Pro



## Changelog Table:

|  |  |  |
| --- | --- | --- |
| Version | Author | Description |
| v1.0 | Nicholas Thong Meng Shui | * Created this document |
| V1.1 | Nicholas Thong Meng Shui | * Added information and content to 1.3.1 Product Perspective |
| V1.2 | Nicholas Thong Meng Shui | * Added information and content to 1.3.3 User Characteristics |
| V1.3 | Muhammad Anas bin Khairul Azman | * Added content to 1.3.2 Product Functions |
| V1.4 | Nicholas Thong Meng Shui | * Added Use Case Diagram to 3.1 Functions |
| V1.5 | Nicholas Thong Meng Shui | * Removed EHR System from 1.3.1 * Updated 1.3.2 Campus Recreation Facility Integration * Created and added content to table 3-1 in 3.1 functions * Added table labels to tables 1-1 and 3-1 |
| V1.5.1 | Muhammad Anas bin Khairul Azman | * Added Product Limitations in 1.3.4 * Added pretext for 3.2 Performance Requirements |

## 1.3 Product Overview

### 1.3.1 Product Perspective

The Wellness Platform is a system that integrates the university health centre’s appointment system and campus recreation facility management software. Its primary role is to support student wellness through personalized health resources and wellness goals, integration with university medical appointment records, and interaction with recreational facilities.

As such, this system communicates and interoperates with several other components of the university's infrastructure. These include the university authentication system, recreation portal, and health portal. The system utilizes these interfaces to authenticate users, retrieve health data, enable health appointment scheduling, enable fitness class scheduling, and provide wellness recommendations.

1. System Interfaces

* **Authentication System**: The system relies on the university's login infrastructure to authenticate student users securely.
* **Recreation Portal**: Interfaces with the university’s recreation facility management software to enable fitness class booking and data sharing.
* **Health Portal**: Interfaces with the university’s health centre’s appointment system to allow students to schedule health appointments.

1. User Interfaces
   1. Wellness Platform website shall make use of white (RGB Hex code: #FFFFFF) for its overall background and navigation bar font colour.
   2. Wellness Platform website shall always have a black (RGB Hex code: #000000) for non-navigation bar font colour.
   3. Wellness Platform website shall always have a blue (RGB Hex code: #000EBF) navigation bar present at the top of the page.
2. Hardware Interfaces

The system supports standard student devices such as personal computers and mobile phones. No specialized hardware is required.

1. Software Interfaces

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Mnemonic** | **Specification Number** | **Version** | Reference |
| University Health Portal | UNIV\_HEALTH\_PORT | N/A | Current | [University Health Patient Portal](https://www.universityhealth.com/patient-visitor-resources/patients/patient-portal) |
| University Recreation Portal | UNIV\_REC\_PORTAL | N/A | Current | [Columbia University Recreation Portal](https://perec.columbia.edu/content/member-portal-resources) |
| OAuth 2.0 Authentication Framework | OAUTH2 | RFC 6749 | Latest | [OAuth 2.0 Specification](https://tools.ietf.org/html/rfc6749) |
| JSON Web Token Standard | JWT | RFC 7519 | Latest | [JWT Specification](https://tools.ietf.org/html/rfc7519) |
| RESTful API Interface | REST\_API | OpenAPI 3.0 | Latest | [OpenAPI Specification](https://swagger.io/specification/) |

Interfaces:

* University Health Portal
  + **Purpose**: To allow students to manage medical appointments and view personal health records.
  + **Interface Definition**: Web-based interface; provides scheduling, messaging, and medical record access. Integration through RESTful API.
  + **Reference**: University Health Patient Portal
* University Recreation Portal
  + **Purpose**: To enable scheduling and tracking of fitness classes and recreational activities.
  + **Interface Definition**: Booking and facility access information exchanged over REST API. Includes user authentication via SSO.
  + **Reference**: Columbia University Recreation Portal
* OAuth 2.0 Authentication Framework
  + **Purpose**: To authenticate students securely across university systems.
  + **Interface Definition**: Standard OAuth 2.0 protocol to handle login tokens and authorization. Interfaces with the university’s identity provider.
  + **Reference**: OAuth 2.0 Specification
* JSON Web Token (JWT)
  + **Purpose**: To transmit session data securely between frontend and backend systems.
  + **Interface Definition**: Encodes claim-based tokens using standard JWT format (RFC 7519), embedded in HTTP headers.
  + **Reference**: JWT Specification
* RESTful API Interface
  + **Purpose**: To facilitate integration between the wellness platform and external systems such as EHR, health portal, and recreation systems.
  + **Interface Definition**: Uses HTTP(S) with standard methods (GET, POST, PUT, DELETE). Data formatted as JSON. Described using OpenAPI Specification.
  + **Reference**: OpenAPI Specification

1. Communication Interfaces

* HTTPS protocol is used for secure communication with internal university systems.
* Authentication via OAuth 2.0 and JWT for cross-system data sharing.

