

Connie Nshabohurira

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MAKERERE UNIVERSITY BUSINESS SCHOOL

DEVELOPING A SYSTEM FOR DRUG ABUSE AWARENESS AND SUPPORT AMONG UNIVERSITY STUDENTS

USING MUBS A CASE STUDY

BY;

| NAME | REGISTRATION NUMBER | PHONE NUMBER |
|------------------------|--------------------------------|---------------------|
| Nshabohurira Constance | 23/U/16107/EVE | +256-770772171 |
| Yawe Norman | 23/U/18667/PS | +256-763578793 |
| Namazzi Mastulah | 23/U/14493/PS | +256-708039758 |
| Nanteza Hasifah | 23/U/15289/EVE | +256-754478550 |
| Murungi Owen | 23/U/12093/PS | +256-788254536 |
| Kasule David | 23/U/09195/PS | +256-705886889 |

Supervised by

Mr. Ismael Kato

Department of Applied Computing & IT

ikato@mubs.ac.ug

A project proposal Submitted to the faculty of Computing and Informatics of Makerere University Business School in Partial Fulfilment for the Award of the Degree of Bachelor of Business Computing of Makerere University.

FEBRUARY 2025.

DECLARATION

To the best of our knowledge, we, the undersigned, declare that this proposal is our original work, and has never been published and/or submitted for any award in any other University or Higher Institution of Learning.

| NAME | REGISTRATION NUMBER | SIGNATURE |
|------------------------|---------------------|-----------|
| Nshabohurira Constance | 23/U/16107/EVE | Connie |
| Yawe Norman | 23/U/18667/PS | Norman |
| Namazzi Mastulah | 23/U/14493/PS | Grace |
| Nanteza Hasifah | 23/U/15289/EVE | Hasifah |
| Murungi Owen | 23/U/12093/PS | Owen |
| Kasule David | 23/U/09195/PS | David |

Date; 23th November, 2025

APPROVAL

This project proposal has been submitted with my approval as supervisor and my signature is here appended

Signed..... Date

Mr; Ismael Kato
Makerere University Business School

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1. INTRODUCTION

1.1 Project Background

University students face an increasing problem with substance abuse which affects their academic performance and future career prospects. A growing number of students in Uganda use harmful substances, including alcohol and marijuana to manage stress or personal problems, “The average age of the youth with a drug problem is 14years”, (Mugabi,2013) and with a lack of access to trustworthy resources and support systems, it forces many students to make poor decisions that result in lasting negative effects and death, according to the **World Health Organization's 2024 Global Status Report**, alcohol and psychoactive drug use resulted in over 3 million deaths annually, with a large proportion among young people aged 20–39. This points out the need for awareness and early intervention, especially in a university setting where substance experimentation by students is very common. The integration of mobile technology into daily life create opportunities to educate students about important issues and deliver necessary support directly through their devices.

Campus drug awareness programs currently rely and are limited to the distribution of posters and the organization of seminars and events. While these strategies may be helpful, they often fail to establish a meaningful connection with students and do not offer continuous support to the students. Students would have easier and faster access to understanding drug abuse risks and receive assistance through a system that offers engaging content and self-assessment tools while providing counseling services through natural interactions.

This research project uses Makerere University Business School (MUBS) as its primary case study. Drug abuse currently presents challenges for MUBS, which are common among multiple universities that serve student populations where students generally avoid traditional counseling services because of fear of judgment even though the institution offers multiple support systems, leaving many students uninformed as well as unsupported.

This project intends to create a Drug Abuse Awareness System dedicated to university students with MUBS serving as the primary case study. The system is designed to interact with students in an engaging and supportive way by offering content that speaks directly to students' experiences, and guides them toward available support services encouraging them to make healthier choices. This approach ensures that students can access help privately and efficiently, making it easier for anyone struggling with drug abuse to find the support they need without fear of judgment.

