

Blueprint for an Inclusive Sexual Health App for Malaysians

D4 - Requirements Planning, Technical Design, Project Planning and Project Setup

Group 8

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University of Southampton Malaysia
COMP2300: Software Design and Development Project

Summary of work completed

In Deliverable 4, a total of 4 major tasks were completed. For requirements planning, epics, user stories and system requirement were included. Epics and user stories are used to create the project sprints and overall burndown chart for project planning, in which the first sprint is described in detail. The system requirements guided our technical design, where 3 UML diagrams were then produced. Additionally, major and minor risks were identified, and a risk mitigation plan was included.

Report on tasks completed

Requirements Planning

Based on the user stories in Deliverable 3, user stories for this report are improved upon to be more fine-grained and concise. Each user story is prioritized based on MoSCoW, assigned an estimated work size (i.e. S, M, L, XL), and follows the INVEST principles. For each story, system requirements are listed, from which agile tasks and acceptance criteria are derived. User test plans are included where possible, as well as a preliminary assignment of user stories to sprints based on significant correlation and increasing MoSCoW priority.

Technical Design

We first came up with a technical design for our application before translating them into appropriate UML diagrams. The three UML diagrams included are (i)*Use Case Diagram*, (ii)*Class Diagram*, and (iii)*Activity Diagram*. Explanations are included for each UML diagram to justify our design decisions and clarify how our designs meet the user requirements that we have laid out.

Project Planning

To illustrate the project plan, sprints and burndown charts were produced with *Jira*. Story points to estimate items were derived from work size in requirements planning. The three burndown sprints were decided based on the amount of available time for each increment during Semester 2. For each sprint, risks were identified, and sensible deliverables were chosen so that value is delivered. The project plan that we propose is one that is realistic and achievable to the best of our estimation.

Project Setup

We have set up our project management and development environment to support Agile SCRUM. We will be using GitHub for version control, Jira for task and role division and management. We included a clear plan on how we will manage our projects and provided screenshots as evidence that all team members and supervisor have access to the necessary resources. We have identified

and analysed the main risks to our project and produced a risk management plan that includes mitigation strategies for each risk.

Project Management Tools Used

- **Excel** - Used to draft and organize the initial user stories and task breakdown.
- **Jira** – Used to assign work, track progress across sprints, and generate burndown charts.
- **Python & Matplotlib** – Used to create the Gantt chart to visualize project tasks, timelines, and dependencies.
- **GitHub** – Used for version control, collaborative development, and tracking changes to the project repository.

Reflections

What went well

Despite conflicting schedules and individual assignment deadlines, the group remained in contact and stayed aligned with the overall project goals. A meeting held a few weeks earlier allowed us to review progress on individual responsibilities, clarify expectations, and identify for any necessary updates. With tasks clearly assigned, progress was able to continue even without frequent meetings. Team members took responsibility for their assigned components and made steady independent progress.

What could be improved

- Due to the heavy workload from other modules, the group was unable to hold a meeting during this week, which limited opportunities for real-time discussion and feedback.
- Time constraints meant that some features and design details could not be reviewed collectively as thoroughly as planned, leaving room for further refinement in the next phase.

Overall Reflection

While meeting frequency was limited, prior planning and clear task allocation allowed progress to continue. This experience highlighted the importance of early coordination and time management, which we will apply more effectively in the next stage of development.

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Project Blueprint for an Inclusive Sexual Health App for Malaysians:

Requirements Planning

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Bachelor of Science (BSc) in Computer Science

Overview

User stories have been improved to become more fine-grained. In accordance with AGILE Scrum, major tasks were categorized as epics, with corresponding fine-grained user stories, user story titles, and system requirements arranged in accordance with INVEST principles and MoSCoW priority, as shown on *page 7*. Further breakdown of user stories into tasks with specific acceptance criteria for Sprint 1 is shown on *page 14*. Figure 1 shows a preliminary assignment of epics for each increment.

Epics Assignment

The main priority for our app would be completing the calendar system, notification system, and appointment booking system. These are the major defining capabilities of our application to address our problem statements and persona dilemmas. Privacy policy and data disclosure are included for user assurance, as well as a STI self-assessment form with medical disclaimer. Designing a homepage with easy access to app features is a focal point too.

The second sprint focuses on storing SRH medical records so that users have a central storage system, a map locator for SRH providers, and curated SRH information to be included for easy user access.

For the final increment, remaining epics will be completed according to increasing priority and necessity, such as accessibility settings, privacy and security, clinic-side system, admin system, and in-app medication store. Implementation of games and rewards system depends on the completion of other epics.

Further elaboration and visualization can be found in Project Planning.

| | Epics |
|--|--|
| Increment 1 <i>(2 weeks)</i> | <ol style="list-style-type: none">1. User Registration and Login (1.1 – 1.4)2. Calendar Events, Filters, Summaries (5.1 – 5.9)3. Notifications and Reminders (6.1 – 6.2)4. Appointment Booking (9.1 – 9.3)5. Privacy Policy and Data Disclosure (2.1)6. STI Assessment Form (3.1) |
| Increment 2 <i>(3 weeks)</i> | <ol style="list-style-type: none">1. SRH Medical Records System (8.1 – 8.3)2. SRH Information and Resource (11.1 – 11.2)3. Clinic Locator (10.1 – 10.5)4. Homepage Features (4.1) |
| Increment 3 <i>(7 weeks)</i> | <ol style="list-style-type: none">1. Accessibility Settings (12.1 – 12.2)2. In-app Medication Store (13.1 – 13.10)3. Privacy and Security (7.1 – 7.5)4. Admin System (15.1 – 15.10)5. Clinic-Side System (14.1 – 14.3)6. Games and Rewards (16.1 – 16.5) |

Figure 1 Product backlog of tasks to complete for Increment 1, 2, and 3

User Stories with INVEST Principles

Below is a table compilation of epics, user stories, user story titles, and system requirements written in accordance with AGILE principles and revised to suit INVEST principles. A total of 16 epics are planned for our application. User stories and system requirements are highlighted according to MoSCoW colour legend in Figure 2.

| |
|--------------------|
| Must Have |
| Should Have |
| Could Have |

Figure 2 MoSCoW colour legend

| No. | Epic | No. | User Stories | User Story Titles | System Requirements | Size | I | N | V | E | S | T |
|-----|------------------------------------|-----|---|------------------------------------|---|------|---|---|---|---|---|---|
| 1 | User Registration and Login | 1 | As a new user, I want to register my details via email or mobile number so that I can sign up for an account | User registration | System allows users to register using email or mobile number and validates that passwords meet security requirements. | M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As a registered user, I want to log in securely using my credentials so that I can access the homepage | User login | System supports secure email/password login and displays appropriate error messages for invalid login attempts. | M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 3 | As a registered user, I want to receive a verification link (email/SMS) so that I can activate my account. | Account activation | System sends an account verification link or OTP via email or SMS and activates the account upon successful verification. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 4 | As a user, I want to reset my password security via OTP/email so that I can regain access to my account. | Forgot password | System provides a forgot-password option that allows users to reset their password via OTP or email link. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2 | Privacy Policy and Data Disclosure | 1 | As a user, I want to view and read the app's privacy policy and data disclosure so that I know my rights. | Privacy policy and data disclosure | System allows users to view the complete privacy policy and data disclosure information. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 3 | STI Assessment Form | 1 | As a user, I want to complete a "Symptom Checker" questionnaire so that I can assess my potential risk for STIs | STI assessment form | System provides a symptom-checker questionnaire and displays a risk assessment, medical disclaimer and directs user to book appointments if at high risk. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

| | | | | | | | | | | | | |
|---|--------------------------------------|---|--|--------------------------------------|---|---|---|---|---|---|---|---|
| 4 | Homepage Features | 1 | As a user, I want to have a simple homepage where I can access all features easily | Homepage and feature shortcuts | System displays homepage, taskbar, and shortcut to features | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 5 | Calendar Events, Filters and Summary | 1 | As a user, I want to view a calendar in the app so that I can see my upcoming schedule at a glance. | Display calendar view | System supports monthly, weekly, and daily calendar views and displays upcoming events at a glance. | L | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As a user, I want to filter categories in calendar (appointments/medications/moods/menstrual cycle) so that I can choose what to focus on. | Filter calendar event categories | System allows users to filter calendar events by category (appointments, medications, moods, menstrual cycle). | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 3 | As a user, I want to log calendar events (i.e. appointments, medications, moods, menstrual cycle) so that I can keep track of events | Log calendar events and details | System allows users to create and save calendar events with details (title, type, date/time, notes, reminders). | M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 4 | As a user, I want calendar events to be visually highlighted using colours or icons so that I can quickly identify them. | Display events via icons and colours | System displays events with distinct colours or icons per category for quick visual identification | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 5 | As a user, I want to edit an existing calendar event so that I can update changes to my schedule. | Edit calendar event | System allows users to edit existing calendar events and immediately saves and reflects the updates. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 6 | As a user, I want to delete existing calendar events so that outdated or cancelled events are removed. | Delete calendar event | System allows users to delete calendar events and prompts for confirmation before permanent removal. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 7 | As a user, I want to select a mood multiple times a day so that I can record my emotions anytime. | Log daily moods | System allows users to log multiple mood entries per day with time stamps. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 8 | As a user, I want a summary of my moods by day so that I know my emotion patterns. | Daily mood summary | System generates a daily summary of logged moods and returns emotional patterns feedback for the selected day. | M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 9 | As a user, I want a summary of my moods by month so that I know my emotion patterns. | Monthly mood summary | System generates a monthly summary of logged moods and displays overall emotional trends. | L | | ✓ | ✓ | ✓ | | ✓ |

