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SENG 696 GROUP 10

ASSIGNMENT 1

I Document Control

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1 Business Case

1.1 Motivation

Mental health has become a great concern, especially with the COVID-19 pandemic, as during the pandemic ease of access to mental health professionals became challenging due to the lockdown and movement restrictions.

And due to the isolation that people were forced into; it became highly evident that the isolation caused mental health to become more of a concern for people. Thus, mental health services have been in more demand.

With the rising popularity of online meetings, it became a dire need to allow more people access to mental health professionals and mental health attention, in addition to providing them with an accessible way to schedule these appointments easily online.

This will gain the benefit over earlier modes of appointment scheduling through phone calls and the mandatory physical attendance to doctors' appointments, as it provides a convenient way of seeing all available appointments to schedule from them freely to a wider audience at the same time, and allow the appointments to have a visual component rather than just over a phone call.

2 System Description

2.1 System functionality

The proposed system will:

- allow users to register or log in through a user interface to the application.
- check for the user's uniqueness in the registration scenario, and will authenticate the user's credentials (username/email and password) in the login scenario.
- allow the user to select between two types of appointments: a general counselor appointment and a specialist appointment.
- display the selected doctor availability and the user will be able to select their preferred appointment based on date and time.
- allocate the selected time slot for the user.
- send an invoice through email to the user confirming the appointment.

2.2 High-level perspective

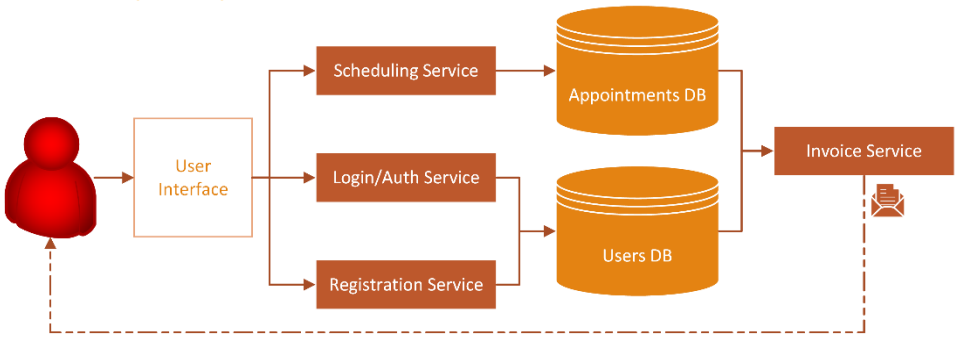

Figure 2.1. A high-level view of the system

2.3 Assumptions

It is assumed that:

- User uniqueness will be verified through an email ID.
- The system will maintain a database containing the user's name, contact information, and password.
- The system will maintain a database containing the doctors' appointment list, and its availabilities.
- The users are allowed to schedule their preferred appointment types without restrictions.
- The users are allowed to schedule their preferred appointment time based on availability.
- The system will automatically generate an email with the invoice confirming the appointment.

3 Requirements

3.1 Must have

- The system will check for the user's uniqueness at registration through the Users Database.
- The system should authenticate the user through the Users Database.
- The system should display the different types of consultations available.
- The user should be able to select their preferred appointment type.
- The system should display available schedule times by accessing the Appointments Database.
- The user should be able to select their preferred appointment date and time.
- The system should reserve the selected time slot on the user's confirmation in the Appointments Database.
- The system should generate the invoice and send it through email to the user.

3.2 Nice to have

- A payment portal.
- Creating and emailing a calendar invite to the user.
- Creating an online video meeting session, and emailing the details to the user.
- Accessing prescriptions online.
- Appointment reminder service (email).

3.3 Deferred (Wish List)

- Appointments cannot be canceled or rescheduled.
- Viewing previous consultations history.
- Database for patients' medical history.
- A user interface for the doctors.

4 GAIA: Analysis Process

4.1 Roles Models

For this project five roles have been identified which are described as follows*:

Role Schema		**Portal (UI)**
Description		Will be the interface that the user interacts with to access the system features
Protocols and Activities		ReadUserInput, NavigateRoute
Permissions		Read UserInput
Responsibilities	***Liveness***	UserInteraction = (UserInteraction, UserInput, Route)
	Safety	Correct navigation and data display

Role Schema		**Registration**
Description		Responsible for gathering and saving the data of new users
Protocols and Activities		RegisterUsers, AuthenticateUser
Permissions		Read UsersData, Write UsersData
Responsibilities	***Liveness***	Register = (Register, User)
	Safety	Create user profile

Role Schema		**Login**
Description		Authenticates the credentials provided and grants users access to the system
Protocols and Activities		AuthenticateUser
Permissions		Read UsersData, authenticate Users
Responsibilities	***Liveness***	RequestAccess = (RequestAccess, User)
	Safety	Grants system access

Role Schema		**Scheduling**
Description		Fetches the available appointment times and allocates them on confirmation
Protocols and Activities		ReadAppointment, AllocateAppointment
Permissions		Read AppointmentData, Write AppointmentData
Responsibilities	***Liveness***	FetchAppointments = (FetchAppointments, Doctor), BookAppointment = (BookAppointment, User, Appointment)
	Safety	Returns available appointments, Allocate an appointment

