**MOUNTAINS OF THE MOON UNIVERSITY**

**FACULTY OF SCIENCE, TECHNOLOGY AND INNOVATION**

**DEPARTMENT OF COMPUTER SCIENCE**

**COURSE UNIT:**

**ADVANCED WEB DESIGN**

**TOPIC:**

**DEVELOPING A COMPREHENSIVE HOSPITAL WEBSITE**

**CASE STUDY:**

**KYARUSOZI HEALTH CENTER IV**

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# INTRODUCTION:

Kyarusozi Health Center IV is a government aided health facility. It’s located in kyenjojo district, kyarusozi Town council. It started operating as a health center II some many years ago and later on was upgraded to a health center III after realizing the increasing demands for the facility services by the local people. Currently, Kyarusozi Health Center III has further been promoted to a health center IV due to the continuously increasing demand for health care services and also based on the community Health Needs Assessment. Kyarusozi Health Center IV aims at providing quality healthcare service delivery to all people within the surrounding community with equality and fairness from all backgrounds.

# BACKGROUND:

Since its inception, Kyarusozi Health Center IV has been a cornerstone of the local community, providing comprehensive medical services, cutting-edge treatments, and compassionate care to patients from all walks of life. Founded on the principles of integrity, innovation, and excellence, the hospital has consistently adapted to meet the evolving needs of its patients and the broader healthcare landscape.

Despite its sterling reputation and unwavering commitment to patient care, Kyarusozi Health Center IV has historically operated without a dedicated website. While traditional modes of communication, such as phone calls and in-person visits, have served the hospital well, the absence of a digital presence has limited its ability to connect with patients, streamline administrative processes, and showcase its myriad services to a broader audience. Activities such as outreaches have been carried out to reach out to the clients remotely and also lay out some relevant and crucial health related information to the people.

In recent years, the increasing digitization of healthcare has underscored the necessity for Kyarusozi Health Center IV to embrace modern technologies and communication channels. With patients increasingly turning to the internet to research healthcare providers, schedule appointments, and access medical information, the absence of a website represents a significant missed opportunity for the hospital to engage with current and prospective patients effectively.

Moreover, as the COVID-19 pandemic has highlighted the importance of telemedicine and virtual care delivery, the need for Kyarusozi Health Center IV to establish an online platform has become more urgent than ever. A website would not only facilitate remote consultations and telehealth services but also provide patients with a convenient avenue for accessing health resources, booking appointments, and communicating with healthcare professionals from the comfort of their homes as well as providing education to the people.

The proposed website for Kyarusozi Health Center IV will be designed to address current challenges that are being encountered by the health facility as well as its clients as a result of relying on traditional mode of communication like phone calls and such of a kind which have limited the facility’s opportunity to deliver quality health care services to its clients.

The website for Kyarusozi health center IV is to enhance accessibility, convenience, and patient engagement. By providing a user-friendly interface and a wealth of online resources, the website aims to empower patients to take control of their healthcare journey, make informed decisions, and access the services they need with ease.

Additionally, the website will serve as a digital showcase for Kyarusozi health center IV’s comprehensive range of medical specialties, state-of-the-art facilities, and distinguished team of healthcare professionals. Through compelling content, multimedia features, and interactive tools, the website will strive to convey the hospital's commitment to excellence, innovation, and patient-centered care.

Furthermore the website will enhance Improved Communication, this website will provide a centralized platform for communication between the hospital administration, healthcare professionals, and patients, it will also enhance Patient Education that is the website will serve as a valuable educational resource for patients, offering a wealth of information on various medical conditions, treatment options, preventive care, and wellness tips. Educational articles, videos, and infographics can empower patients to make informed healthcare decisions and take proactive steps towards better health.

This website will also involve Appointment Scheduling, Virtual Tours and Facility Information, Health Records Access which can allow patients to access their medical records, test results, and share information with other healthcare providers as needed.

# PROBLEM STATEMENT

Currently at Kyarusozi Health Center IV, the facility carries out in-person visits to the facility, as well as traditional modes of communication like phone calls which makes it hard for patients to access healthcare services remotely, resulting into challenges like delays in patient care and inefficiencies in workflow management and inability communicate with healthcare providers digitally, in response to these evolving needs, Kyarusozi Health Center IV is leveraging digital technology to enhance the patient experience and improve healthcare access. To address these issues and enhance the delivery of quality healthcare services at Kyarusozi Health Center IV there is a pressing need to develop a comprehensive Hospital website that centralizes and streamlines workflows and improves accessibility to information across the entire health facility digitally.