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|---|-----------------------------|---|---|---------------------------------------|--|---|---|---|---|---|---|
| 6 | Notifications and Reminders | 1 | As a user, I want to receive a push notification when a calendar event is approaching so that I am reminded of it. | Push notifications of upcoming events | System sends push notifications for upcoming calendar events based on configurable notification settings. | M | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As a user, I want to edit reminder settings so that I can change when notifications are sent. | Edit notification details | System allows users to set and update reminder frequency and notification time for events. | S | ✓ | ✓ | ✓ | ✓ | ✓ |
| 7 | Privacy and Security | 1 | As a user, I want to unlock the app using security PIN so that no one can access my information. | Security PIN authentication | System requires a user-defined security PIN to access the app after it is enabled. | L | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As a user, I want my stored medical records encrypted at rest so that my sensitive data cannot be accessed without authorization. | Encryption of user medical records | System encrypts all stored medical records at rest using standard encryption and prevents access without authorized credentials. | S | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 3 | As a user, I want alias-based or neutral notifications so that my sensitive information is protected. | Alias-based or neutral notifications | System allows users to customize notifications either with neutral wording or user-defined aliases. | M | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 4 | As a user, I want to customize the app's name or logo so that it aligns with my privacy preferences. | User customize app name and logo | System allows users to customise the app's displayed name or logo within the device interface. | S | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 5 | As a user, I want to hide sensitive content (e.g. STI results) so that I don't see these information constantly | Hide sensitive content | System allows users to hide sensitive content behind an eye-icon. | S | ✓ | ✓ | ✓ | ✓ | ✓ |
| 8 | SRH Medical Records | 1 | As a user, I want to upload a medical record file so that it is stored in my account. | Upload medical records to database | System allows users to upload medical records in supported file formats, validates file type & size, encrypts files before storing, and allow renaming of details. | M | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As a user, I want to view a list of all uploaded medical records and their details | View medical records and details | System displays a list of uploaded medical records with file name, upload date, category and view more details. | S | ✓ | ✓ | | | ✓ |
| | | 3 | As a user, I want to categorise my medical records (by date, test type, or clinic) so that I can find info quickly. | Filter medical records by category | System allows users to categorise and filter medical records by date, test type, or clinic. | S | ✓ | ✓ | ✓ | ✓ | ✓ |

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|----|---|---|---|--|--|----|---|---|---|---|
| 9 | Appointment Booking | 1 | As a user, I want to book an available appointment slot so that the time is reserved for me. | Book appointment slots | System allows users to book available appointment slots, choose physical/online consultation and payment method, and receive a booking confirmation message. | XL | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As a user, I want to cancel a booked appointment so that I can free up the slot. | Cancel appointments | System allows users to cancel booked appointments, releases the time slot, and displays a cancellation confirmation with refund status if applicable. | L | ✓ | ✓ | ✓ | ✓ |
| | | 3 | As a user, I want to be able to choose between paying online or physically depending on my preferred appointment method, so I have more autonomy. | Payment method - Bookings | System allows users to select online/physical payment and processes refunds for eligible cancellations made within 24 hours. | S | ✓ | ✓ | ✓ | ✓ |
| 10 | Clinic Locator | 1 | As a user, I want to see nearby clinics and hospitals on a map so that I can find them easily. | Map of SRH clinics/hospitals | System displays nearby SRH clinics and hospitals on an interactive map based on user location. | M | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As a user, I want to view and copy clinic or hospital details (e.g. contact, opening hours, address) so that I can browse and save them. | Popup list of clinics/hospital details | System displays all clinic details in a popup and allows users to copy information such as address, contact, and opening hours. | S | ✓ | ✓ | ✓ | ✓ |
| | | 3 | As a user, I want to filter clinics by location and pricing so that I can narrow down suitable options. | Filter clinics/hospitals by categories | System allows users to filter clinics by location, pricing, service type, opening hours, and inclusivity indicators (e.g., LGBTQ+ friendly). | S | ✓ | ✓ | ✓ | ✓ |
| | | 4 | As a user, I want to sort reviews of clinics (rating/most recent/keyword) so that I can view the most relevant feedback first. | View and filter reviews of clinics/hospitals | System allows users to sort and filter clinic reviews by rating, date, or keywords. | M | ✓ | ✓ | ✓ | ✓ |
| | | 5 | As a customer, I want to submit reviews of a clinic/clinician so that I can help others make decisions. | User review submission form | System allows users to submit reviews and ratings for selected clinics or clinicians. | S | ✓ | ✓ | ✓ | ✓ |
| 11 | Accessing SRH Information and Resources | 1 | As a user, I want to search SRH information in the app so that I do not need to use external websites | Show list of SRH articles and video titles | System searches SRH articles and videos from database and displays matching results in a list. | L | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As a user, I want to filter information by topics/keywords so that I can easily find content relevant to my needs. | Filter SRH information by | System allows users to filter SRH content by topic, keyword, or category. | S | ✓ | ✓ | ✓ | ✓ |

| | | | | category or keywords | | | | | | | | |
|----|-------------------------|---|---|--|---|----|---|---|---|---|---|---|
| 12 | Accessibility Settings | 1 | As a colour-blind user, I want to switch to grayscale mode so that I can perceive information clearly. | Accessibility settings for colour blindness - Grayscale mode | System ensures app interface meets WCAG standards in terms of colour contrast and text size | M | ✓ | | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As a colour-blind user, I want icons, text-labels or patterns to be used alongside colours so that information is distinguishable | Accessibility settings for colour blindness - Using icons, labels and patterns | System uses icons, text labels, or patterns alongside colours for colour-blind users. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 13 | In-app Medication Store | 1 | As a customer, I want to browse products by category so that I can easily find items I am interested in. | Medication store product category | System allows users to browse products by category and displays all relevant items in each category. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As a customer, I want to search for products so that I can quickly locate specific items. | Search items | System search returns products matching the search keywords. | M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 3 | As a customer, I want to view product details so that I can evaluate products before purchasing. | View item details | System displays product detail: name, description, price, stock, and images. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 4 | As a customer, I want to add products to my cart so that I can review them before checkout. | Add item to cart | System allows users to add selected products to the shopping cart for later review. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 5 | As a customer, I want to update my cart (update quantity / remove items) so that it reflects what I want to buy. | Update cart item quantity | System allows users to change item quantities or remove items from the cart. | M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 6 | As a customer, I want to check out and submit an order so that I can buy the products I selected | Submit order details | System lets users to review the cart, choose delivery address, and submit the order successfully. | L | ✓ | ✓ | ✓ | ✓ | | ✓ |
| | | 7 | As a customer, I want to make a payment securely (e.g. FPX) so that I can buy the products I selected safely. | Make payment | System allows users to make secure payments using supported payment methods and confirms payment success. | XL | ✓ | ✓ | ✓ | | | ✓ |

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| | | 8 | As a customer, I want to save multiple delivery addresses so that I can choose them conveniently at checkout. | Save delivery addresses | System allows users to save multiple delivery addresses, set a default, and select or change an address during checkout. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 9 | As a customer, I want to track my order so that I know the delivery progress. | Track order delivery progress | System allows users to track their order progress live, showing status changes and expected delivery times. | XL | ✓ | ✓ | ✓ | | | ✓ |
| | | 10 | As a customer, I want to hide my personal details from order summaries so that my purchase remains discreet. | Hide personal details from order summaries | System allows users to opt for anonymous delivery by notifying store to hide product name and details | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 14 | Clinic-side System | 1 | As a provider, I want to add clinic or clinician appointment slots so that users can book them. | Providers - Add appointment slots | System allows providers to create new appointment slots with date, time, type, and availability status. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As a provider, I want a calendar that shows booked and available slots so that I view them easily | Providers - Calendar view of all appointment slots | System displays a calendar highlighting booked and available appointment slots for each provider. | L | | ✓ | ✓ | ✓ | | ✓ |
| | | 3 | As a provider, I want to update details or remove an available appointment slot so that the information remains accurate. | Providers - Edit or remove appointment slots | System allows providers to edit or delete appointment slots, updating availability and notifying affected users. | M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 15 | Admin System | 1 | As an admin, I want to access my main dashboard so that I can have a comprehensive view of all admin features | Admin dashboard | System provides an admin dashboard displaying all key management features and summary statistics. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As an admin, I want to process clinic applications (approve/reject) so that only accredited SRH providers are included | Admin - Select SRH clinics/hospitals | System allows admins to review and approve/reject clinic applications, ensuring only accredited SRH providers are listed. | S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 3 | As an admin, I want to approve or reject submitted clinic/clinician reviews so that only respectful and informative reviews are visible. | Admin - Process submitted user reviews | System allows admins to accept or reject user-submitted reviews before they are publicly visible. | M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 4 | As an admin, I want to upload SRH articles and infographic so that users can read and view accurate content | Admin - Upload verified SRH information | System allows admins to upload verified SRH articles and infographics for user access. | XL | ✓ | ✓ | ✓ | ✓ | | ✓ |

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|-----------|-------------------|----|---|--|---|-----------|---|---|---|---|---|
| | | 5 | As an admin, I want to add quizzes to test users' knowledge. | Admin - SRH-related quizzes | System allows admins to create and publish quizzes related to SRH topics. | L | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 6 | As an admin, I want to manage product categories so that the in-app med store remains well organised. | Admin - Update product categories | System allows admins to add, edit, or remove product categories to maintain store organization | S | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 7 | As an admin, I want to add new products so that customers can purchase new inventory. | Admin - Add new products | System allows admins to add new products with details such as name, price, stock, and category. | M | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 8 | As an admin, I want to update product information (name, price, stock, availability) so that the store always displays accurate data. | Admin - Edit product detail | System allows admins to edit existing product information: name, price, stock, and availability status. | M | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 9 | As an admin, I want to receive low-stock alerts so that I can restock on time. | Admin - Receive low-stock alerts | System sends push notifications to admins when product stock falls below a predefined threshold | M | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 10 | As an admin, I want to view product-wise sales reports so that I can understand business performance. | Admin - View product-wise sales report | System generates sales reports by product, showing quantity sold, revenue, and trends over time. | XL | ✓ | ✓ | | | ✓ |
| 16 | Games and Rewards | 1 | As a user, I want to see a "streak" or visual reward for taking my medications consistently so that I stay motivated | Medication streak | System displays visual streaks consistent medication adherence and rewards badges | M | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 2 | As a user, I want to earn badges for completing quizzes so that I feel rewarded. | Earn points and badges | System awards points to users upon completing quizzes successfully. | S | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 3 | As a user, I want to see a summary of my quiz score and the correct answers at the end so that I can learn from mistakes. | Quiz score summary | System displays quiz scores along with correct answers immediately after completion. | M | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 4 | As a user, I want a review mode for completed quiz questions so that I can see explanations for each answer. | Quiz review mode | System allows users to review completed quiz questions with explanations for correct and incorrect answers. | L | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | 5 | As a user, I want audio support for quizzes so that content is accessible to learners with visual difficulties. | Quiz audio support | System provides audio playback for quiz questions and options to support visually impaired users. | L | ✓ | ✓ | ✓ | ✓ | ✓ |