1. Memory Constraints

The system is lightweight and web-based, requiring minimal local memory. All user data is stored and processed in cloud/university-hosted servers.

1. Operations

The Wellness Platform is intended to function under both user-driven and automated operations. The following operational requirements are identified:

1) Modes of Operation

* **User-Initiated Mode**: Students interact with the web application to:
  + Set and view wellness goals.
  + Book or cancel health centre or fitness appointments.
  + View personalized health resources.
* **Admin Mode**: Authorized staff access logs or analytics reports through secure dashboards.

2) Periods of Interactive and Unattended Operations

* Interactive Operations:
  + Occur during active user sessions.
  + Includes booking appointments, viewing data, or modifying goals.
* Unattended Operations:
  + Background data syncing with EHR and Recreation systems.
  + Periodic refresh of user statistics (e.g., step counts, appointment reminders).
  + Runs on a scheduled basis (e.g., nightly or hourly intervals).

3) Data Processing Support Functions

* **Data Aggregation**: Collects fitness and medical data from multiple systems and consolidates it in the student dashboard.
* **Data Validation**: Ensures data accuracy and compliance with privacy regulations (e.g., HIPAA).
* **Error Logging**: Logs failures during API communication or user actions for diagnostics.
* **Monitoring**: System health checks and logging for server uptime and performance metrics.

1. Site Adaptation Requirements

The system requires configuration of university-specific endpoints (e.g., EHR API URLs, class schedule formats) during deployment. It also requires institution-specific policy parameters (e.g., data retention limits, HIPAA compliance flags).

1. Interfaces with Services

Integrates with:

* University SaaS-based portals (e.g., health appointment scheduling)
* Cloud storage services (if enabled)

## 1.3.2 Product functions

Health Centre Appointment System Integration

* The wellness platform needs to integrate with the health centre’s appointment system.
* Schedule appointments with the health centre.
* Cancel scheduled appointments.

Campus Recreation Facility Integration

* Search and filter classes by their type, date and location.
* Book fitness classes.
* Notification for open slots in fitness classes.
* Google/Outlook calendar integration which syncs any booked fitness classes.
* Email reminders of booked fitness classes

University Health Portal Integration

* Set personal wellness goals (steps, workout, sleep).
* Track personal wellness goals.
* Dashboard of wellness goal progress.
* Weekly summary of wellness goals.
* Receive tailored health resources based on user preferences.

## 1.3.3 User Characteristics

Table 1-1 User Characteristics:

|  |  |  |
| --- | --- | --- |
| User group | Description | Minimum Ability/Knowledge |
| Students | Students currently enrolled in the university | Possess basic computer skills |

## 1.3.4 Product Limitations

### 1.3.4.1 General Limitations

The main limitations of our product comes from the fact that it is only accessible via web browser for ease of access for students. Furthermore, the use of this wellness portal is only accessible for students within the university and is not available for staff members of the university or students outside of the university.

# 2.0 References

# 3.0 Requirements

## 3.1 Functions

A diagram of a student wellness platform

AI-generated content may be incorrect.

Figure 1.0 : Use case diagram

Table 3-1 Use Case ID:

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case ID** | **Actor** | **Use Case (Function)** | **Brief Description** |
| **UC\_001** | Student | Login | Allows the student to log into the system using their credentials. |
| **UC\_002** | Student | Book Fitness Class | Enables the student to select and book a fitness class from the available options. |
| **UC\_003** | Student | Cancel Fitness Class | Allows the student to cancel a previously booked fitness class. |
| **UC\_004** | Student | Schedule Health Centre Appointment | Allows the student to choose a time slot and book an appointment with the health centre. |
| **UC\_005** | Student | Cancel Health Centre Appointment | Enables the student to cancel a scheduled health centre appointment. |
| **UC\_006** | Student | Track Wellness Goals | Allows the student to set, monitor, and update personal wellness goals. |
| **UC\_007** | Student | View Notifications | Displays system-generated alerts or updates to the student. |
| **UC\_008** | Student | View Personalised Health Tips | Provides the student with curated health and wellness tips. |
| **UC\_009** | University Health Portal | Manage Health Centre Appointments | Receives and updates student health appointment bookings and cancellations. |
| **UC\_010** | University Recreation Portal | Manage Fitness Class Booking | Updates the fitness class schedule and availability based on bookings or cancellations. |
| **UC\_011** | System (Automated) | Integrate Wellness Data Across Systems | This system-level function operates as an internal module, synchronizing student wellness data across connected systems (e.g., Health Centre, Fitness). It may interact with internal databases or APIs to perform this integration automatically. |

## 3.2 Performance Requirements

### 3.2.5 Cancel Health Center Appointments

Functional Requirement for Cancel Health Center Appointment

Use Case Table

### 3.2.6 Track Wellness Goals

Functional Requirement for Tracking Wellness Goals

Use Case Table

### 3.2.7 View Notifications

Functional Requirement for Viewing Notifications

Use Case Table

### 3.2.9 Manage Health Center Appointments

Functional Requirement for Manage Health Center Appointments

Use Case Table