1.2 Statement of the Problem

In order to prevent drug and substance misuse, university students should be able to easily access accurate information, helpful guidance, and strong support systems to help them avoid drug abuse. This is important for creating a healthy and productive academic environment for students, with counseling services playing a crucial role. However, at MUBS and many other universities in Uganda, a lot of students are unaware about the real dangers and risks of substance abuse or where to get help if they're already struggling. Current initiatives like posters, seminars, and counseling sessions do exist, but they often don't grab students' attention or are hard for students to access mostly for fear of judgment. Because of this, many students either stay unaware or feel unsure about reaching out for support. If these issues aren't addressed, the university could see more students dropping out, falling behind academically, facing worsening mental health, or, in the worst situations, losing their lives.

To address this, our project introduces a Drug Abuse Awareness System that is designed both for students who are already dealing with addiction and need help, and for those who haven't been affected yet but need to understand the risks. Guided by findings from the Annual Research Questionnaire (ARQ) 2020–2021 by UNODC, the project focuses on closing the gaps in existing treatment and support services.

The system will provide interactive content, self-assessment tools, and direct access to support services making it easier, more private, and more effective for students to get the help and information they need, and ultimately helping the university community fight drug abuse together.

1.3 Project Goal and Objectives

1.3.1 Project Goal

This project aims at designing and developing a Drug Abuse Awareness System that raises awareness, educates, and connects university students with essential support services to improve their wellbeing and mental health in issues concerning drug and substance abuse.

1.3.2 Research Objectives

1. To identify the key factors contributing to drug abuse among university students in and outside Uganda
2. To analyze the effectiveness of the already existing drug awareness strategies at MUBS.
3. To review literature in relation to drug and substance abuse amongst university students
4. To design and develop a system that provides drug abuse awareness content, self-assessment tools, and access to counseling services.
5. To evaluate the impact of the app on student awareness, behavior, and access to support services.

1.3.3 Project Scope

The project focuses on the design and development of a Drug Abuse Awareness System for university students, with Makerere University Business School a case study.

a) Timeframe: The project will run for 4 months, from research, development, testing, and deployment. Some of the activities involve:

1. Research and data collecting to understand the challenges of drug abuse addiction among students.
2. Gathering the requirements using input from the students and university support services.
3. Designing a user-friendly system that is engaging, easy to use, and informative for the students
4. Developing and testing the system to ensure smooth and seamless functionality, performance and usability.
5. Deployment and onboarding of students to ensure the system reaches the intended users.

b) Project Deliverables:

1. A fully functional easy to access web system that provides educational content, support, and connects students to help resources like counselors and a supportive community to heal and share their stories.
2. A fully complete project report that presents the entire development process, research findings, and provides clear recommendations to improve the system plus counselling services at MUBS.

1.3.4 Project Assumptions

We have outlined a few assumptions that will guide the planning and implementation of the project to ensure clarity and mutual understanding among all stakeholders and team mates. These assumptions outline all the conditions considered necessary for the successful development, completion and operation of the Drug Abuse Awareness System for MUBS students.

Assumption 1: Availability of Tools and Resources: Throughout the projects development we assume that all necessary software e.g. code editors, debugging tools, version control tools, hardware e.g. laptops and computers, internet access, and other tools required for designing, developing, and testing the system will continue to be, accessible, available and functional.

Assumption 2: Active Participation from Stakeholders: We anticipate that all key stakeholders, including our academic supervisor, team members, and potential users will be available to provide timely feedback, guidance, and approval when it is needed. We also anticipate that everyone in the group will remain committed and dedicated to completing their assigned tasks.

Assumption 3: Technology Compatibility and Functionality: We assume that the selected technologies for development, including programming tools, development platforms, and design

software, will be compatible and effectively meet all our project needs without causing any major technical issues.