Sprint 1 – Task Breakdown and Acceptance Criteria

| <i>Epic</i> | <i>No.</i> | <i>User Story Titles</i> | <i>Tasks</i> | <i>Acceptance Criteria</i> |
|---|------------|------------------------------------|--|--|
| <i>User Registration and Login</i> | 1 | User registration | Sign-up fields Password security criteria Email or number Prevent duplicate sign-up Confirmation message | <ul style="list-style-type: none"> System provides a form with fields for Name, Email/Mobile Number, and Password. Password meet security requirements (e.g., minimum 8 characters, one number). System checks for duplicate accounts (cannot register with an existing email/phone). Upon successful submission, the account is created in a "Pending" state. |
| | 2 | User login | Backend verification Secure session | <ul style="list-style-type: none"> The system validates credentials against the database. Users cannot log in if their account is not yet activated. The system provides clear error messages for "Invalid credentials" (without specifying if the email or password was the fail point, for security). Successful login initiates a secure session and redirects to the Homepage. |
| | 3 | Account activation | Send activation link (email) Send OTP Activate account Confirmation message | <ul style="list-style-type: none"> The system validates credentials against the database. Users cannot log in if their account is not yet activated. The system provides clear error messages for "Invalid credentials" Successful login initiates a secure session and redirects to the Homepage. |
| | 4 | Forgot password | Send link (email) or OTP Set new password Confirmation message Login with new password | <ul style="list-style-type: none"> The "Forgot Password" link is visible on the login page. The system sends a reset link/OTP only if the email/phone exists in the system. The user must be able to set a new password without knowing the old one. The system invalidates the reset link/OTP once the password has been successfully changed. |
| <i>Privacy Policy and Data Disclosure</i> | 1 | Privacy policy and data disclosure | Find on sign-up/log-in page Find in settings Agreement checkbox Version update "Data We Collect" "How We Use Your Data" "Third-Party Sharing" "Right To Be Forgotten" Contact support team | <ul style="list-style-type: none"> The Privacy Policy accessible from Registration/Sign-up page before user creates account, and Settings in the app. Explicitly state what data is collected (e.g., email, phone, location, device info). Explicitly state the purpose of collection (e.g., "to improve service," "for account security"). Explicitly disclose data shared with third parties (e.g., analytics, payment processors) and provide names / categories of those partners. Provide clear instructions on how a user can request account/data deletion (Right to be Forgotten). Provide contact information of support team for privacy concerns. |

| | | | | |
|--------------------------------------|---|--------------------------------------|---|--|
| | | | | <ul style="list-style-type: none"> User ticks agreement checkbox manually instead of it pre-ticked to comply with GDPR |
| STI Assessment Form | 1 | STI assessment form | Multi-step questionnaire Clinical symptoms Medical disclaimer Calculate risk level Next Steps Data processing (Client-side / Transient server-side) | <ul style="list-style-type: none"> Results page should provide a "Download PDF" and "Save results to my profile" button. Form has "Skip" or "Prefer not to say" options for non-essential questions. If user selects "No symptoms," system should skip symptom-related questions and move to behavioural risk factors. Users can backtrack to change previous answers. Form captures following data (to be verified): Symptoms (e.g. presence of discharge, sores, itching, pain during urination), Risk Factors (e.g. recent unprotected encounters, number of partners, previous STI history), Demographics (e.g. age, biological sex - for specific risks: PID, Prostatitis) System calculates risk level (e.g., Low, Medium, High) based on a predefined medical algorithm. Disclaimer states on result screen: "This is not a diagnosis. Please consult a healthcare professional for clinical testing." The results page must provide specific "Next Steps" (e.g., "Find a Clinic" button or "Book a Test"). |
| Homepage Features | 1 | Homepage and feature shortcuts | Feature Shortcuts Effective icons & text labels Text size Colour contrast | <ul style="list-style-type: none"> Homepage should have taskbar with all features visible. Icons and labels should convey meaning effectively. Text and contrast levels should be clearly visible and WCAG standards. |
| Calendar Events, Filters and Summary | 1 | Display calendar view | Calendar layout view Monthly calendar Weekly calendar Add event option View chosen day's events | <ul style="list-style-type: none"> Able to view calendar in monthly or weekly format. |
| | 2 | Filter calendar event categories | Choose category filter Show filtered events | <ul style="list-style-type: none"> Has a "Filter" menu for users to toggle categories on/off. By default, display all categories of logged events in calendar. |
| | 3 | Log calendar events and details | Add appointment Add medication Add event details | <ul style="list-style-type: none"> Clicking an empty date shows a popup with selection of event types (Appointment, Medication, Mood) before logging details. Clicking a date with icons shows logged event entries and option to add new events. |
| | 4 | Display events via icons and colours | Select icons Show events in calendar | <ul style="list-style-type: none"> Icons are displayed successfully on calendar grid (e.g. pill for meds, heart for moods). |

| | | | | |
|-----------------------------------|---|---------------------------------------|--|---|
| Notifications and Reminders | 5 | Edit calendar event | Edit event detail Save event detail Update changes | <ul style="list-style-type: none"> • Users can edit an event detail and save changes • Changes are saved and displayed correctly in frontend and backend. |
| | 6 | Delete calendar event | Delete event & notification | <ul style="list-style-type: none"> • Users can delete an event and changes are updated accordingly in frontend and backend. |
| | 7 | Log daily moods | Display mood options Add time-stamped moods Define mood Optional notes | <ul style="list-style-type: none"> • Users can log a mood with timestamp. Each log includes a mood range, type and optional note. |
| | 8 | Daily Mood summary | Calculate moods within 24-hour Summarise daily trend Display 24-hour summary | <ul style="list-style-type: none"> • System calculates the "Dominant Mood" of the day or an "Average Sentiment Score." |
| | 9 | Monthly mood summary | Calculate moods in a month Summarise monthly trend Display monthly summary | <ul style="list-style-type: none"> • Summarize the monthly mood with a "Mood Map" (heatmap) or short paragraph summary. |
| | 1 | Push notifications of upcoming events | Request permission User-defined timings Send notifications Deep linking | <ul style="list-style-type: none"> • The app must request permission for push notifications during onboarding or before first reminder is set. • Reminders can be set at a defined time (e.g. exact time, "5 mins before," "1 hour before," or "1 day before"). • Multiple reminders can be set for a single event (e.g., 1 day before AND 1 hour before). • For medications, users can edit how often the reminder repeats (Daily, Weekly, or custom intervals). • Global vs. Specific Settings: Users should be able to set a "Global" default (e.g., "Always remind me 10 mins before meds") but override it for specific events. • Notifications must be displayed clearly yet neutrally to protect user privacy. • Notifications must appear even if the app is closed or the phone is locked. • Deep Linking: Tapping the notification must open the app directly to the specific Event Detail page. • User never receives the same alert twice |
| | 2 | Edit notification details | Edit title Edit description Edit date & time Edit frequency | <ul style="list-style-type: none"> • Users can edit notification timings and details. • Changes are saved and updated successfully. |

*Appointment
Booking*

| | | | |
|---|---------------------------------|--|---|
| 1 | Book appointment slots | View available appointments Prevent double-booking Auto-create calendar event Auto-schedule push notifications Confirmation message | <ul style="list-style-type: none">• User should only see and select slots marked as "Available" (by provider).• System prevents double bookings (Atomic transactions).• Upon successful booking, the slot status changes from "Available" to "Booked," and a calendar event is created for the user.• A confirmation message is sent once user's slot is booked successfully.• A push notification reminder is automatically scheduled for the booked time.• Users cannot book appointments in the past. |
| 2 | Cancel appointment | Delete event & notification Revert slot to "Available" Notify provider | <ul style="list-style-type: none">• Check if the cancellation is within the allowed timeframe (e.g., "Must cancel 24 hours in advance").• Cancelled slot reverts to "Available" for other users to book.• Corresponding calendar_event is deleted in the user's view.• Send automated notification to specific provider about the cancellation. |
| 3 | Payment method - Bookings | Pay Online Pay at Clinic Online payment mockup Payment pending (offline) Display refund policy Invoice | <ul style="list-style-type: none">• Two options presented to user: "Pay Online Now" and "Pay at Clinic."• "Pay Online" selected - app securely integrate with a payment provider and appointment is confirmed <i>after</i> successful transaction.• "Pay at Clinic" selected - appointment is confirmed immediately, and mark record with "Payment Pending" status.• Regardless, user receives a digital receipt / "Payment Due" invoice in their "My Appointments" section.• Display refund policy for online payments: "Cancellations made after 24 hours from time of booking are no longer refundable". |

Test Plans for Key User Stories

The following are the test plans for key user stories in Sprint 1 to ensure functionality and correctness.

- **US1 – 4 (Registration):**
 - Valid email and password create a new local user profile.
 - Attempting to register with an invalid email format displays an error.
 - Successful registration redirects the user to the "Home" dashboard.
- **US7 (Medication Tracker):**
 - Adding a medication with a valid name and dosage updates the "Active Medications" list immediately.
 - Submitting an empty form triggers a validation error ("Name is required").
 - Clicking "Log Intake" updates the "Last Taken" timestamp for that specific medication.
 - The "Streak" counter increments by 1 after logging intake.
- **US7 – 10 (Appointment Calendar):**
 - Appointments added manually appear on the correct date in the calendar view.
 - Clicking a date with an appointment displays the appointment details popup.
 - Editing an appointment's time updates the notification schedule.
 - Deleting an appointment removes it from both the list and the database.
- **US16 (Appointment Booking):**
 - Selecting a clinic and time slot reserves the slot temporarily.
 - Confirming the booking adds it to the user's local calendar.
 - The system prevents booking a slot that has already been taken (if backend integration is active).
 - The user receives a "Booking Confirmed" success message upon completion.

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Project Blueprint for an Inclusive Sexual Health App for Malaysians:

Technical Design

Group 8

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University of Southampton Malaysia
COMP2300: Software Design and Development Project

*Technical design submitted in partial fulfilment of the requirements for the award
of*

Bachelor of Science (BSc) in Computer Science

COMP2300 Technical Design Document

- **Project:** COMP2300 - Digital Sexual Healthcare Management Platform
- **Platform:** Kotlin Multiplatform (Android, iOS, Desktop)
- **Architecture:** Clean Architecture with MVVM Pattern
- **Last Updated:** December 2025

Introduction

This document provides a comprehensive technical design for the COMP2300 healthcare application, detailing the architectural decisions, component interactions, and implementation strategies that enable a maintainable, scalable, and testable multiplatform solution.

1. Executive Summary

This document outlines the technical design for the COMP2300 application, a multiplatform solution designed to provide digital sexual healthcare services including clinic booking, educational resources, and a product shop. The system leverages **Kotlin Multiplatform (KMP)** to maximize code reuse across Android, iOS, and Desktop clients, while maintaining a consistent contract with the backend via shared domain models.

The design prioritizes **maintainability**, **testability**, and **developer velocity** through a strict **Clean Architecture** approach and a component-based design strategy.

1.2 Scope

This design covers:

- Client-side architecture (Android, iOS, Desktop)
- Clean Architecture implementation with three layers
- State management and reactive UI patterns
- Navigation and routing strategies
- Data persistence and API integration
- Testing and quality assurance approaches

1.3 Design Philosophy

Clean Architecture is employed to enforce separation of concerns, making the codebase more maintainable, testable, and adaptable to change by isolating business logic from framework dependencies.

