



MindCare Burundi

BSc. in Software Engineering

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Declaration

I declare that this research project is my original work and has not been submitted elsewhere for academic or professional purposes.

Abstract

This project aims to develop a responsive website that addresses the urgent mental health challenges in Burundi. The platform will provide anonymous counseling, educational resources, self-assessment tools, and access to local mental health services. It will be optimized for both mobile phones and PCs, ensuring inclusivity and accessibility for a broad audience. By leveraging technology, this solution aims to reduce stigma, improve awareness, and connect individuals with mental health support.

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CHAPTER ONE: INTRODUCTION

1.1 Introduction and Background

Mental health challenges in Burundi are often underreported and stigmatized. Post-conflict trauma, depression, and anxiety are common, yet access to mental health services remains scarce. A 2008 study estimated that 40% of the general population experienced depression, and 62% experienced anxiety (SAGE Journals, 2008). Additionally, trauma-related mental health issues like Post-Traumatic Stress Disorder are highly prevalent, with 20–30% of the population potentially suffering from Post-Traumatic Stress Disorder or trauma-related conditions (UNHCR Reports). With only 0.69 mental health workers per 100,000 people (WHO, 2017), addressing these challenges requires innovative solutions. Traditional approaches to mental health care focus on in-person therapy, which excludes underserved populations in rural areas. By integrating software-based solutions, this project seeks to bridge this gap and provide accessible, anonymous, and culturally relevant mental health support.

1.2 Problem statement

Current mental health platforms such as BetterHelp and Talkspace primarily target high-income countries and lack localized, affordable support for low-income regions like Burundi. Existing services do not address Burundi's unique challenges, such as post-conflict trauma and stigma around mental health. MindCare Burundi aims to address these gaps by offering tailored, affordable solutions specific to Burundi's cultural context.

1.3 Project's main objective

What is the overall aim of your project?

To develop a software platform that provides mental health support in Burundi, addressing the gaps in accessibility, affordability, and cultural relevance.

1.3.1 List of the specific objectives

- 1. To research and gather data on mental health needs and existing gaps in Burundi.*
- 2. To develop a website offering counseling, anonymous chat, self-assessment tools, and educational resources.*
- 3. To evaluate the platform's effectiveness based on user feedback, service reach, and stigma reduction metrics.*

1.4 Research questions

- 1. What are the primary mental health challenges faced by individuals in Burundi?*
- 2. How can a digital platform address these challenges more effectively than traditional methods?*
- 3. What features should the platform include to maximize accessibility and impact?*

1.5 Project scope

The project will focus on urban and rural populations in Burundi, with an initial pilot in Bujumbura. Target users include individuals experiencing mental health challenges, their caregivers, and mental health professionals. The prototype will be tested with 10-20 users over two months.

1.6 Significance and Justification

The platform will:

- Reduce stigma by normalizing discussions about mental health.*

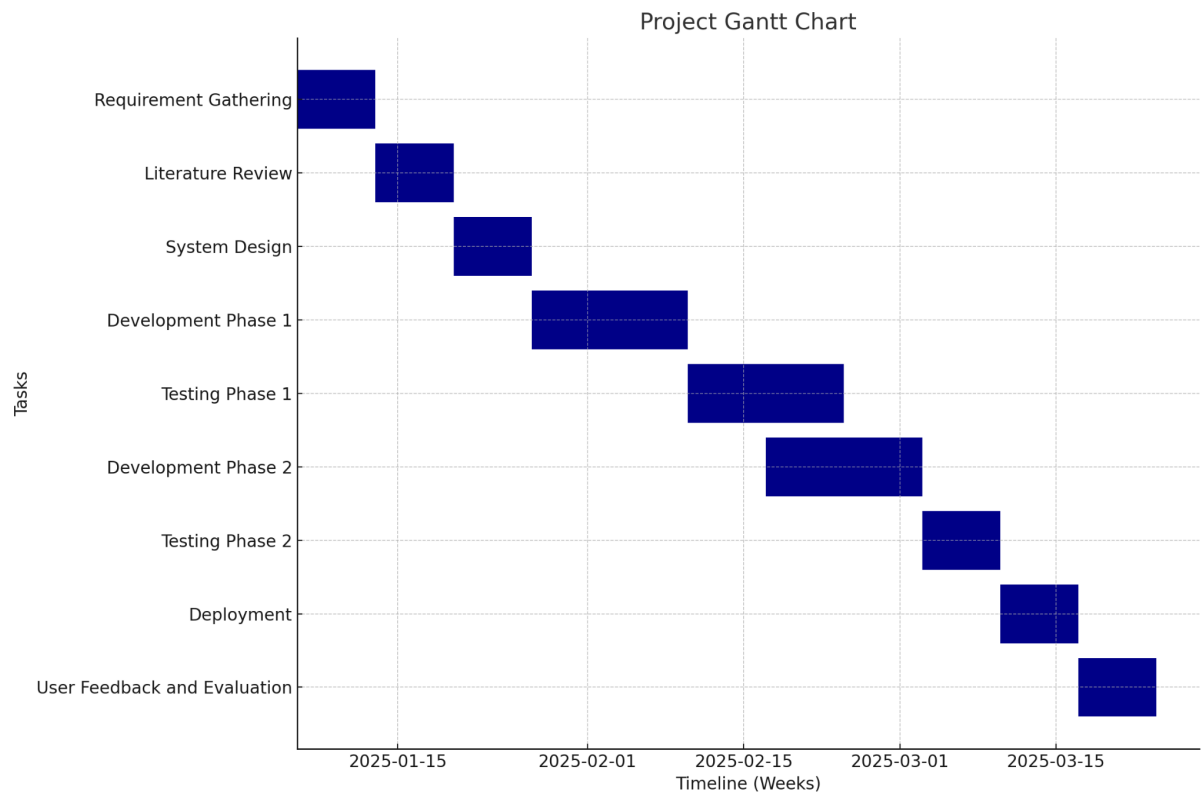
- *Improve access to mental health services, especially for underserved populations.*
- *Empower individuals with tools and resources to manage their mental health.*

1.7 Research Budget

<i>Item/Service</i>	<i>Description</i>	<i>Cost (USD)</i>
<i>Web Hosting Services</i>	<i>Hosting the platform on a secure server (AWS) for one year.</i>	<i>\$120</i>
<i>Domain Registration</i>	<i>Registering a custom domain for the website.</i>	<i>\$15</i>
<i>Content Development</i>	<i>Creating educational resources, self-assessment tools, and articles tailored to Burundi's context.</i>	<i>\$200</i>
<i>User Testing</i>	<i>Conducting testing with a sample group of users for feedback and debugging.</i>	<i>\$100</i>
<i>Marketing and Awareness</i>	<i>Running awareness campaigns about the platform through social media and local events.</i>	<i>\$150</i>
<i>Miscellaneous Costs</i>	<i>Additional unforeseen expenses.</i>	<i>\$150</i>
<i>Total</i>		<i>\$735</i>

1.8 Research Timeline

The Gantt chart to present how different components of the project will be implemented with respect to time.



CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This literature review focused on software-based mental health solutions, specifically platforms offering counseling, educational resources, and self-assessment tools. The methodology involved reviewing peer-reviewed articles, technical reports, and software documentation. Indexed platforms such as IEEE Xplore, PubMed, ACM Digital Library, and Google Scholar were explored to identify relevant literature. Approximately 10 papers and reports were reviewed, highlighting the effectiveness, limitations, and potential of digital mental health tools in low-resource settings like Burundi.

2.2 Historical Background of the Research Topic

Burundi's mental health challenges are deeply rooted in its history of conflict and its underdeveloped healthcare infrastructure. The aftermath of prolonged violence and displacement has led to high rates of trauma, depression, and anxiety. A 2008 study estimated that 40% of the general population experienced depression, and 62% experienced anxiety (SAGE Journals, 2008). Furthermore, the United Nations High Commissioner for Refugees (UNHCR) reported that 20–30% of the population may suffer from Post-Traumatic Stress Disorder or trauma-related conditions, owing to the country's history of violence. Despite efforts by NGOs, mental health remains stigmatized, and awareness is limited, particularly in rural areas. The absence of a comprehensive mental health policy exacerbates the situation, leaving large segments of the population underserved.

2.3 Overview of Existing System

Several platforms aim to provide mental health support globally. Notable examples include:

- **BetterHelp:** *An online therapy platform offering text, voice, and video counseling with licensed professionals.
Limitations:* High subscription costs, primarily English-speaking services, and a lack of cultural relevance to Burundi.
- **Talkspace:** *Provides therapy through asynchronous messaging and live sessions.
Limitations:* Similar to BetterHelp, it targets high-income countries and does not address the unique challenges of low-income regions.

