SOFTWARE DEVELOPMENT PROPOSAL

### PREPARED FOR

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# Project Definition

The purpose of this project is to develop a web application for the Fitness Center located in the Human Kinetics Program (HKP) building, with the primary goal of eliminating the traditional pen-and-paper method for logging user activity. This application will provide a seamless, mobile-based solution that allows users to conveniently log in and out of the center using their personal devices. By transitioning to a digital system, the Fitness Center aims to improve efficiency, reduce manual errors, and enhance the overall user experience.

The system is designed to be cost-effective and user-friendly, requiring no additional hardware investments such as computer units or specialized equipment. The application will operate entirely through users' mobile devices, removing the need for complex system setups or installations. This approach minimizes operational costs and simplifies the process for both users and administrators.

The web application will include functionality for users to securely log their access to the Fitness Center, while administrators will have the ability to view and analyze records for their documentation purposes.

# Business Need

The client requires a more efficient and structured system for tracking student usage of their gym facilities. At present, they rely on a manual logbook, which poses several vulnerabilities and limitations including but not limited to storage, accessibility, and functionality. Implementing a digitized system will not only streamline the process of record-keeping but also address its limitations through the following remedies:

1. Storage: Paper records can quickly accumulate, occupying physical space and requiring careful management and maintenance, as they are susceptible to physical deterioration. Meanwhile, a web-based platform can update data to the cloud, preserving valuable data while eliminating the need for physical storage.
2. Accessibility: Retrieving specific data from manual logbooks can be inefficient and time-consuming, especially for older records. An electronic logbook provides immediate access to records for a specific date.
3. Functionality: A software solution allows the addition of more extensive functionalities than that of a manual logbook. This project specifically will enable the client to monitor treadmill usage, allowing for a thorough evaluation of university resource utilization and energy consumption.

With these utilities, the project deliverables will significantly improve the operations of the Fitness Center, providing a streamlined and convenient solution for tracking their facilities.

* 1. Customer Profile and Existing System

Under the management of the HKP of the University of the Philippines – Baguio (UPB), the Fitness Center caters to the university population, employees and students alike. In order to review operations of the facility and identify areas for improvement, the HKP tracks its users through a paper logbook. In this current system, gym-goers write down their names together with their time-in before entry and their time-out after use. It is noted that the Fitness Center also tracks treadmill usage through the same procedure. These records serve as a usage tally and a reference for the administrator’s reports.

With the creation of a digitized system, it will be possible to streamline these user logging procedures. This system will be developed primarily to facilitate user tracking and to assist the Fitness Center administrator or coordinator in managing the facility. This will also refine the user experience by making log-ins and log-outs more convenient, enabling quick check-ins through QR code scanning. While users such as students and faculty will use this application regularly, the administrator may only access the system periodically to monitor current Fitness Center statistics. As a result, the project will be developed with the UPB community in mind, particularly regular users and those who are interested in using the facility.

* 1. Critical Constraints

As a course requirement, the implementation timeline of the project is limited to the period from the approval of this proposal until the end of the second semester of A.Y. 2024-2025. Moreover, the course mandates that only one prototype may be developed by the team. The features proposed to the HKP must be successfully delivered, though additional features may be incorporated as long as the final project remains aligned with the client's primary objectives.

Additionally, since the client is not in the position to provide any resources, the team will be responsible for sourcing all necessary materials and covering all related expenses. An internet-based solution also requires server access, and connecting to the university’s server is up to the discretion of the Digital Innovation Center (DIC). Given these constraints, it is the team’s responsibility to strategize and develop a cost-effective solution that meets the project's objectives while ensuring optimal outcomes for both parties.

Lastly, it is the team’s objective to design a solution that is suited for long-term use. However, bugs and performance issues may still emerge over time and may require upgrades and optimizations to maintain functionality and efficiency.

* 1. Project Deliverables

1. Hardware Deliverables

* QR code posters
* User manual
* Admin guide
* System architecture overview

1. Software Deliverables

* QR-based user log-in/log-out functionality
* Real time tracking of user entry, exit and treadmill usage
* Email notification for users who are unable to log-out
* Admin dashboard for monitoring user records
* Local and cloud-based data storage for records
* Backdating feature for admin
* View and retrieval of historical data feature for admin

1. Training

* An orientation will be conducted for the staff designated to use the web application.

1. Post-installation Support

* Maintenance and bug fixes
* User support and troubleshooting assistance
* Performance monitoring

1. **Preliminary Requirements**

The QR-based user tracking system will be a responsive web application built with SvelteKit. The system will implement role-based access control, ensuring that users and administrators can access their respective functionalities.

Users will log in and out by scanning a QR code for gym access and treadmill usage. Administrators will have additional capabilities such as manually editing logs and accessing user records. The system will track user activity in real-time and send email notifications for automatic log-outs. Data will be stored both locally and in the cloud, and the system will be compatible with any device equipped with a functional camera and QR code scanning capability.

