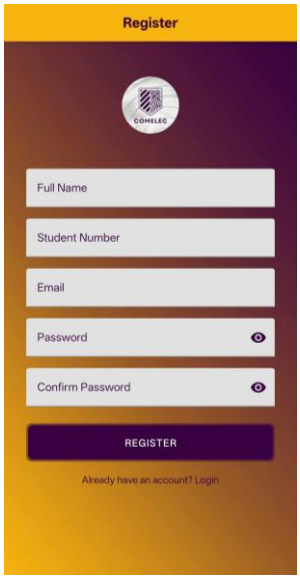


Figure 2. Registration Form.

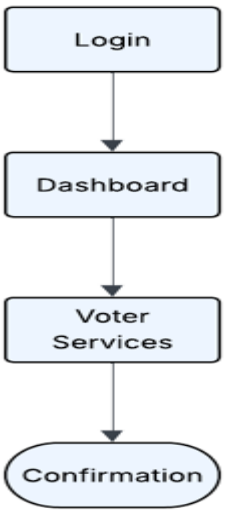
The Registration Form page allows users to submit their voter registration data in a simple and step-by-step process. It has input fields such as full name, student ID number, e-mail address, and password. Fields are labeled correctly, and validation is used to prevent errors such as missing or invalid input. At the bottom, a Submit button allows users to send their information once completed.

Figure 3. Candidate Profiles.

The Candidate Profiles screen presents a list of all candidates running for positions, each displayed in a card format with their name, photo, and desired position.

5.2 Navigation & Flow

App Flow:



The flow of application begins at the log-in page, on which users log in securely with their Google account. After they have logged in successfully, they are redirected to the main dashboard that provides them access to various voter services. From there, users can choose services like registration, validating candidate information, or viewing election updates. After completing a particular service—such as filling out a registration form—they are automatically directed to a confirmation page to ensure that their action had been successfully completed. This simple flow provides a seamless and easy navigation experience.

Navigation:

The app makes use of a bottom navigation bar to offer easy and convenient access to the major pages of the app. Some of the main sections include Home, Voter Services, Candidates, Updates, and Settings. The design is made to be simple and intuitive to enable users to transition between features with ease, using few taps, and this ensures an efficient and convenient experience during their engagement with the app.

Accessibility Guidelines

The application is accessible according to guidelines through the utilization of high-contrast text to allow for readability by visually impaired users. Fonts are selected for legibility and clarity, with minimal use of highly decorative styles that could impede understanding. Navigation is made straightforward and consistent, with intuitive controls and layouts that support users of different abilities, providing an inclusive experience for everyone.

6. Deployment & Maintenance

6.1 Deployment Plan

The mobile application deployment is coordinated via GitHub, the primary hub for version control, code sharing, and release management. Developers push updates to specific branches and create pull requests for code review and testing before merging into the main branch.

Rollout Strategy

Phase 1: Internal Testing

The application will then be thoroughly prepared by the development team. This stage is meant to find out any major bugs, performance problems, or UI/UX inconsistencies. It will also present a chance to test key functionality such as registration, candidate information display, and real-time updates before scaling to a large audience.

Phase 2: Pilot Test at BUKSU

During this phase, the app will be launched to a limited number of users among the BUKSU community. Feedback will be gathered in order to solve any lingering issues, and additional enhancements will be implemented based on actual usage.

Phase 3: Public Release (Region-wide)

Following successful testing during the previous phases, the application will be rolled out for general use within the area. At this phase, more people will be targeted and monitored again to check whether the application remains stable and users are satisfied.

7. Appendices

7.1 Glossary

OAuth: An authentication protocol that is safe and allows people to log into the app with an account they already have (e.g., Google) without providing the app their password. It adds an additional layer of security and makes it easier to log in.

API (Application Programming Interface): A group of protocols and instruments by which the application is capable of interacting with the server. It allows the application to send and retrieve data, i.e., voter information, candidate data, and election updates, from the backend.

MVVM (Model-View-ViewModel): A software pattern applied to structure code in a manner that divides the app's logic into three independent components:

- Model: The business data or business logic (e.g., candidate, voter information).
- View: The user interface or UI (e.g., candidate list, registration form).
- ViewModel: The connection that ties the model to the view, in that data is displayed in the view and controls the app's state.

7.2 References & Resources

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