2. System Architecture

2.1 High-Level Overview

The system follows a typical **Client-Server** architecture, enhanced by Kotlin Multiplatform's ability to share code not just logic, but also data definitions.

- **Client:** A Compose Multiplatform application (Android, iOS, Desktop) handling UI, local business logic, and API communication.
- **Server:** A Ktor-based backend service managing data persistence, authentication, and core business rules.
- **Shared Kernel:** A common module containing data entities used by both Client and Server.

2.2 Module Organization & Justification

The codebase is organized into four primary modules, each with a distinct responsibility:

| Module | Responsibility | Justification |
|------------|---|--|
| shared | Contains Domain Models (Entities). | Code Reuse & Type Safety: By sharing models between Client and Server, we ensure that API contracts are strictly typed and consistent. A change in a user property in shared automatically propagates to both backend and frontend code, eliminating “schema drift” bugs. |
| composeApp | The Client Application. Contains UI, Client Domain, and Data Implementation. | Unified UI Strategy: Using Compose Multiplatform allows a single UI definition for all platforms, reducing development time by ~40% compared to native separate UIs. It also encapsulates |

| | | | |
|---------------|------------------------|--------|--|
| | | | the full client-side Clean Architecture stack. |
| server | The Ktor Backend. | | Ecosystem Consistency: Using Ktor (Kotlin) allows the server to natively consume the shared module. It simplifies the mental model for developers who can work full-stack with a single language. |
| i18n | Centralized Resources. | String | Localization First: Separating strings into a dedicated module ensures the app is ready for internationalization (i18n) from Day 1, a key requirement for healthcare accessibility. |

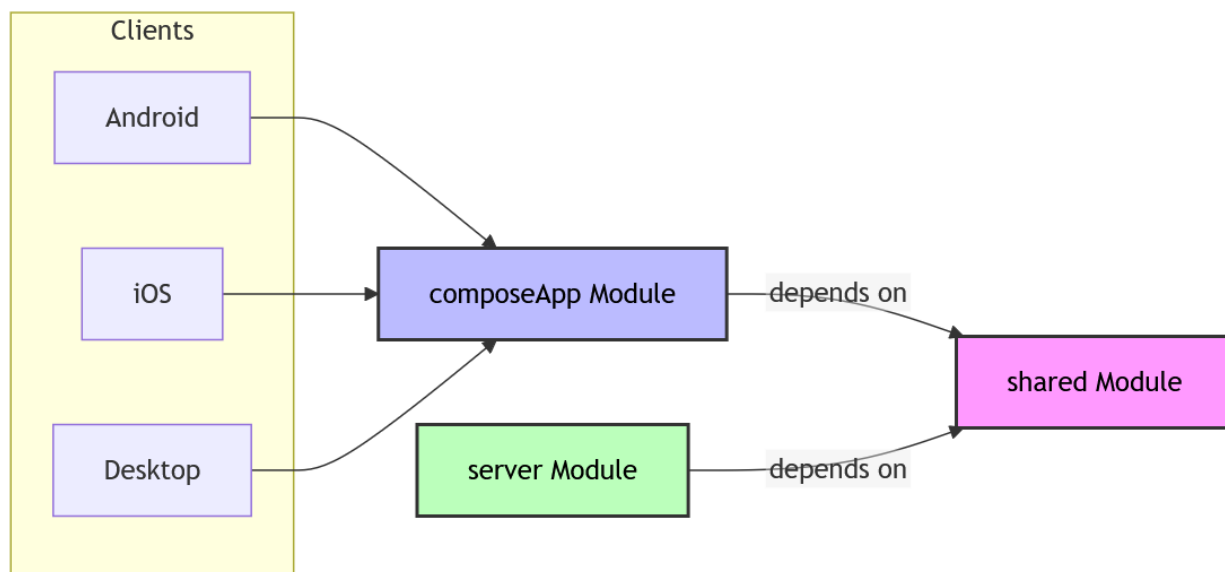


Figure 1: Diagram describing dependencies between each module

Client Architecture (Clean Architecture)

This section describes the Clean Architecture implementation used in the COMP2300 multiplatform healthcare application. The codebase follows a three-layer architecture: Presentation, Domain, and Data.

Clean Architecture is employed to enforce separation of concerns, making the codebase more maintainable, testable, and adaptable to change by isolating business logic from framework dependencies.

1. Domain Layer (Business Logic)

Responsibility: Contains pure business logic and defines contracts for data operations.

Justification: While models are universal, the actions a client takes (e.g., *Login*, *AddToCart*) are specific user stories. Orchestrating these in Use Cases decoupling the “What” (Business Rule) from the “How” (Data Fetching).

Patterns:

- **Models:** Kotlin data classes representing business entities (User, Product, Appointment, etc.)
- **Repository Interfaces:** Contracts that define what data operations are possible **without specifying** implementation
- **Use Cases:** Encapsulated business operations that orchestrate repository calls
- **Navigation Contract:** Type-safe screen definitions using sealed interfaces

Key Principles:

- Framework-independent (no Android/Compose dependencies)
- Pure Kotlin with coroutines for async operations
- Repository pattern abstracts data source details
- Models are immutable data classes with `kotlinx.serialization`

2. Data Layer (Repository Implementation)

Responsibility: Implements repository interfaces and manages data sources.

Justification: This abstracts the source of data from the rest of the app. It allows us to seamlessly switch between Mock Data (for dev/testing) and Real API (production) without changing a single line of UI or Domain code.

Implementation Strategies:

- **API Repositories:** For features requiring live data (e.g., Shop uses Ktor HTTP client)
- **Mock Repositories:** For development and testing with static sample data
- **Local/In-Memory Repositories:** For session state and temporary data (e.g., authentication)

Patterns:

- **Data Transfer Objects:** Separate API models from domain models
- **Mappers:** Convert between DTOs and domain models
- **Repository Pattern:** Multiple implementations per interface enable source-swapping

Key Principles:

- Implementation lives separate from interface definitions
- Single Responsibility per data source type
- Easy to swap between mock and real APIs

3. Presentation Layer (UI)

Responsibility: Renders UI and handles user interactions.

Justification: Unidirectional Data Flow (UDF) makes state changes predictable and easy to debug. Compose's declarative nature fits perfectly with this reactive model.

Patterns:

- **ViewModels:** One per screen, extending `androidx.lifecycle.ViewModel`
- **StateFlow:** Reactive UI state management with immutable state objects
- **UDF:** Events flow up, state flows down
- **Sealed Interfaces:** Represent UI states (Loading, Success, Error)
- **Compose Multiplatform:** Shared UI code across Android, iOS, Desktop

Key Principles:

- ViewModels expose state as `StateFlow<UiState>`
- UI is a function of state (declarative)
- Business logic delegated to domain layer

Interaction Flow

- User Action triggers UI event handlers
- ViewModel receives event, may call Use Case
- Use Case orchestrates business logic, calls Repository Interface
- Repository Implementation fetches data from appropriate Data Source
- StateFlow emits new state, Compose UI automatically recomposes

Dependency Direction: Presentation \rightarrow Domain \leftarrow Data

Data Flow

The following sequence diagram illustrates the unidirectional data flow architecture in the application, where user actions trigger events through layered components (Compose UI, ViewModel, Use Case, Repository, and Data Source) synchronously updating the UI via `StateFlow`.

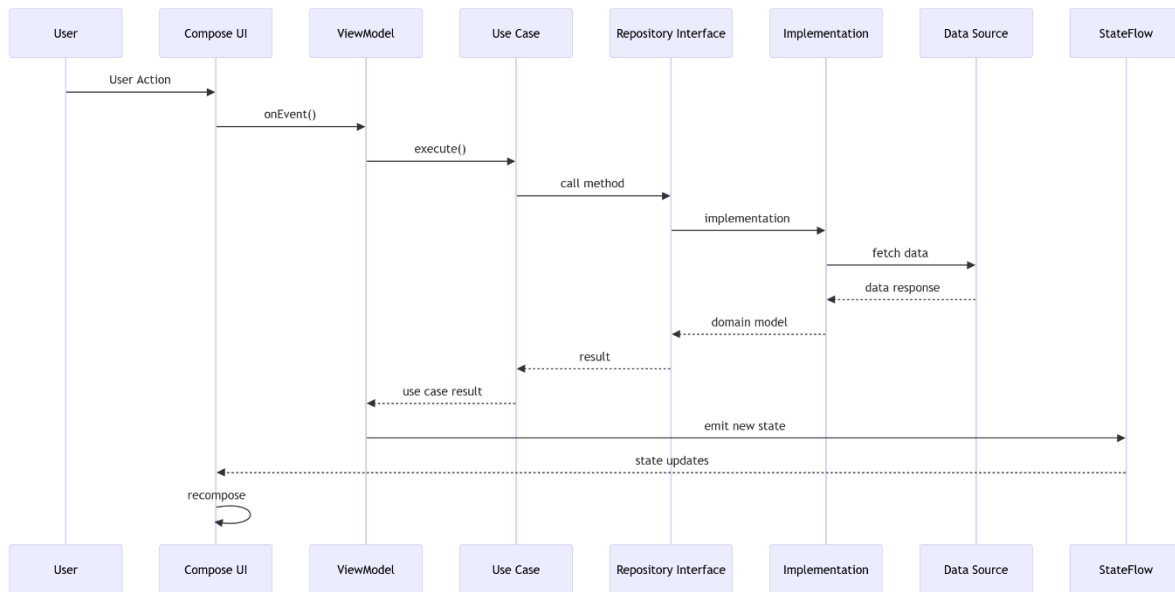


Figure 2: Sequence diagram of data flow

Diagram: Interaction Flow (Login Scenario)

The following sequence diagram illustrates how the layers interact during a specific user action (Logging in).

