

## Design Brief

### Client

- **Name:** GWSC Extracurricular Committee
- **Contact:** PDA@gwsc.vic.edu.au
- **Location:** Greater Western Secondary College (GWSC), Melbourne, VIC, Australia

### Business Analyst, Project Manager, Developer (Front-end and back-end) and System Evaluator

- **Name:** Ishan
- **Contact:** OJH0003@gwsc.vic.edu.au
- **Affiliation:** Student, Greater Western Secondary College

### Date

- **Issue Date:** March 17, 2025
- **Submission Date:** March 20, 2025 (design brief submitted)
- *Future revisions may occur*

### Project Title

- **GWSC School Club Membership Manager Solution**

## 1. Problem/Need/Opportunity

The current club management system at Greater Western Secondary College (GWSC) relies heavily on outdated methods, including paper-based registration forms and manual attendance tracking via the Compass platform. This approach has led to significant inefficiencies and issues, including:

- **Data Integrity Issues:** Frequent loss of sign-up forms, resulting in inaccurate membership records (e.g., 15% of forms misplaced in 2024).
- **Communication Breakdowns:** Missed event notifications due to lack of automated reminders, with 20% of students reporting unawareness of club activities in a recent survey.
- **Low Engagement:** Declining student participation, with a 10% drop in club attendance over the past two years, attributed to cumbersome processes and poor accessibility.

### Opportunity:

The development of a digital solution presents an opportunity to address these challenges by streamlining club membership registration, automating attendance tracking, and enhancing engagement through targeted event reminders. This solution will improve operational efficiency, reduce errors, and foster a more inclusive extracurricular environment at GWSC, aligning with the school's goal to increase student involvement by 15% by the end of 2025.

## 2. Users

The solution will cater to two primary user groups, each with distinct needs and interactions:

- **Students:**
  - **Requirements:** Ability to register for an account, select and join multiple clubs (e.g., Chess Club, Drama Club), log attendance at meetings, and receive automated event reminders via email or in-app notifications.
  - **Characteristics:** Ages 12–18, varying technical proficiency (basic to intermediate), requiring an intuitive interface.
  - **Access:** Available on school PCs during and after school hours.
- **Club Leaders:**
  - **Requirements:** Manage member lists (add/remove users), record attendance, send event notifications to members, and create new club events with customizable dates and details.
  - **Characteristics:** Teachers or senior students, intermediate to advanced technical skills, needing administrative control and reporting features.
  - **Access:** Available on school PCs with restricted admin privileges.

### User Constraints:

- Limited time availability (students: 1–2 hours/week; leaders: 2–3 hours/week).
- Dependence on school IT infrastructure (e.g., network drive access, Python compatibility).

## 3. Programming Language Features

The solution will leverage the following technologies and techniques to meet user requirements and demonstrate VCE competencies:

- **Python (Version 3.x):**
  - **Object-Oriented Programming (OOP):** Implementation of User and Club classes to encapsulate data (e.g., user ID, club name) and methods (e.g., register(), log\_attendance()).
  - **File Handling:** Use of CSV files for persistent storage of user data, attendance logs, and event schedules on a network drive.

- **Tkinter:**
  - **Graphical User Interface (GUI):** Development of a desktop application with interactive elements, including:
    - Buttons for registration and event creation.
    - Checkboxes for club selection and attendance logging.
    - Text fields for user input (e.g., name, email).
  - **Layout:** Grid or pack geometry managers for a responsive design across school PC screen sizes.
- **Algorithms:**
  - **Quicksort:** Applied to sort member lists by name or join date for efficient retrieval.
  - **Binary Search:** Used for login validation to quickly verify user credentials against the CSV database.

#### **Additional Features:**

- Error handling (e.g., try-except blocks for file I/O errors).
- Modular code structure (e.g., separate modules for GUI, data management).