These systems are inaccessible to most Burundians due to financial constraints, language barriers, and the lack of localized content addressing post-conflict trauma

2.4 Review of Related Work

Existing literature on digital mental health tools reveals significant findings:

1. **Educational Platforms:** *Research emphasizes the role of culturally tailored educational content in reducing stigma and raising awareness (WHO, 2018).*
2. **Self-Assessment Tools:** *Interactive tools have been shown to improve mental health awareness and enable users to self-identify potential issues (Doe & Jones, 2019).*

While these tools show promise, they are often designed for high-income settings and fail to address the cultural and logistical challenges of low-resource environments like Burundi.

2.3.1 Summary of Reviewed Literature

The reviewed literature highlights the need for digital mental health solutions that are:

- *Affordable and accessible.*
- *Localized to address specific cultural contexts.*
- *Focused on both education and support.*

2.5 Strength and Weakness of the Existing System(s)

Strengths: *Accessibility and scalability in high-income regions.*

Weaknesses: *High costs, limited cultural relevance, and lack of anonymity for rural users.*

2.6 General comment and Conclusion

Existing systems provide valuable insights but fail to address the specific needs of underserved populations in low-income regions. This project aims to bridge these gaps by creating an affordable, culturally relevant, and accessible platform for mental health support in Burundi.

CHAPTER THREE: SYSTEM ANALYSIS AND DESIGN

3.1 Introduction

This chapter describes the methodologies and tools used to design and develop the MindCare platform. The design process follows a user-centered approach to ensure the platform meets the needs of users in Burundi. Agile development principles will be employed, enabling iterative development and continuous feedback integration. This ensures the platform evolves based on user input and addresses real-world mental health challenges effectively.

3.2 Research Design (including the development model used)

To ensure accessibility and inclusivity, a mobile-first development model will be adopted. This approach prioritizes the design and optimization of the platform for mobile devices, given the high prevalence of mobile internet usage in Burundi.

3.3 Functional and Non-functional Requirements

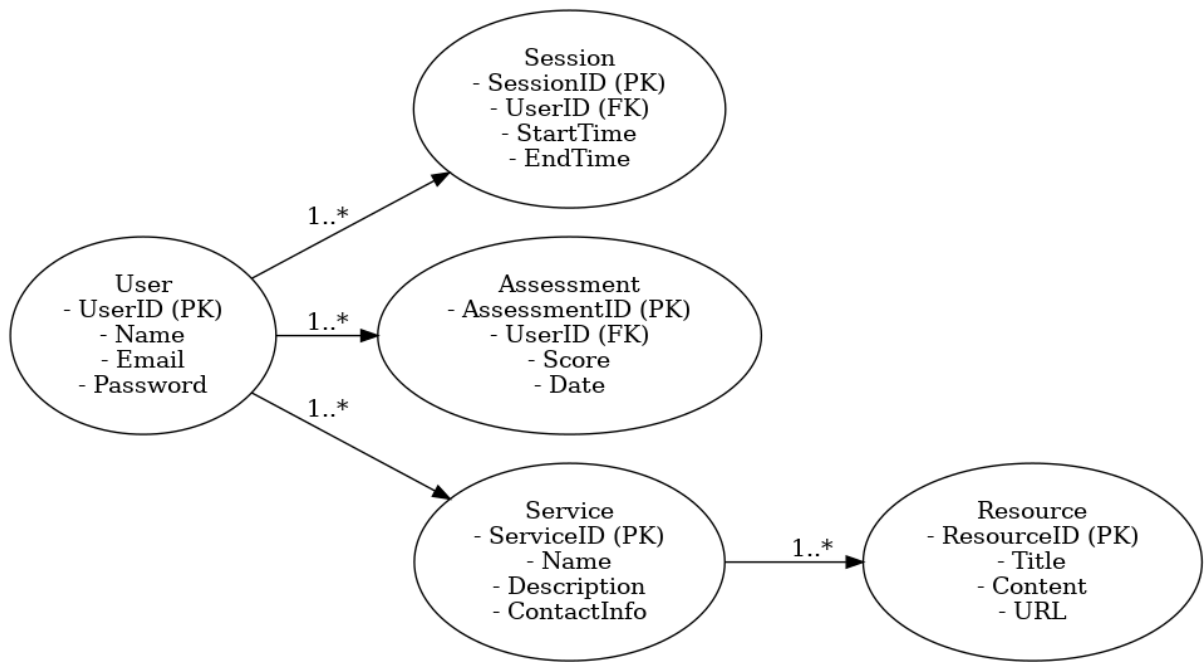
- **Functional Requirements:**
 - *User Authentication and Authorization: Secure user registration and login, with different roles for users and administrators.*
 - *Anonymous Counseling:*
 - *Chat Functionality: Real-time chat with trained counselors, maintaining anonymity.*
 - *Forum/Community: A moderated forum for users to connect and share experiences.*
 - *Self-Assessment Tools:*
 - *Depression, Anxiety, and Stress Screeners: Standardized screening tools with personalized feedback and resources.*
 - *Educational Resources:*
 - *Articles and Videos: Informative content on mental health topics, coping mechanisms, and available resources.*
 - *Appointment Scheduling: Option to schedule appointments with local mental health providers through the platform.*
 - *Language Support: Support for Kirundi, French, and English.*
- **Non-Functional Requirements:**
 - *Usability: Intuitive and user-friendly interface, accessible to individuals with varying levels of technological literacy.*
 - *Maintainability: Easy to update and maintain the platform over time.*