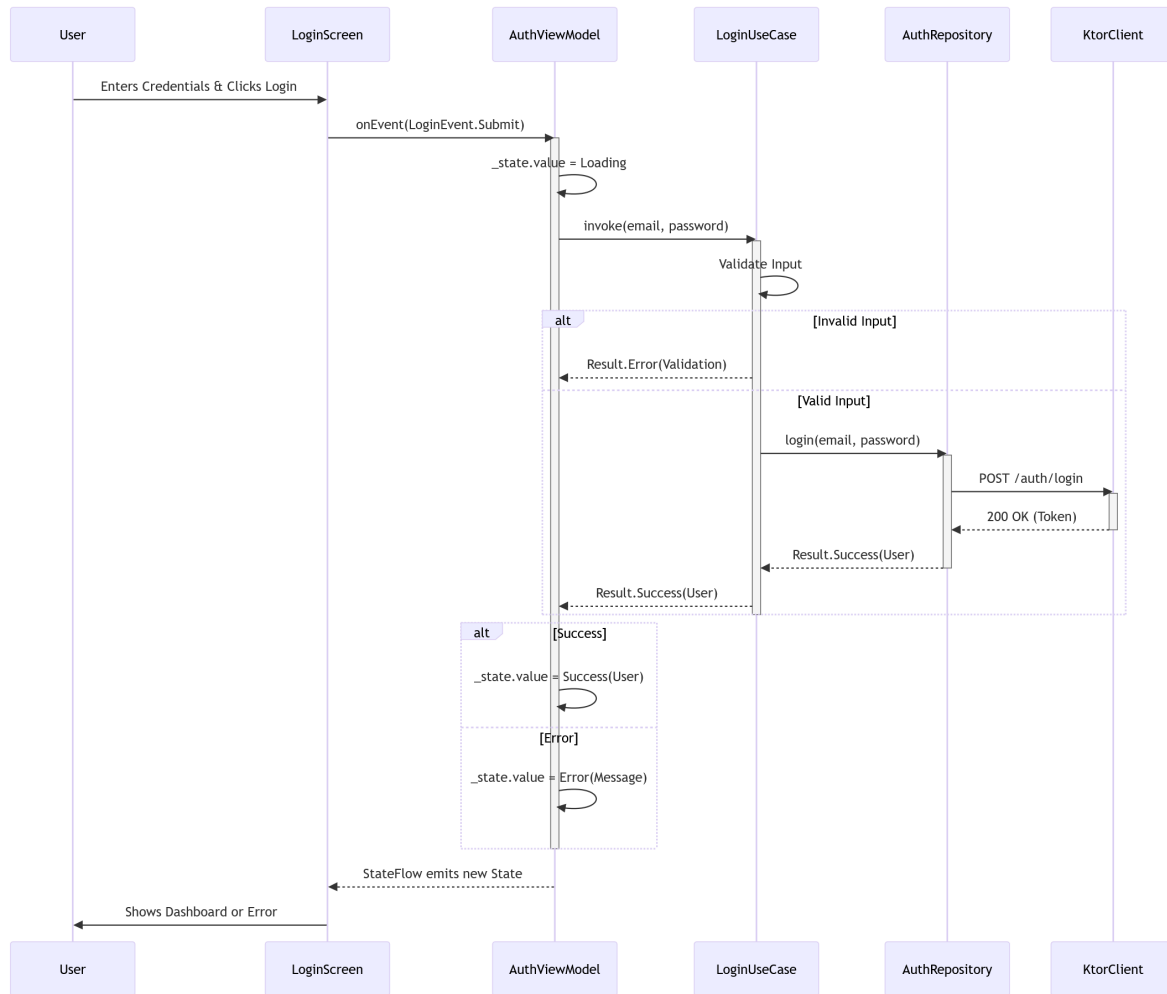
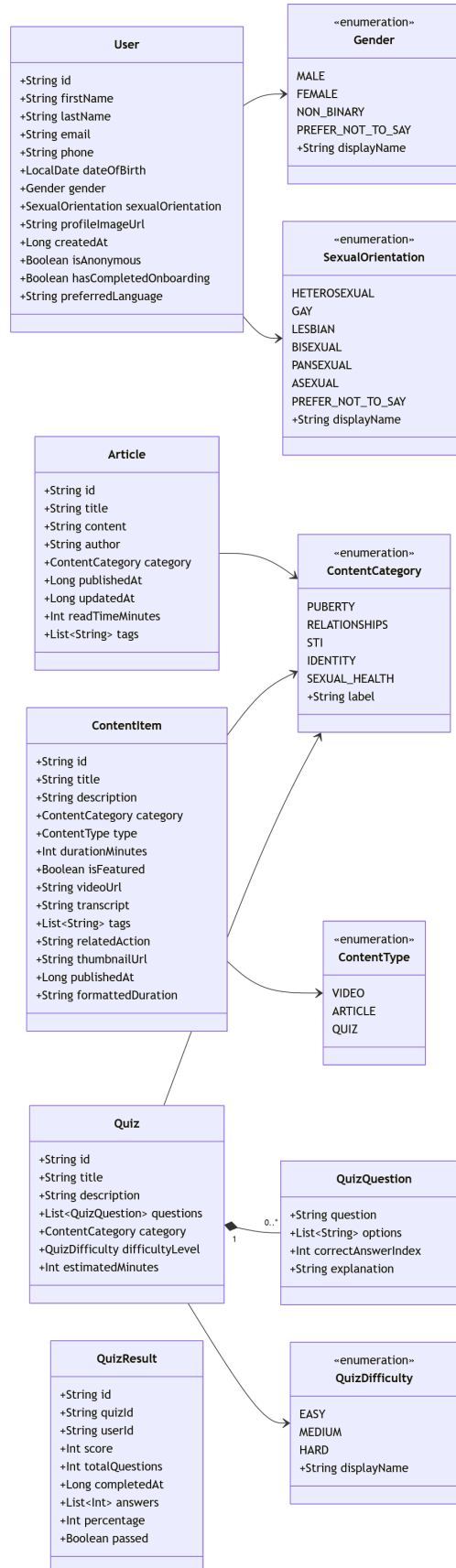
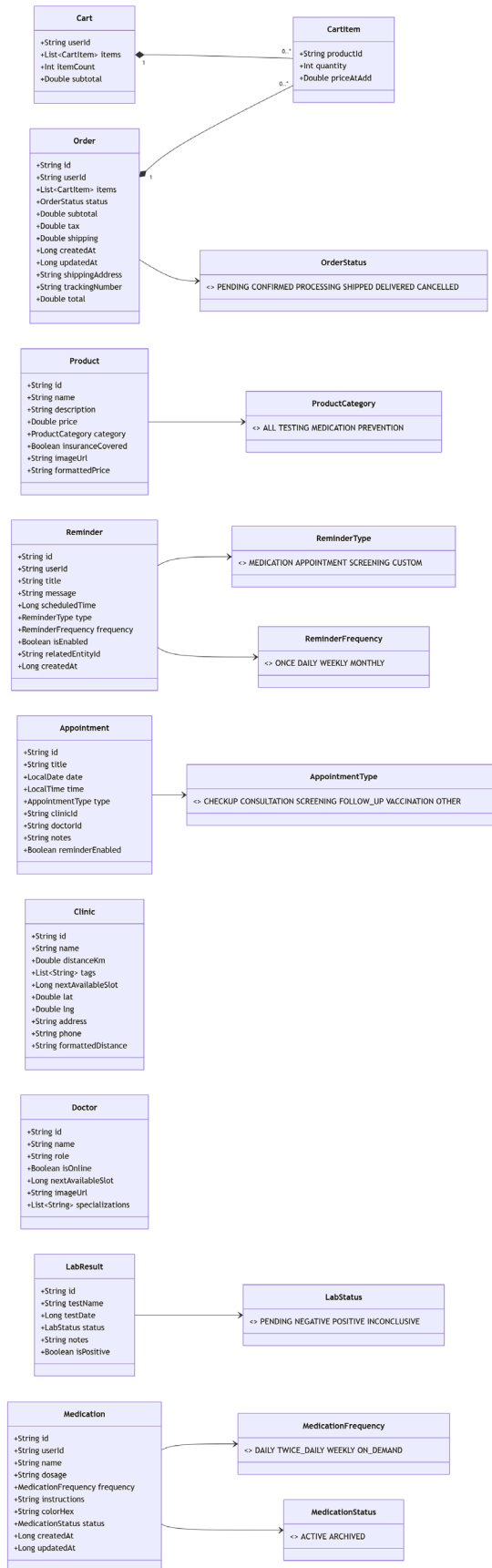


Figure 3: Sequence diagram of Login Flow

Class Diagram

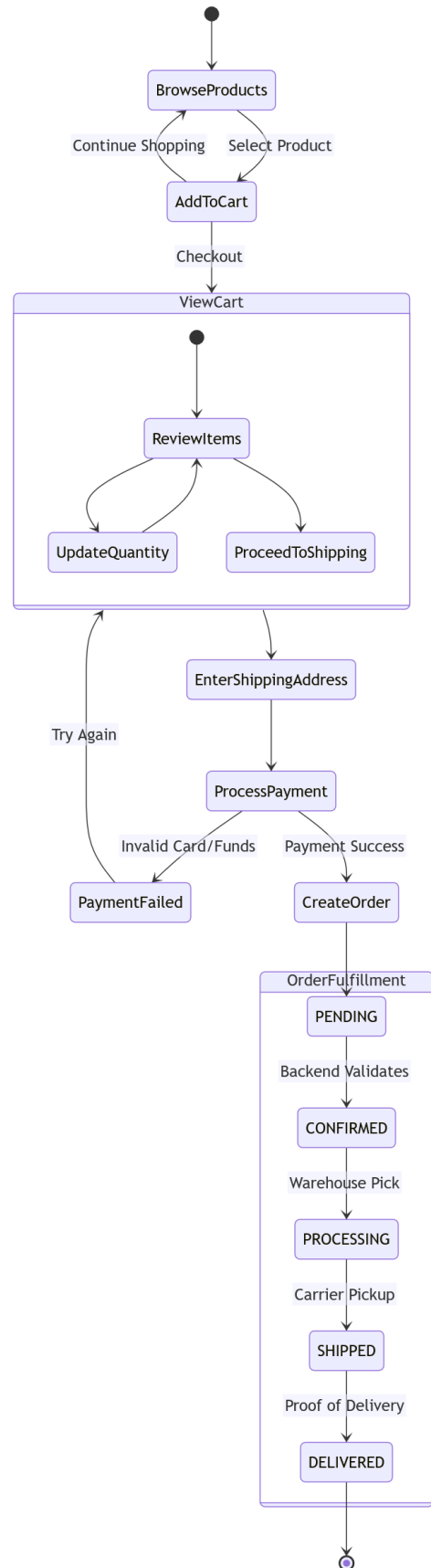
The next two pages are the class diagram modelling the data models in the application.





Activity Diagram

The activity diagram on the right illustrates the process of purchasing a product, from cart selection to final delivery.



Fulfilment of Requirements

Maintainability

- **Strict Layering:** Refactoring the UI (e.g., redesigning the Shop Card) does not risk breaking business logic.
- **Module Boundaries:** The shared module enforces a strict contract, preventing ad-hoc data structures that become technical debt.

Testability

- **Unit Testing:** ViewModels and Use Cases depend on *interfaces*, not concrete classes. We can easily inject FakeRepository to test logic (e.g., “Does cart total update when item added?”) without running an emulator or network request.
- **UI Testing:** Compose Previews allow isolated testing of UI components with sample data.

Scalability

- The architecture supports adding new platforms (e.g., Web Wasm) by simply adding a new source set in composeApp and reusing 90% of the code (Domain + simple UI modifications).
- New features can be added as new packages in presentation and domain without modifying existing functional code.