# OBJECTIVES:

## MAIN OBJECTIVE.

To develop a website for Kyarusozi Health Center IV.

## SPECIFIC OBJECTIVES:

1. To gather and analyze required information about Kyarusozi Health Center IV.
2. To Design a website for Kyarusozi Health Center IV.
3. To host and maintain a website for Kyarusozi Health Center IV website.

# PROJECT SCOPE:

## PHYSICAL SCOPE:

This physical scope outlines the various features that will be incorporated into the hospital website to provide valuable information, support patient interactions, and enhance overall user satisfaction. This includes clear navigation, clear interfaces and comprehensive content covering health care programs. The physical scope of implementing the hospital website also encompasses the establishment of a robust IT infrastructure, including server infrastructure with high-speed internet connectivity, IT equipment such as computers and networking devices, dedicated physical space for server rooms and IT department offices, and compliance measures to ensure adherence to relevant regulations s. Additionally, training facilities for staff education, help desks for technical support, and backup systems for data integrity and disaster recovery are essential components. This comprehensive approach ensures the secure and efficient operation of the website, facilitating improved communication, patient engagement, and service delivery within the hospital ecosystem.

## TECHNICAL SCOPE:

The technical aspect of the project will leverage modern web development technologies to ensure a high performing, secure and scalable platform. This involves frontend development using HTML, CSS, JavaScript and Bootstrap for responsive design and cross browser compatibility. Backend point will utilize server side scripting languages like PHP along with database management systems for content generation and user authentication. Security measures such as SSL encryption and firewall protection will be implemented. The main functionalities will include; health records management, appointment scheduling, patient portal, health information and education, feedback and reviews, news and announcements, online consultations. Maintenance and Updates, establishment of procedures for ongoing maintenance, updates, and patches to the website's software, security protocols, and content management system, ensuring continued functionality, performance, and security as well as Implementation of backup systems and disaster recovery plans to prevent data loss and ensure rapid restoration of website operations in the event of hardware failures, natural disasters, or cyber-attacks. Continuous testing and optimization to enhance performance and usability,

Performance optimization ensure that it delivers a seamless and efficient user experience for patients, healthcare professionals, and administrators, performance optimization for the website of Kyarusozi Health center IV can be addressed by ensuring fast Loading times across diverse internet speeds and connection types to enhance user experience and engagement, Performance optimization techniques such as minimizing HTTP requests, leveraging browser caching, and optimizing images and multimedia content can significantly improve page load times, reducing bounce rates and increasing user engagement, Mobile Responsiveness to enable the website to adapt seamlessly to different screen sizes and resolutions, providing a consistent user experience across desktops, tablets, and smartphones, Server Response Time, this can be achieved by leveraging content delivery networks (CDNs) to cache static content closer to users' geographical locations, reducing latency and improving website performance, particularly for users accessing the website from different parts of the world, Monitoring and Testing: Continuous monitoring and performance testing of the website using tools such as Google Page Speed Insights, Webpage Test, this can help identify performance bottlenecks, optimize critical areas, and ensure that the website meets performance targets and user expectations over time.

**METHODOLOGY:**

**1.** Data collection:

The following methodologies will be used under data collection.

**Interviews:** The researcher will use interviewing method to collect data which involves asking oral questions and getting oral answers. During this stage the researcher will meet and interact with the stakeholders, including the hospital administration, gather information about the current website that the hospital has. Find out the strength and weaknesses and identify the requirements and expectations of the system.

**Observation:** this involves watching the workflows within Kyarusozi Health Center IV and other hospital settings. This observation can provide firsthand insights into the challenges and inefficiencies faced by the health care providers as well as identifying areas of improvement that would result into better health care delivery to the clients.

**Questionnaire:** The researcher will send a series of questions to the stakeholders and hospital administrators of Kyarusozi Health Center IV including various question formats such as multiple choices, rating scales and open-ended questions. This will provide the researcher with various information required to identify the user requirements.

