TQS: Product specification report

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[This report should be written as the main source of technical documentation on the project, clarifying the functional scope and architectural choices. Provide concise, but informative content, allowing other software engineers to understand the product and quickly access the related resources.
Tips on the expected content, along the document, are meant to be removed.
You may use English or Portuguese; do not mix.]

1 Introduction

1.1 Overview of the project

This project, designed as part of the Total Quality Software (TQS) course, aims to develop a digital solution for the New Private Health Initiative (newPhi), a hypothetical healthcare system. The primary objective is to design and implement an integrated IT solution that streamlines patient appointments and admissions while excluding clinical records for now. This IT solution enhances patient and staff experience by providing efficient, robust, and user-friendly digital services. It is developed to handle pre-appointment scheduling, reception services, and post-encounter processes like billing and presence confirmation, focusing on offering competitive services by improving accessibility and operational efficiency in healthcare settings.

1.2 Limitations

While newPhi aims to be comprehensive, certain limitations are inherent in the current scope of the project:

Clinical Records Integration: At this stage, integration with existing clinical records systems is not included. This functionality is essential for a complete healthcare management system and is planned for future phases.
Mobile Application: The mobile version of the Patient portal, which would allow for greater accessibility and convenience, is also planned but not yet implemented.
Advanced Analytics: Use of data analytics for optimizing hospital operations and patient flow is considered but currently outside the project scope.

2 Product concept and requirements

2.1 Vision statement

newPhi is designed to revolutionize the way patients interact with healthcare facilities by providing a streamlined, intuitive digital platform for scheduling and managing healthcare appointments. This system addresses the high-level business problem of inefficient healthcare management, where patients struggle with long wait times, complex booking procedures, and inefficient administrative processes. By consolidating patient management, administrative tasks, and digital display systems into a unified platform, newPhi ensures a smoother operational flow and enhanced patient care experience

2.2 Personas and scenarios

Personas

- **Persona 1: Emma (Patient)**
  - **Demographics:** Age 32, employed, tech-savvy.
  - **Behaviors:** Prefers online scheduling, uses mobile apps for health management.
  - **Goals:** Quickly find and book appointments, easy check-in, minimal waiting times.
- **Persona 2: Dr. Harris (Healthcare Provider)**
  - **Demographics:** Age 45, general practitioner.
  - **Behaviors:** Needs efficient tools to manage patient flow.
  - **Goals:** Reduce administrative tasks, seamless access to patient appointment schedules.
- **Persona 3: Linda (Reception Staff)**
  - **Demographics:** Age 38, familiar with basic IT tools.
  - **Behaviors:** Manages patient registration and billing.
  - **Goals:** Streamline patient check-ins, efficient handling of payments and inquiries.

Main Scenarios

Here are the key scenarios that the system will need to support:

- **Scenario 1: Booking an Appointment (Emma)**
  - Emma logs into Φ-Patient, searches for a dermatologist at the nearest hospital, views available slots, and books an appointment.
- **Scenario 2: Patient Check-in (Linda)**
  - Linda uses Φ-Desk to check in arriving patients, verifies their details, and updates their status in the system.
- **Scenario 3: Calling Patients to Consultation (Dr. Harris)**
  - Dr. Harris uses Φ-Desk to view his daily schedule and Φ-Boards to call patients from the waiting room based on their appointment times and priority status.