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Project Blueprint for an Inclusive Sexual Health App for Malaysians:

Project Planning

Group 8

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University of Southampton Malaysia
COMP2300: Software Design and Development Project

*Project planning submitted in partial fulfilment of the requirements for the award
of*

Bachelor of Science (BSc) in Computer Science

Sprint 1 – Project overview

| | | | |
|--|--|------------------------|---------|
| <input type="checkbox"/> Sprint 1 2 Feb – 19 Feb (20 work items) | 73 0 0 | Complete sprint | ... |
| Establish core onboarding, scheduling, and privacy foundations by enabling user registration, basic calendar interaction, appointment booking, reminders, privacy disclosure, and STI self-assessment. | | | |
| G8D-8 | User Story 1: User Registration | EPIC 1: USER REGIST... | TO DO ▾ |
| G8D-9 | User Story 2: User Login | EPIC 1: USER REGIST... | TO DO ▾ |
| G8D-10 | User Story 3: Account activation | EPIC 1: USER REGIST... | TO DO ▾ |
| G8D-11 | User Story 4: Forgot password | EPIC 1: USER REGIST... | TO DO ▾ |
| G8D-13 | User Story 5: Display calendar view | EPIC 2: CALENDAR E... | TO DO ▾ |
| G8D-14 | User Story 6: Filter calendar event categories | EPIC 2: CALENDAR E... | TO DO ▾ |
| G8D-15 | User Story 7: Log calendar events and details | EPIC 2: CALENDAR E... | TO DO ▾ |
| G8D-16 | User Story 8: Display events via icons and colours | EPIC 2: CALENDAR E... | TO DO ▾ |
| G8D-17 | User Story 9: Edit calendar event | EPIC 2: CALENDAR E... | TO DO ▾ |
| G8D-18 | User Story 10: Delete calendar event | EPIC 2: CALENDAR E... | TO DO ▾ |
| G8D-20 | User Story 11: Log daily moods | EPIC 2: CALENDAR E... | TO DO ▾ |
| G8D-21 | User Story 12: Daily mood summary | EPIC 2: CALENDAR E... | TO DO ▾ |
| G8D-22 | User Story 13: Monthly mood summary | EPIC 2: CALENDAR E... | TO DO ▾ |
| G8D-25 | User Story 14: Push notifications of upcoming events | EPIC 3: NOTIFICATIO... | TO DO ▾ |
| G8D-29 | User Story 15: Edit notification details | EPIC 3: NOTIFICATIO... | TO DO ▾ |
| G8D-35 | User Story 16: Book appointment slots | EPIC 4: APPOINTME... | TO DO ▾ |
| G8D-36 | User Story 17: Cancel appointments | EPIC 4: APPOINTME... | TO DO ▾ |
| G8D-37 | User Story 18: Payment method - Bookings | EPIC 4: APPOINTME... | TO DO ▾ |
| G8D-39 | User Story 19: Privacy policy and data disclosure | EPIC 5: PRIVACY POL... | TO DO ▾ |
| G8D-45 | User Story 20: STI assessment form | EPIC 6: STI ASSESSM... | TO DO ▾ |

Sprint 1 was planned to deliver the **core functional features** of the app, focusing on user registration and login, calendar management, notifications, appointment booking, privacy policy, and STI assessment. User stories were allocated across the team to balance workload and ensure dependencies were respected (e.g., notifications depend on calendar events). The sprint scope was designed to deliver immediate user value while remaining realistic and achievable within the sprint timeframe.

Sprint 2 – Project overview

▼

Sprint 2

16 Feb – 6 Mar (11 work items)

34

0

0

Complete sprint

...

| | | | | | | |
|--|--------|---|------------------------|---------|---|--|
| | G8D-58 | User Story 21: Upload medical records to database | EPIC 7: SRH MEDICAL... | TO DO ▼ | 5 | |
| | G8D-59 | User Story 22: View medical records and details | EPIC 7: SRH MEDICAL... | TO DO ▼ | 3 | |
| | G8D-60 | User Story 23: Filter medical records by category | EPIC 7: SRH MEDICAL... | TO DO ▼ | 3 | |
| | G8D-62 | User Story 24: Show list of SRH articles and video titles | EPIC 8: SRH INFORM... | TO DO ▼ | 3 | |
| | G8D-63 | User Story 25: Filter SRH information by | EPIC 8: SRH INFORM... | TO DO ▼ | 3 | |
| | G8D-65 | User Story 26: Map of SRH clinics/hospitals | EPIC 9: CLINIC LOCA... | TO DO ▼ | 3 | |
| | G8D-66 | User Story 27: Popup list of clinics/hospital details | EPIC 9: CLINIC LOCA... | TO DO ▼ | - | |
| | G8D-67 | User Story 28: Filter clinics/hospitals by categories | EPIC 9: CLINIC LOCA... | TO DO ▼ | 5 | |
| | G8D-68 | User Story 29: View and filter reviews of clinics/hospitals | EPIC 9: CLINIC LOCA... | TO DO ▼ | 3 | |
| | G8D-69 | User Story 30: User review submission form | EPIC 9: CLINIC LOCA... | TO DO ▼ | 3 | |
| | G8D-71 | User Story 31: Homepage and feature shortcuts | EPIC 10: HOMEPAGE F... | TO DO ▼ | 3 | |

+ Create

Sprint 3 – Project overview

▼

Sprint 3

9 Mar – 24 Apr (35 work items)

14100

Complete sprint

⋮

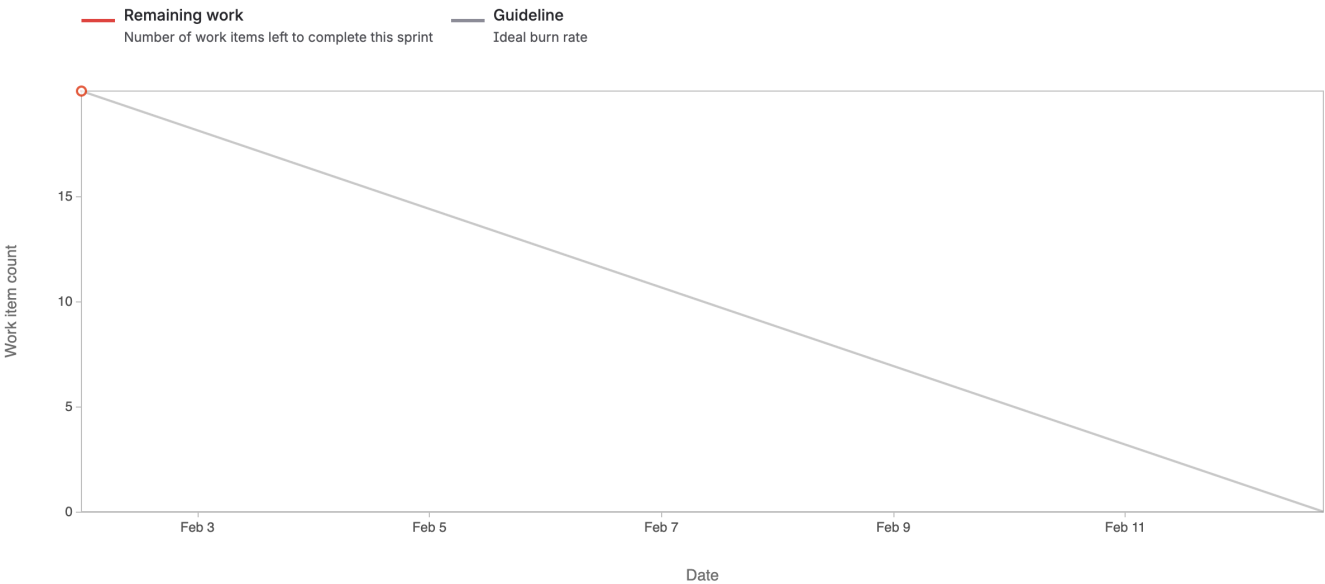
| | | | | | | |
|--|--------|---|-------------------------|---------|---|--|
| | G8D-73 | User Story 32: Accessibility settings for colour blindness - Grayscale mode | EPIC 11: ACCESSIBILI... | TO DO ▼ | 3 | |
| | G8D-74 | User Story 33: Accessibility settings for colour blindness - Using icons, labels and patterns | EPIC 11: ACCESSIBILI... | TO DO ▼ | 5 | |
| | G8D-76 | User Story 34: Medication store product category | EPIC 12: IN-APP MED... | TO DO ▼ | 3 | |
| | G8D-77 | User Story 35: Search items | EPIC 12: IN-APP MED... | TO DO ▼ | 3 | |
| | G8D-78 | User Story 36: View item details | EPIC 12: IN-APP MED... | TO DO ▼ | 2 | |
| | G8D-79 | User Story 37: Add item to cart | EPIC 12: IN-APP MED... | TO DO ▼ | 3 | |
| | G8D-80 | User Story 38: Update cart item quantity | EPIC 12: IN-APP MED... | TO DO ▼ | 3 | |
| | G8D-81 | User Story 39: Submit order details | EPIC 12: IN-APP MED... | TO DO ▼ | 5 | |
| | G8D-82 | User Story 40: Make payment | EPIC 12: IN-APP MED... | TO DO ▼ | 5 | |
| | G8D-83 | User Story 41: Save delivery addresses | EPIC 12: IN-APP MED... | TO DO ▼ | 3 | |
| | G8D-84 | User Story 42: Track order delivery progress | EPIC 12: IN-APP MED... | TO DO ▼ | 3 | |
| | G8D-85 | User Story 43: Hide personal details from order summaries | EPIC 12: IN-APP MED... | TO DO ▼ | 3 | |
| | G8D-87 | User Story 44: Security PIN authentication | EPIC 13: PRIVACY AN... | TO DO ▼ | 3 | |
| | G8D-88 | User Story 45: Encryption of user medical records | EPIC 13: PRIVACY AN... | TO DO ▼ | 5 | |
| | G8D-89 | User Story 46: Alias-based or neutral notifications | EPIC 13: PRIVACY AN... | TO DO ▼ | 3 | |
| | G8D-90 | User Story 47: User customize app name and logo | EPIC 13: PRIVACY AN... | TO DO ▼ | 2 | |
| | G8D-91 | User Story 48: Hide sensitive content | EPIC 13: PRIVACY AN... | TO DO ▼ | 2 | |
| | G8D-55 | User Story 49: Providers - Add appointment slots | EPIC 14: CLINIC-SID... | TO DO ▼ | 5 | |
| | G8D-54 | User Story 50: Providers - Calendar view of all appointment slots | EPIC 14: CLINIC-SID... | TO DO ▼ | 5 | |
| | G8D-53 | User Story 51: Providers - Edit or remove appointment slots | EPIC 14: CLINIC-SID... | TO DO ▼ | 5 | |
| | G8D-52 | User Story 52: Admin dashboard | EPIC 15: ADMIN SYST... | TO DO ▼ | 5 | |
| | G8D-51 | User Story 53: Admin - Select SRH clinics/hospitals | EPIC 15: ADMIN SYST... | TO DO ▼ | 5 | |
| | G8D-50 | User Story 54: Admin - Process submitted user reviews | EPIC 15: ADMIN SYST... | TO DO ▼ | 5 | |
| | G8D-48 | User Story 55: Admin - Upload verified SRH information | EPIC 15: ADMIN SYST... | TO DO ▼ | 5 | |
| | G8D-47 | User Story 56: Admin - SRH-related quizzes | EPIC 15: ADMIN SYST... | TO DO ▼ | 5 | |
| | G8D-46 | User Story 57: Admin - Update product categories | EPIC 15: ADMIN SYST... | TO DO ▼ | 5 | |
| | G8D-44 | User Story 58: Admin - Add new products | EPIC 15: ADMIN SYST... | TO DO ▼ | 5 | |
| | G8D-43 | User Story 59: Admin - Edit product detail | EPIC 15: ADMIN SYST... | TO DO ▼ | 5 | |
| | G8D-42 | User Story 60: Admin - Receive low-stock alerts | EPIC 15: ADMIN SYST... | TO DO ▼ | 5 | |
| | G8D-41 | User Story 61: Admin - View product-wise sales report | EPIC 15: ADMIN SYST... | TO DO ▼ | 5 | |
| | G8D-33 | User Story 62: Medication streak | EPIC 16: GAMES AND ... | TO DO ▼ | 5 | |
| | G8D-32 | User Story 63: Earn points and badges | EPIC 16: GAMES AND ... | TO DO ▼ | 5 | |
| | G8D-31 | User Story 64: Quiz score summary | EPIC 16: GAMES AND ... | TO DO ▼ | 5 | |
| | G8D-30 | User Story 65: Quiz review mode | EPIC 16: GAMES AND ... | TO DO ▼ | 5 | |
| | G8D-27 | User Story 66: Quiz Audio Support | EPIC 16: GAMES AND ... | TO DO ▼ | - | |