**2.** Design phase.

**User Research,** Conduct thorough user research to understand the needs, preferences, and behaviors of the website's target users, including patients, healthcare professionals, and administrators. This can involve techniques such as interviews, surveys, observations, and usability testing to gather insights into user goals, pain points, and expectations.

**Responsive Design Implementation,** This will create a visually appealing and mobile friendly website that adapts seamlessly to various screen sizes and devices. This ensures that the users can access the website comfortably via desktop computers, laptops, tablets, and smartphones.

**3.** WEB HOSTING:

**Host provider:**

Web hosting is an essential service responsible for providing the infrastructure and resources necessary to host the Kyarusozi Health Center IV website on the internet. Web hosting ensures website reliability, security measures implemented by the host provider to safeguard the website from cyber threats and unauthorized access. These measures may include SSL encryption, firewall protection, malware scanning, and regular security updates. Mentioning these security features assures stakeholders of the safety and integrity of the website's data, and performance such as uptime guarantees provided by the host provider, ensuring that the website is available to users without interruption, security measures, scalability options, and technical support availability. Additionally upon factors like reputation, cost considerations, and contract terms, underscoring the importance of selecting a reputable host provider that aligns with the hospital's specific needs and requirements. I will select a suitable web hosting provider based on the above factors to ensure that the website is hosted on the platform that can support its technical requirements and accommodate future growth.

**HOW THE WEBSITE WILL BE HOSTED:**

Choosing a Web Hosting Provider: I will Research and select a web hosting provider that meets the needs in terms of features, pricing, reliability, and customer support. Personally I will use Bluehost Company for hosting my website.

Selecting a Hosting Plan: This is based on the website's requirements. Shared hosting is cost-effective and suitable for small to medium-sized websites with moderate traffic. VPS hosting offers more control and resources, while dedicated hosting provides the highest level of performance and control.

Registering a Domain Name: This will be done by registering the domain name through the chosen hosting provider or a domain registrar like Google Domains.

Pointing the Domain to Your Hosting Provider: This will involve updating domain’s Domain Name System settings to point to the nameservers provided by your hosting company.

Setting up the Hosting Account: Once I have signed up for a hosting plan, I will follow the provider's instructions to set up my hosting account. This involves choosing a server location, setting up email accounts, and configuring other hosting settings.

Uploading the Website Files: This will be done using FTP (File Transfer Protocol) or a web-based file manager provided by the hosting provider to upload my website files to the server.

Configuring the Website Settings: this will be done by adjusting any necessary configuration settings for the website, such as file permissions, server-side scripting settings like PHP configuration, and any other server-level configurations required by the website's technology stack.

Testing the Website: This will be done before making the website live, the website will be thoroughly tested to ensure that everything is working correctly. Checking for broken links, missing images, functionality issues, and compatibility across different web browsers and devices.

Pointing the Domain to the Website: Once I have confirmed that the website is working properly, I will update the domain's DNS settings to point to the correct location of the website files on the server. This may involve configuring A records, CNAME records, or other DNS settings provided by the hosting provider.

Monitoring and Maintaining the Website: The website will be monitored regularly for performance, security, and uptime. Keep the software and scripts up to date to mitigate security risks, and make any necessary adjustments to accommodate changes in traffic or functionality.

Promoting the Website: Once the website is live, I will promote it through various channels such as social media, search engine optimization (SEO), online advertising, and email marketing to attract visitors and drive traffic to the site.

**SEARCH ENGINE OPTIMISATION:**

Search engine optimization is crucial for improving website’s visibility in search engine results pages and driving organic traffic to your site. The following steps will be taken to optimize the website:

Keyword Research: I will identify relevant keywords and phrases that the target audience is likely to use when searching for the products, services, or content of the website. This will be done using tools like Google Keyword Planner to find popular and relevant keywords.

On-Page Optimization: This includes Title Tags which ensure that each page has a unique, descriptive title tag that includes the target keyword, Meta Descriptions that write compelling meta descriptions that summarize the content of each page and encourage users to click, URL Structure which creates SEO-friendly URLs that include relevant keywords and accurately describe the content of the page, and Header Tags such as H1, H2, H3, to structure your content and include keywords where appropriate.