3.4 System Architecture

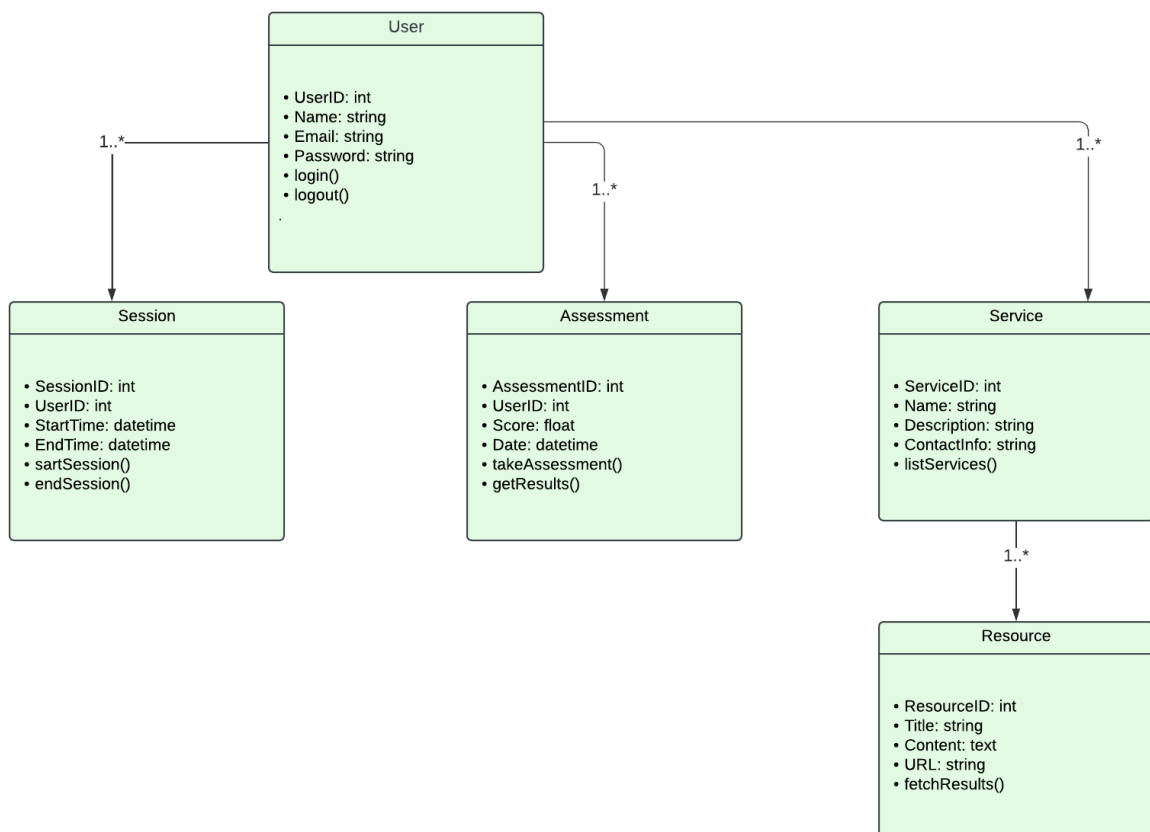
The system will use a three-tier architecture, including a frontend (HTML, CSS and Javascript), backend (django), and database (PostgreSQL).