Burndown Chart

Sprint 1

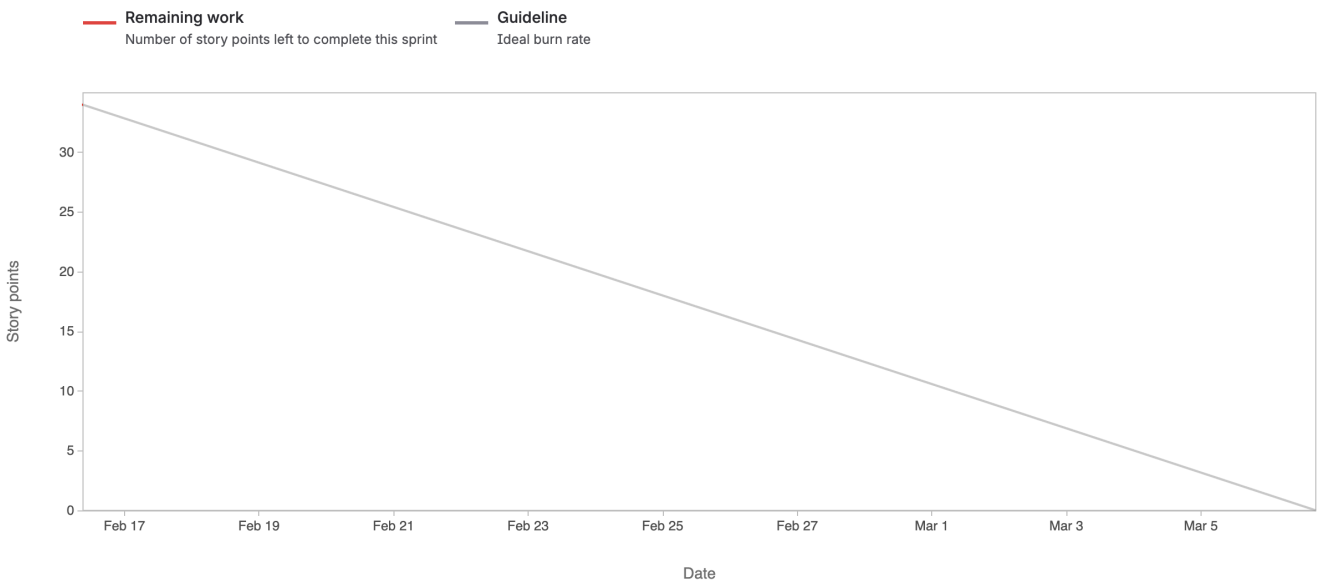
Date - February 2nd, 2026 - February 12th, 2026

Sprint goal - Establish core onboarding, scheduling, and privacy foundations by enabling user registration, basic calendar interaction, appointment booking, reminders, privacy disclosure, and STI self-assessment.



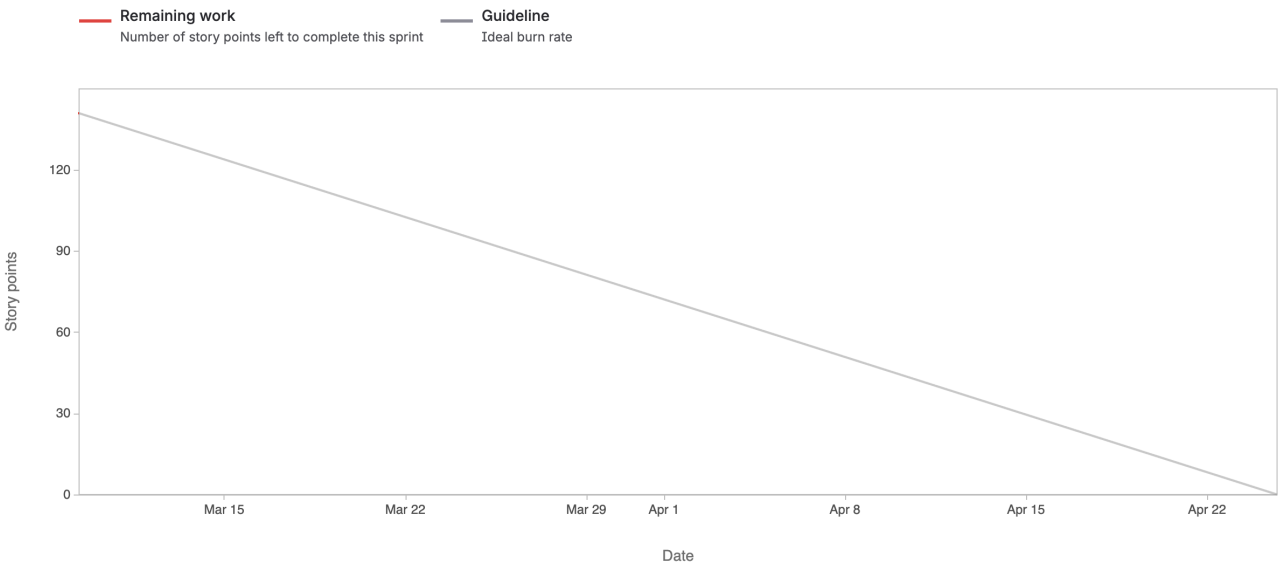
Sprint 2

Date - February 16th, 2026 - March 6th, 2026

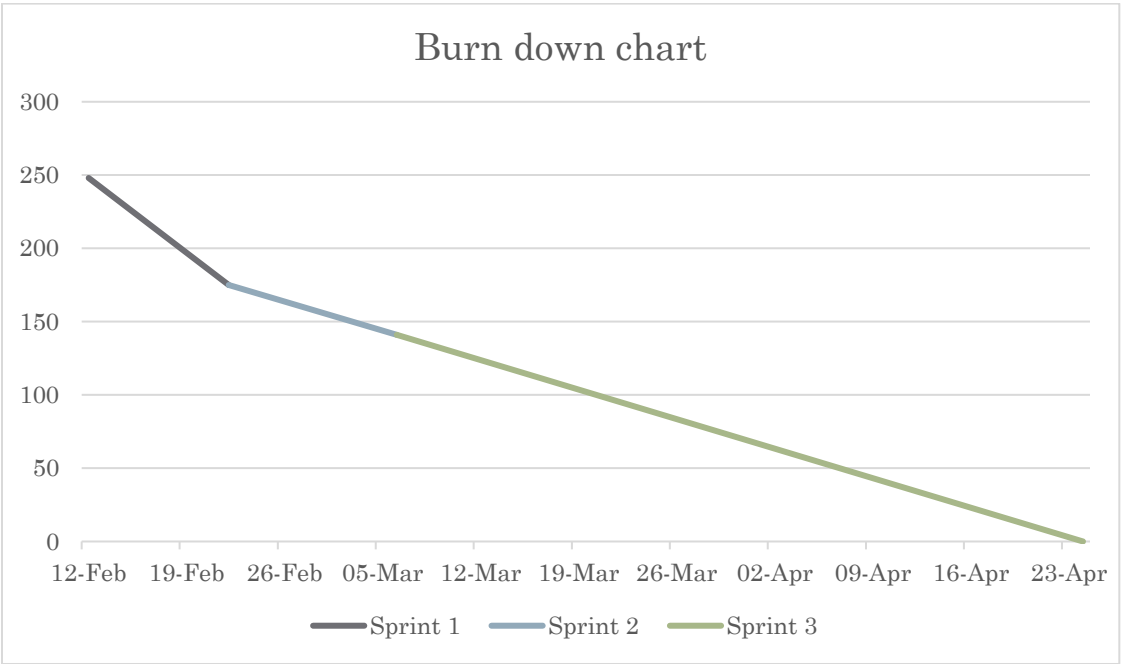


Sprint 3

Date - March 9th, 2026 - April 24th, 2026



Overall Burndown Chart Sprint 1, 2, 3



Burndown Chart Analysis for Sprints 1–3

The burndown charts for Sprints 1 to 3 show the team’s progress in completing planned tasks across the project.

Sprint 1 focused on core features such as user registration, calendar management, notifications, appointment booking, privacy policy, and STI assessment. The chart shows a steady decline as tasks were completed, indicating smooth progress.

Sprint 2 covered SRH medical records, SRH information resources, clinic locator, and homepage features. The chart reflects gradual completion of tasks, with steady progress throughout the sprint.

Sprint 3 addressed accessibility settings, the in-app medication store, and privacy and security features. The burndown chart shows completion of remaining tasks and final refinement before project delivery.