## **4. Feasibility**

A thorough feasibility analysis ensures the project's "viability within the given constraints", according to the study design:

- **Technical Feasibility:**
  - **Hardware:** Compatible with GWSC's existing PCs (minimum specs: 2GB RAM, Windows 10/11, Python 3.x installed).
  - **Software:** Utilizes Python 3.x and Tkinter (pre-installed on school systems), with CSV files stored on a secure network drive accessible to authorized users.
  - **Constraints:** Limited to desktop use; no internet-dependent features due to school firewall restrictions.
- **Time Feasibility:**
  - **Duration:** 16 weeks (80 working days, excluding weekends and public holidays, e.g., Labour Day on May 11, 2025) from March 18, 2025, to July 2, 2025.
  - **Schedule:** Aligns with PSM stages: Analysis (3 weeks), Design (4 weeks), Development (6 weeks), Evaluation (3 weeks).
  - **Milestones:** Key deliverables (e.g., SRS, Designs) completed by due dates (see Gantt chart).
- **Economic Feasibility:**
  - **Cost:** No additional hardware/software costs; utilizes existing school resources.
  - **Budget:** Time investment by developer (Ishan) estimated at 10–15 hours/week, within VCE workload.
- **Social Feasibility:**

- **Skills:** Matches VCE Applied Computing competencies (OOP, GUI development, algorithm implementation).
- **User Acceptance:** Supported by GWSC's push for digital transformation and student feedback favoring automation.
- **Legal Feasibility:**
  - **Privacy:** Complies with Australian Privacy Principles (APP) by storing personal data (e.g., names, emails) securely on a school network drive with access controls.
  - **Copyright:** Original code; no third-party libraries beyond Python standard library.

## 5. Originality

This solution stands out due to its tailored approach to GWSC's specific needs:

- **Customization:** Incorporates GWSC-specific clubs (e.g., Chess Club, Drama Club, Sports Club) with customizable event reminders, unlike generic tools like Google Forms or Microsoft Excel.
- **Innovation:** Introduces an automated reminder system triggered by event dates, a feature absent in current GWSC processes and most off-the-shelf solutions.
- **Scalability:** Designed to accommodate future clubs or features (e.g., event feedback forms), with modular code for easy updates.

## Comparison to Existing Solutions:

- Unlike Compass (attendance-only, manual), this solution automates membership and reminders.
- Unlike commercial tools (e.g., Clubhouse), it's free, school-specific, and avoids subscription costs.

## 6. Scope

### In Scope:

- **Functional Requirements:**
  - User login system with username/password authentication.
  - Club selection interface allowing students to join multiple clubs.
  - Attendance tracking with CSV-based logging for each meeting.
  - Event reminder system sending notifications 24 hours before events.
- **Non-Functional Requirements:**
  - Usability: Intuitive GUI for users with basic skills (e.g., large buttons, clear labels).
  - Reliability: 99% uptime on school PCs, with data backup every 7 days.
  - Accessibility: Keyboard navigation and high-contrast mode for diverse needs.

- Maintainability: Modular code with comments for future updates.
- **Constraints:**
  - Limited to desktop use on school PCs.
  - No real-time syncing (batch updates via CSV).

### Out of Scope:

- **Exclusions:** Mobile app integration, real-time online access, payment processing, or integration with external platforms (e.g., Google Calendar, Compass, ...).
- **Rationale:** These features are beyond the roughly 16-week timeline and current technical infrastructure; they are recommended for future enhancements post-project.

## 7. Project Timeline and Resources

- **Timeline:** 16 weeks from March 18, 2025, to July 2, 2025, detailed in the accompanying Gantt chart.
- **Resources:**
  - **Hardware:** GWSC PCs (Python 3.x, Tkinter pre-installed).
  - **Software:** Python IDE (e.g., PyCharm or VS Code), network drive storage.
  - **Human:** Developer (Ishan), client feedback from GWSC Extracurricular Committee.
- **Risks and Mitigation:**
  - **Risk:** PC compatibility issues → Mitigation: Test on multiple school PCs.
  - **Risk:** Data loss → Mitigation: Daily backups to network drive.
  - **Risk:** Time overrun → Mitigation: Buffer week in evaluation stage.

## 8. Success Criteria

- **Functional Success:** All in-scope features (login, club selection, attendance, reminders) operational by July 2, 2025.
- **User Acceptance:** 80% positive feedback from 10+ students and 5+ club leaders in beta testing.
- **Efficiency:** Reduce sign-up errors by 90% and event miss rates by 50% compared to current methods.
- **Assessment Alignment:** Meet VCE Unit 3 Outcome 2 (Analysis) and Unit 4 Outcome 1 (Development/Evaluation) criteria.

## 9. Approval

- **Developer Sign-Off:** Ishan, March 17th 2025

- **Client Sign-Off:** [Space for GWSC Extracurricular Committee signature and date]