* 1. Functional Requirements
  2. General Features
* User Authentication. Users and administrators must be able to create and log in to their accounts.
  1. Admin Features
* Manual Editing or Backdating. This allows the admin to update logs manually in case of power outages or other necessary adjustments.
* View History. This enables the admin to access user and treadmill usage records, with the ability to filter logs by date for easier tracking.
  1. User Features
* QR Scanning. Users will log in and log out by scanning a QR code. A separate QR code will be scanned in order to use the treadmill.
* Email Notifications. As protocol, any active records that remain logged by designated break times or closing hours will be automatically logged out by the system. When this occurs, users will receive an email notification informing them that they were unable to log out and that the system has logged them out automatically.
  1. External Interface
* The web application must be able to run on major web browsers such as Google Chrome.
* Since the system relies on QR scanning for user log-ins and log-outs, it must be compatible with devices that support QR scanning, particularly smartphones.
* Application Programming Interfaces (APIs) will be used to fetch and update data from the database, send email notifications, and authenticate user and admin accounts.
  1. User Interface

The app will be accessible on mobile devices, making a responsive UI design essential. To achieve this, SvelteKit will be used to develop the user interface, ensuring smooth performance and adaptability across different screen sizes. Additionally, the interface will be customized based on the user’s role, allowing each user to access only the functionalities relevant to their responsibilities. This role-based design will enhance usability and improve the overall user experience.

* 1. Target Environment

The proposed solution is a web-application platform, intended to operate on the local server of the university after the project is turned over to the client. During development, the team will be availing Elastic Compute Cloud and Relational Database Service from Amazon Web Services, but will also consider alternatives such as Microsoft Azure and Google Cloud to adapt to any potential issues. The web-app will be designed for 24/7 availability and accessibility on any smartphone using university Wi-Fi. The system will also be tested to accommodate a user capacity of 50-100.

* 1. Summary of Customer Priorities and Expectations

The primary objective of this project is to improve the operations of the UPB Fitness Center by replacing the traditional manual logbook with a QR-based digital system. The client's expectations are listed below in order of priority:

1. Log-in/Log-out Feature
   * Users should be able to scan a QR code upon entry and exit, ensuring accurate and effortless activity tracking inside the fitness center.
   * The system must automatically log out users who are unable to do so and notify them via email.
2. Tracking of Treadmill Usage
   * The system should record treadmill usage data, allowing administrators to monitor usage trends and resource allocation effectively.
3. Admin Features for Monitoring
   * The admin should be able to access a dashboard to view, retrieve and analyze user records.
   * The system should allow manual log adjustments in case of power outages or when the need arises.
4. Accessibility
   * The web-based system must be user-friendly and accessible on mobile devices without additional hardware.
   * Data should be retrievable for reporting purposes.
5. **Approvals**
6. Mary Chezka Ann Sinco, Project Adviser. The Project Adviser will oversee the development process by monitoring progress and assisting the team in resolving issues that may be encountered during development.
7. Jessica Talangchey, HKP Coordinator. The HKP Coordinator will designate the administrators for the web application. As the client, they shall give their final approval once the system meets the specified requirements. In cases where certain requirements cannot be fulfilled, their approval will also be required to proceed with the project development.
8. Project Development Team: Mikka Abarra, Renz Caluag, Mirachelle Escalante, Aaron Tamayo, Anton Valencia, and Douleia Yap. The project development team is responsible for designing the web in accordance with the client’s requirements while also adapting to any necessary changes and unforeseen issues.

Approvals

The project development team is expected to deliver a functional web application by the end of the second semester, A.Y. 2024-2025. Any modifications beyond those outlined in this document shall be made under the guidance of the project adviser and with the approval of the client, represented by the HKP coordinator. By affixing their signatures below, the client and project adviser confirm their approval of the system features detailed in this proposal, and the development team agrees to design the system accordingly.

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| MARY CHEZKA ANN SINCO, PROJECT ADVISER |  | JESSICA TALANGCHEY, HKP COORDINATOR |

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| --- | --- | --- |
| MIKKA ABARRA, DEVELOPER |  | RENZ CALUAG, DEVELOPER |

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| --- | --- | --- |
| MIRACHELLE ESCALANTE, DEVELOPER |  | AARON TAMAYO, DEVELOPER |

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| --- | --- | --- |
| ANTON VALENCIA, DEVELOPER |  | DOULEIA YAP, DEVELOPER |

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| DATE OF SIGNING |

# 8. Milestones and Reporting

### Total estimation of man hours: 226

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| --- | --- | --- | --- | --- |
| **Milestone** | **Tasks** | **Reporting** | **Hrs** | **Date** |
| **1 - Analysis** | | | | |
| 1.1 | Analysis and design stage, gather data and create system mockup | None | 20 | 20/01/15 |
| 1.2 | Architecture design | None | 4 | 01/02/15 |
| 1.3 | Design work plan (distribution of tasks to development teams) | Client meeting to review work plan | 10 | 07/02/15 |
| **2 - Development** | | | | |
| 2.1 | Create database | None | 5 | 14/02/15 |
| 2.2 | Import existing client data | None | 5 | 21/02/15 |
| 2.3 | Clean data | None | 5 | 28/02/15 |
| 2.4 | Create GUI | Client meeting to review GUI | 30 | 01/04/15 |
| 2.5 | Integration with PaperlessOffice.net | None | 10 | 14/04/15 |
| 2.6 | Integration with smartphone network | Email report | 10 | 21/04/15 |
| **3 - Testing** | | | | |
| 3.1 | Alpha testing desktop application (Closed) | Email report | 25 | 07/05/15 |
| 3.2 | Alpha testing smartphone application (Closed) | None | 25 | 14/05/15 |
| 3.3 | Open Beta (volunteer employees) | Client meeting | 22 | 21/05/15 |
| 3.4 | Finalise documentation | None | 20 | 28/05/15 |
| **4 - Deployment** | | | | |
| 4.1 | Deployment to desktops | None | 5 | 01/06/15 |
| 4.2 | Deployment to smartphones | None | 10 | 07/06/15 |
| **5 - Training** | | | | |
| 5.1 | Inhouse training | Client meeting | 16 | 14/06/15 |
| 5.2 | AdHoc training | None | 4 | 30/06/15 |