Overall, the charts demonstrate consistent team progress, effective sprint planning, and successful delivery of features across all three sprints.

Jira Project Members and Access Roles

Current users

Access requests0

Q Search roles

Roles

| Name | Email | Role | Action |
|---------------------------|---------------------|---------------|-------------------|
| <div>C</div> celiste99 | - | Administrator | <div>Remove</div> |
| <div>EN</div> Elham Nazif | - | Administrator | <div>Remove</div> |
| <div>E</div> eliana100317 | - | Administrator | <div>Remove</div> |
| <div>WE</div> Wei Eng | wxe1m23@soton.ac.uk | Administrator | <div>Remove</div> |

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Project Blueprint for an Inclusive Sexual Health App for Malaysians:

Project Setup

Group 8

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University of Southampton Malaysia
COMP2300: Software Design and Development Project

Project setup submitted in partial fulfilment of the requirements for the award of
Bachelor of Science (BSc) in Computer Science

Project Setup

The project's Git repository can be found in the following link:

<https://github.com/elhamnazif/comp2300>

- Root files
 - README.md — project overview and usage instructions.
 - CONTRIBUTING.md — contribution guidelines.
 - build.gradle.kts, settings.gradle.kts, gradle.properties — Kotlin Gradle (KTS) build configuration for the multi-module project.
 - gradlew / gradlew.bat and gradle/ — Gradle wrapper and related tooling.
 - config.properties and config/ — project configuration values and configs.
 - i18n/ — localization resources (translations).
 - .gitignore — files/paths excluded from VCS.
- Top-level modules/directories
 - shared/ — common code intended to be reused across platforms (likely a Kotlin Multiplatform module).
 - composeApp/ — a UI application using Jetpack Compose / Compose Multiplatform (Android / desktop / web UI).
 - iosApp/ — iOS application target.
 - server/ — backend/service module (Kotlin or other JVM-based server code).
 - build-logic/ — custom Gradle build logic (convention plugins or build scripts).

Evidence Of GitHub repository

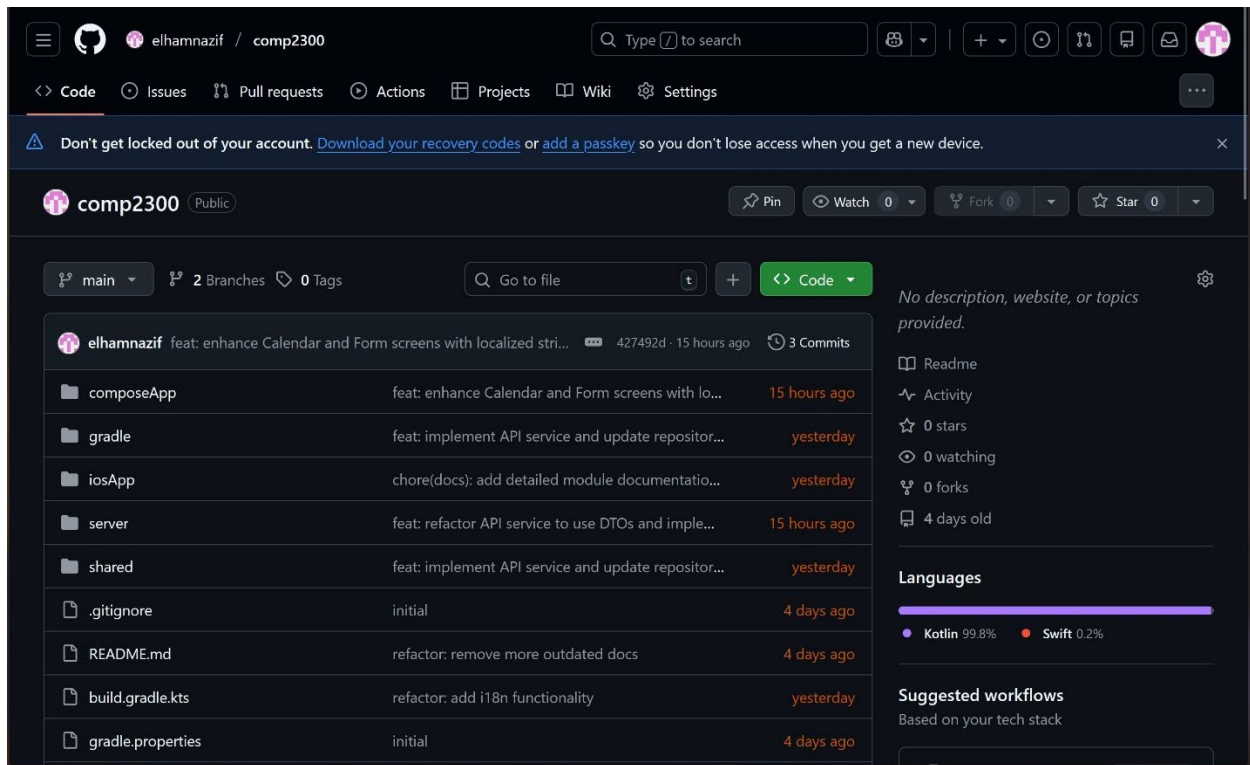


Figure 4: Screenshot of Group 8's git repository hosted on GitHub

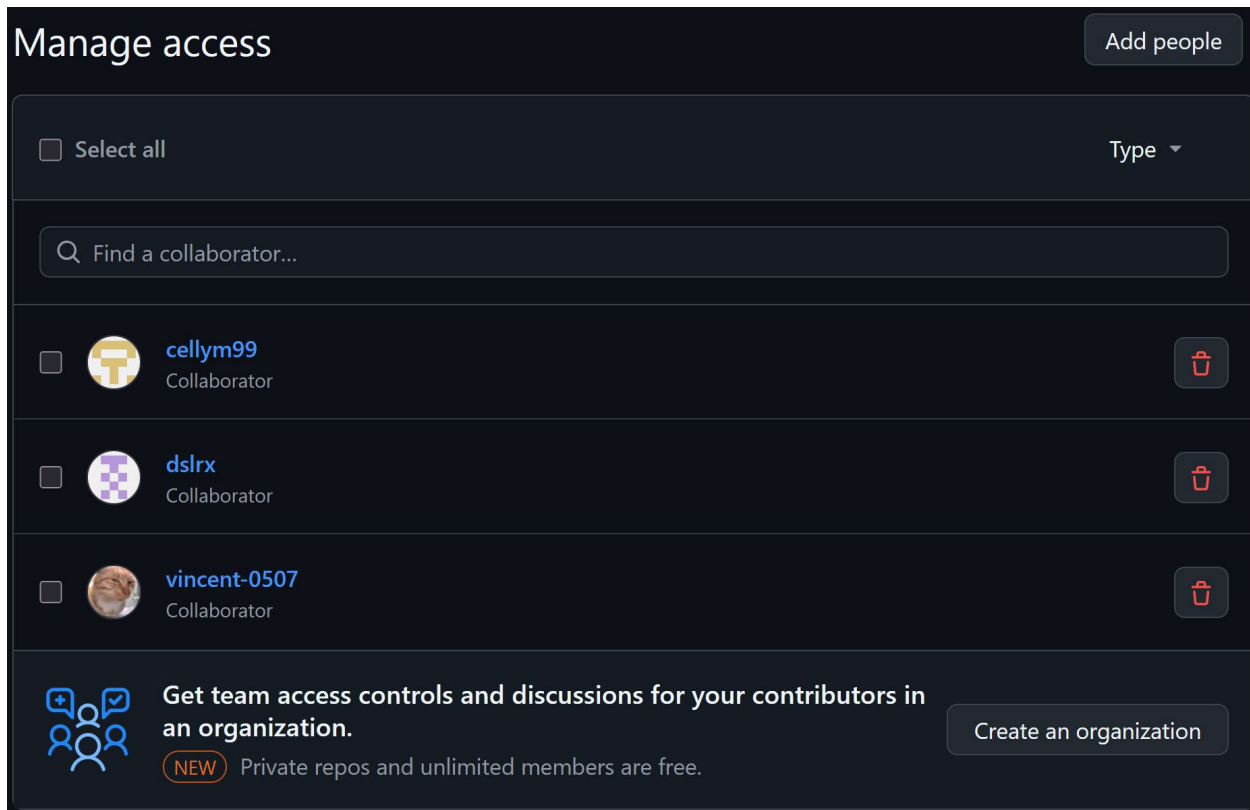


Figure 5: Screenshot of collaborators list, with all group members added. Note that the git repository owner does not show up in collaborators due to a GitHub limitation. They can be seen in the first screenshot.

Risk Management

To ensure the successful delivery of our Digital Sexual Health App, we have implemented a structured risk management process. Given the sensitive nature of healthcare data and the technical complexity of using Kotlin Multiplatform, identifying risks early is crucial. We assessed risks based on their 1. Likelihood (how probable they are) and 2. Impact (how severely they would affect the project).

| Risk ID | Risk Description | Likelihood | Impact | Mitigation Strategy |
|---------|--|------------|--------|---|
| R1 | <p><u>Technical Complexity of KMP</u></p> <p>The team is using Kotlin Multiplatform. We may face difficult configuration issues, particularly with the iOS environment, which could delay development</p> | High | High | We have set up the “Hello World” environment early to catch issues immediately. We will focus on the Android client first if iOS debugging becomes a blocker, ensuring we |

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| | | | | still have a working product to demo. |
| R2 | <u>Data Privacy & Security</u> The app handles sensitive user data (STI symptoms, medical records). A data leak would be a major ethical and legal failure. | Low | Critical | We will implement data encryption for all local data (SQLDelight Encryption). We will strictly follow the “Privacy by Design” principle, ensuring no sensitive data is logged into the console or stored in plain text. |
| R3 | <u>Team Availability</u> Due to heavy coursework in other modules (as noted in our reflections), team members may be unavailable during critical sprint days. | High | High | We have adopted a flexible Agile schedule. If a member is busy, tasks will be reassigned or moved to the next sprint. We have also secured an extension to ensure quality is not compromised by time pressure. |
| R4 | <u>Third-Party API Failures</u> “Clinic Locator” and “Payment” features rely on external APIs (e.g. Google Maps, Payment Gateways). These might fail or require paid tokens we do not have. | Medium | Medium | We will build “Mock” repositories (as defined in our Technical Design) to simulate these APIs for testing. This ensures development can continue even if the real API services are down or inaccessible. |
| R5 | <u>Scope Creep</u> The project has many ambitious features (Games, Shop, Telehealth). Trying to build everything might | Medium | High | We have strictly prioritised features using MoSCoW. “Could Have” features like the Gamification System will only be |

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| | result in a buggy, unfinished app. | | | developed if the core Appointment and Medical Record features are 100% complete and stable. |
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