3.5 UML Diagrams

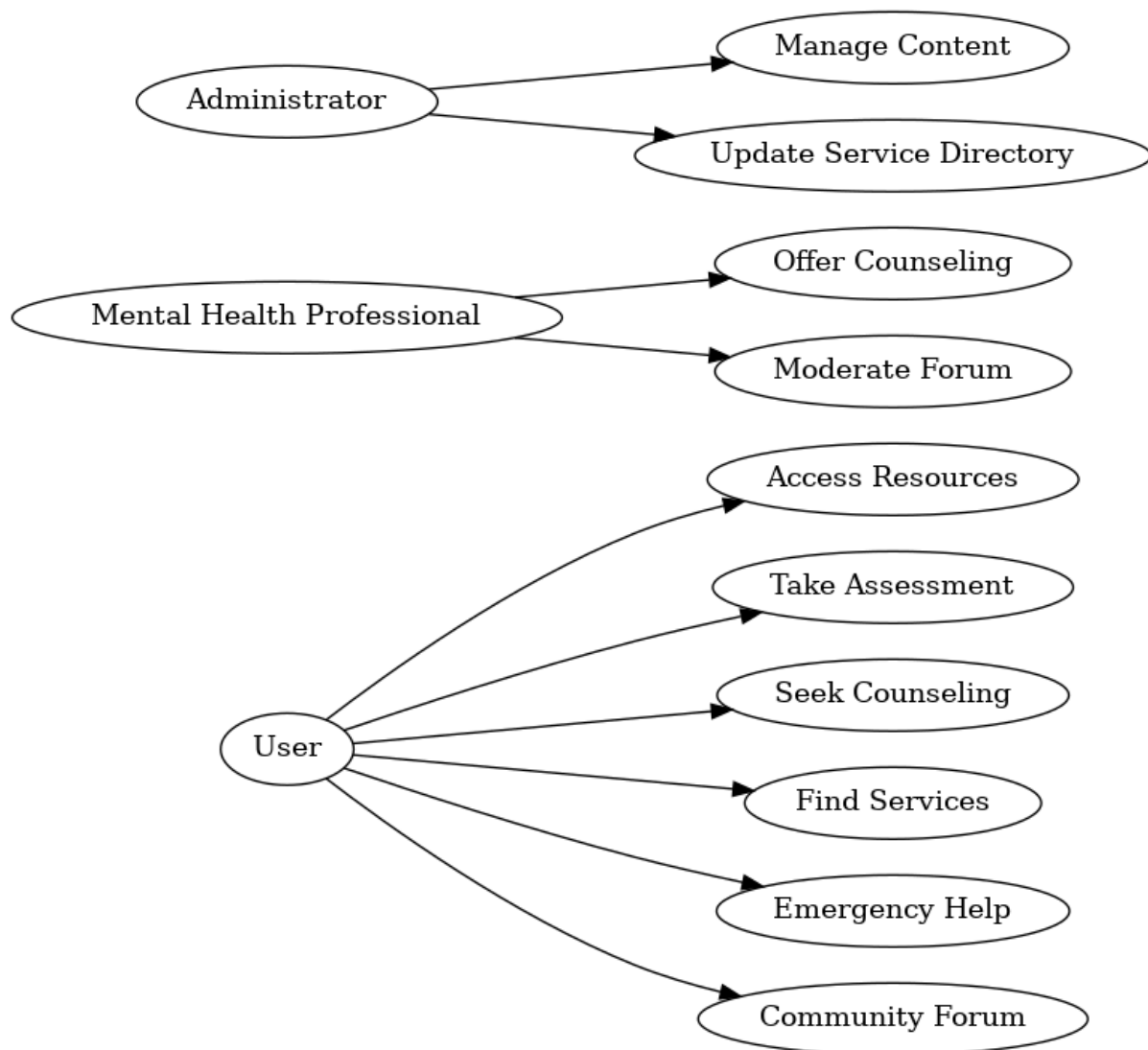
ERD diagram.



Class Diagram



Use Case Diagram



3.6 Development Tools

Front End: HTML, CSS and Javascript

Backend: Django

Database: PostgreSQL

References (APA Format)

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