Role Schema		**Invoice Generator**
Description		Generates and sends an invoice email once an appointment has been scheduled
Protocols and Activities		GenerateInvoice
Permissions		Read UsersData, Read AppointmentData,
Responsibilities	***Liveness***	GenerateInvoice = (GenerateInvoice, User, Appointment)
	Safety	Email Invoice Generated

* Protocols, permissions, and responsibilities are tentitave

4.2 Interaction Model

Protocol	Register	Authenticate	Request.Appointments	Submit.Appointment	Generate.Invoice
Purpose/ parameters	Register User	Login User	Gather Available Doctor Appointments	Allocate prefered doctor appointment	Create and Send Invoice
Initiator(s)	Portal (UI)	Portal (UI)	Portal (UI)	Portal (UI)	Scheduling
Receiver(s)	Register	Login	Scheduling	Scheduling	Invoice Generator
Processing	Client registeration Success/Fail	Client access Granted/Denied	List of appointments	Appointment allocation Success/Fail	Invoice Generate+Send Success/Fail

4.3 System Architecture

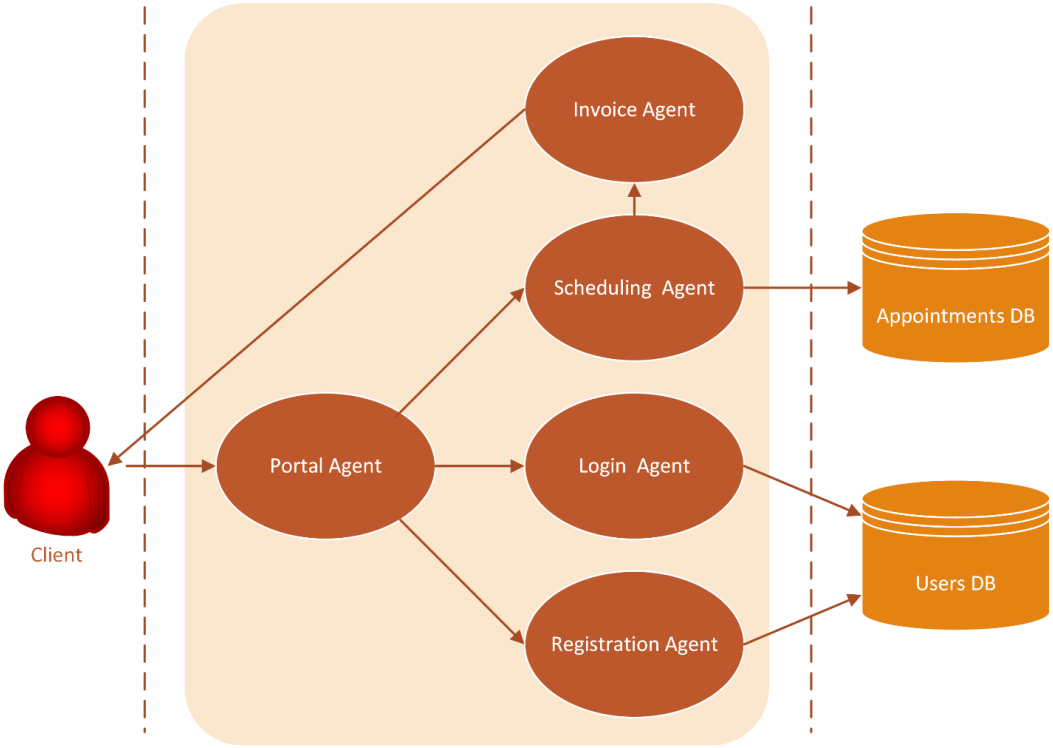

Figure 4.1. System Architecture

4.4 Agents Descriptions

4.4.1 Portal Agent

The portal agent is the interface that the user interacts with, which handles the user's operations such as navigating the system collecting the user inputs, and displaying the required information in an intuitive, user-friendly fashion.

The portal agent communicates with the login agents what's the user provides their login credentials to check if the user should be granted access to the system.

The portal agent also communicates with the registration agent once a new user provides that information; to validate that the user did not exist before, and to create a record in the database for the user.

The portal agent communicates with the scheduling agent, by first retrieving the available appointments once a doctor has been selected. Then, it communicates with the scheduling agent and allocates an appointment once the user confirms the preferred time.

4.4.2 Login Agent

The login agent checks the information in the Users database once a request from the portal agent is received. It then validates whether the credentials received from the portal agent match any existing record in the database, allowing the user to access the system if they are authenticated and denies the requests if no such record exists.

4.4.3 Registration Agent

The registration agent checks the information in the Users database once a request from the portal agent is received. The first step is to validate that the provided user does not exist in the database, if such a user exists, the request is denied. If the provided user's details did not exist, the registration agent will create a record in the database for the provided user.

4.4.4 Scheduling Agent

The scheduling agent checks with the Appointments database and collects all the available appointments for the selected doctor based on the request received from the portal agent.

This agent is also responsible to allocate the time slot in the Appointments database once a request from the portal agent has been received.

Once an appointment has been confirmed the scheduling agent requests an invoice to be issued from the invoice agent.

4.4.5 Invoice Agent

Once a notification from the scheduler agent has been received, the invoice agent generates and emails the user an invoice confirming the appointment.