Internal Linking: This will involve linking to other relevant pages within the website to improve navigation and distribute link equity.

Site Speed: This will involve improving the website's loading speed by optimizing images, minifying CSS and JavaScript files, leveraging browser caching, and using a content delivery network (CDN).

Technical SEO: This will involve creating an XML sitemap and submitting it to search engines to help them crawl and index the site more effectively, using a robots.txt file to control which pages search engines can or cannot crawl on your site, implementing structured data markup to provide search engines with more context about the content and enhance rich snippets in search results.

Optimize Images: This will be done by using descriptive filenames and alt tags for images to improve accessibility and help search engines understand the content of your images.

**E-COMMERCE:**

In this envisioned website for Kyarusozi health center IV, I propose the integration of an ecommerce platform to revolutionize patient experiences and streamline healthcare accessibility. This ecommerce segment will serve as a central hub for various functionalities tailored to meet the diverse needs of the clients. Primarily, patients will have the ability to conveniently order prescription medications and essential healthcare products directly from our facility's inventory through the online pharmacy feature. Furthermore, the platform will facilitate effortless scheduling of medical appointments and consultations, empowering patients to manage their healthcare journey with ease. Additionally, offering a range of health-related services available for purchase, including telemedicine consultations and wellness packages, providing comprehensive healthcare solutions at the click of a button. Through the seamless integration of ecommerce functionalities, the website aims to enhance patient interactions, improve access to vital healthcare resources, and elevate the overall quality of care provided by Kyarusozi Health Center IV.

**Maintenance plan development**: A maintenance plan for the ongoing website management will be developed, including regular backups, software updates, security audits and content management strategies. This will ensure that the website remains operational, secure and up to date after deployment, providing a reliable and consistent user experience.

**TOOLS TO BE USED:**

The tools below demonstrate a comprehensive approach that will be used in website development and management, addressing key technical requirements and considerations to deliver a secure, user-friendly, and engaging online experience for patients and visitors.

1. **Bootstrap:** This will be used as a content management system for website development, offering a user friendly interface for content management and editing.
2. **Development frameworks and languages:** These include HTML, CSS for structuring and styling content and JavaScript for interactivity.
3. **Testing and optimization tools:** Google page Speed insights and Browser Developer Tools for analyzing performance, measuring speed and optimizing code and speed.
4. **My SQL**