2.3 Project epics and priorities

[Apresentar um plano indicativo para a implementação incremental da solução ao longo de várias iterações/releases, explicando as funcionalidades a atingir por *epics*]

3 Domain model

<which information concepts will be managed in this domain? How are they related?>
<use a logical model (UML classes) to explain the concepts of the domain and their attributes>

4 Architecture notebook

4.1 Key requirements and constrains

<**Identify issues that will drive the choices for the architecture** such as: Will the system be driven by complex deployment concerns, adapting to legacy systems, or performance issues? Does it need to be robust for long-term maintenance?
Identify critical issues that must be addressed by the architecture, such as: Are there hardware dependencies that should be isolated from the rest of the system? Does the system need to function efficiently under unusual conditions? Are there integrations with external systems? Is the system to be offered in different user-interfacing platforms (web, mobile devices, big screens,…)?
E.g.: (the references cited in [XX] would be hypothetical links to previous specification documents/deliverables)

There are some key requirements and system constraints that have a significant bearing on the architecture. They are:

- The existing legacy Course Catalog System at Wylie College must be accessed to retrieve all course information for the current semester. The C-Registration System must support the data formats and DBMS of the legacy Course Catalog System [E2].
- The existing legacy Billing System at Wylie College must be interfaced with to support billing of students. This interface is defined in the Course Billing Interface Specification [E1].
- All student, professor, and Registrar functionality must be available from both local campus PCs and remote PCs with internet dial up connections.
- The C-Registration System must ensure complete protection of data from unauthorized access. All remote accesses are subject to user identification and password control.
- The C-Registration System will be implemented as a client-server system. The client portion resides on PCs and the server portion must operate on the Wylie College UNIX Server. [E2]
- All performance and loading requirements, as stipulated in the Vision Document [E2] and the Supplementary Specification [15], must be taken into consideration as the architecture is being developed.>

4.2 Architecture view

→ Discuss architecture planned for the software solution.
→ include a diagram (a package or block diagram)

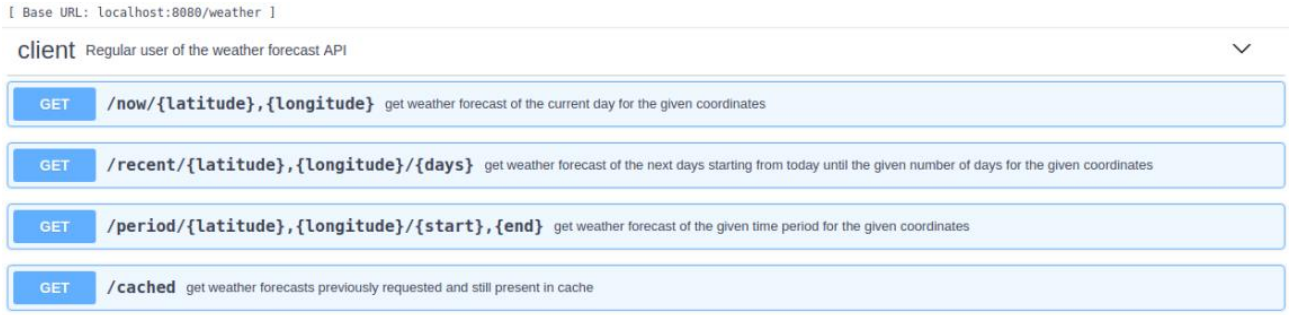
→ explain how the identified modules will interact. Use sequence diagrams to clarify the interactions along time, when needed
→ discuss more advanced app design issues: integration with Internet-based external services, data synchronization strategy, distributed workflows, push notifications mechanism, distribution of updates to distributed devices, etc.>

4.3 Deployment architecture

[Explicar a organização prevista da solução em termos configuração de produção (*deployment*). Anotar, no diagrama, as tecnologias de implementação, e.g.: colo aro simbolo do PostgreSQL na Base de dados,…]

5 API for developers

[Explicar a organização da API. Os detalhes detalhes/documentação dos métodos devem ficar numa solução *hosted* de documentação de APIs, como o Swagger, Postman documentation, ou incluída no próprio desenvolvimento (e.g.: maven site)
<what services/resources can a developer obtain from your REST-API?>
<document the support endpoints>



6 References and resources

<document the key components (e.g.: libraries, web services) or key references (e.g.: blog post) used that were really helpful and certainly would help other students pursuing a similar work>