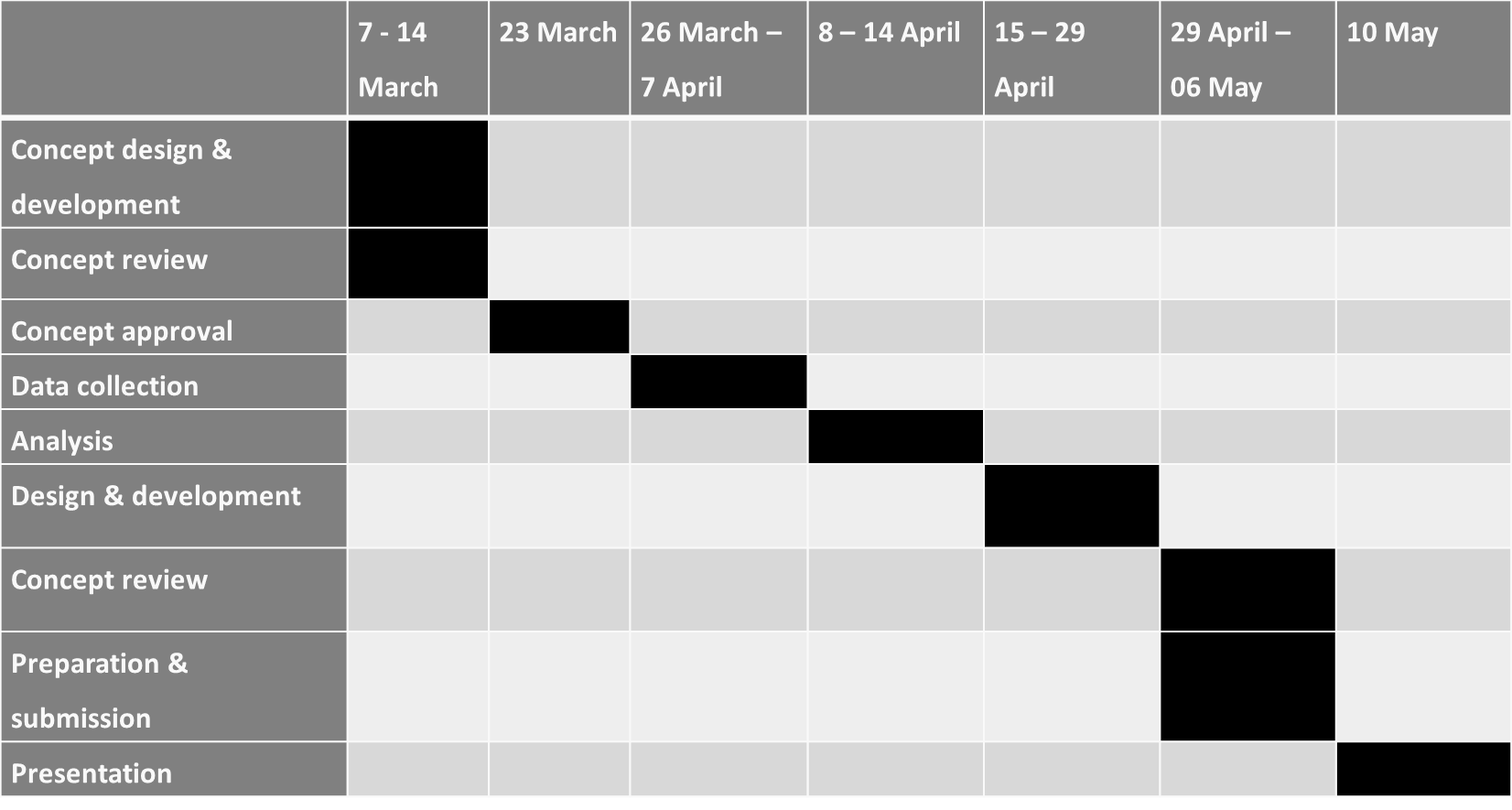
# APPENDICIES

The section serves as supplementary documentation, offering detailed information essential for a comprehensive understanding. Inclusive of supporting materials, the appendices include additional resources such as tables, to enrich the reader's understanding. For instance, Appendix A which is the timeline and Appendix B which is the budget. Appendix A (timeline) delineates the strategic milestones and chronological framework for implementation, illustrating the anticipated schedule for each phase of development and execution. Structured to table progression, it offers a systematic approach towards achieving objectives within specified timeframes. For example, the timeline outlines the preparatory phase, research period, development stage, and eventual implementation milestones.

Meanwhile, the Appendix B (budget) section presents a comprehensive financial overview, outlining projected expenses and funding allocation for various components. With a focus on fiscal planning, it provides transparency in financial management, detailing the budgetary allocation necessary for the successful execution of the concept. This includes costs associated with research materials, personnel, marketing efforts, and any other relevant expenditure essential for the project's success.

Below are the tabulated appendices clearly indicating the timeline appendix and budget appendix.

## TIMELINE:



## BUDGET:

|  |  |  |
| --- | --- | --- |
| **No.** | **Item** | **Amount** |
| 1 | Planning and Research | 700,000UGX |
| 2 | Web design | 500,000UGX |
| 3 | Stationery | 150,000UGX |
| 4 | Web functionality | 600,000UGX |
| 5 | Purchase of domain name | 300,000UGX |
| 6 | Web hosting | 200,000UGX |

The total estimated amount is 2,500,000 UGX

# CONCLUSION

The development of a comprehensive website for Kyarusozi Health Center IV represents a pivotal step towards enhancing patient care, improving communication, and fostering engagement within the healthcare community. By adopting a user-centered design approach and incorporating essential functionalities such as appointment scheduling, patient portals, and clinical research management, the website will empower patients to take control of their health journey while providing healthcare professionals and administrators with valuable tools to streamline operations and deliver high-quality care. Through meticulous user research, thoughtful design considerations, and adherence to accessibility standards, the website will ensure an inclusive and seamless user experience for patients of all backgrounds and abilities. Furthermore, by leveraging modern technologies and performance optimization techniques, the website will uphold the hospital's commitment to excellence, efficiency, and innovation in healthcare delivery.

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