2. LITERATURE REVIEW

2.0 Introduction

This chapter reviews existing literature relevant to the design and development of a Drug Abuse Awareness and Support System for university students. The review focuses on the scale and patterns of substance use among students, the factors that contribute to drug use, the relationship between substance use and mental health (specifically depression), the state of awareness and support mechanisms on campuses, and gaps in existing knowledge. The literature draws on global evidence from the World Health Organization (WHO), regional evidence from research and national bodies, and recent investigative reporting in Uganda that illuminates the local context.

2.1 Understanding drug abuse in the university context

Drug abuse among students is a complex social and health issue that involves patterns of experiment, everyone wants to experience drugs when that come to university (Student on the edge, 2018) and, in some cases, habitual use of brain altering substances. The WHO's global status report highlights that alcohol and psychoactive drugs cause a significant health burden and death rate worldwide and that young adults are an especially affected group (World Health Organization, 2024). The report further emphasizes that treatment gaps and weak prevention systems in many countries contribute to sustained harmful use. Within universities, the transition to independent living and exposure to new social networks create a context where experimentation is common. The university environment therefore functions as a risk environment for some students (Boden & Day, 2023). Recognizing this contextual frame is important because it directs any awareness system to address not only knowledge gaps but also the social and environmental drivers of use.

2.2 Prevalence and patterns of substance use among university students

Global and regional literature shows varying levels of substance use in student populations, with commonalities in which substances are most used and how use changes over time. Boden and Day's PRISMA-guided scoping review of studies from the UK and Ireland maps a broadening range of substances and reports increasing prevalence over time, with cannabis consistently the most reported illicit drug among students (Boden & Day, 2023). The review also highlights that much student use is experimental and opportunistic rather than daily habitual use, although a minority move to regular use or dependence. In sub-Saharan Africa and east African settings, smaller empirical studies point to high rates of alcohol use, khat chewing, tobacco, and episodic

use of other substances; for example, Mengistie and Berhanu's cross-sectional study of final-year students at the Addis Ababa Institute of Technology found notable prevalence for both depressive symptoms and substance use, with alcohol and khat featuring prominently (Mengistie & Berhanu, 2025). In Uganda specifically, recent investigative reporting by the Daily Monitor suggests that a wide mix of substances including marijuana, codeine-based cough syrups, and amphetamine-type stimulants are available near campuses and used by students (Akullu, 2025). Together, these sources indicate that while prevalence numbers vary by place and method, substance use among university students is neither rare nor uniform, and interventions should reflect that breadth.

2.3 Factors contributing to drug abuse among university students

The literature reveals that student substance and drug abuse is shaped by a variety of interconnected factors. One of the most significant ones is accessibility. For many students, substances are not hard to find, social connections, local dealers, and informal supply networks place drugs within easy reach, especially near university campuses. Akullu (2025), writing for the Daily Monitor, describes how "plugs" and neighborhood hubs have created a system where students can obtain drugs with little effort, sometimes even having them delivered by boda-boda riders or passed through hostel networks and friends.

Social and peer influence play an equally significant effect. Boden and Day (2023) highlight how the attitudes and behaviors of friends can shape a student's choices when drug use is seen as a normal part of university life or as a way to bond and experiment, students may feel pressured to participate in drug abuse. The idea that using substances can boost confidence and self esteem or help someone fit in society is a powerful motivator, especially during a period of life defined by new experiences and changing identities.

The issue is further complicated by psychological stress. According to the World Health Organization (2024), the likelihood of dangerous substance use is increased by high stress levels, poor mental health, and a lack of good coping depression and stress mechanisms. Mengistie and Berhanu (2025) found that depressive symptoms are closely linked to substance involvement among Ethiopian students, reinforcing the idea that some students turn to drugs or alcohol as a way to manage feelings of depression or overwhelming stress. In these situations, substance use can feel less like a choice and more like an attempt to cope.

2.4 The relationship between substance use and depression

One important area to consider is the relationship between substance use and depression. Research by Mengistie and Berhanu (2025) found a significant link between depression and stress symptoms and substance use among university students. This supports findings from other studies, which suggest that the relationship can go both ways ie students experiencing depression and stress may turn to substances and drugs as a form of self-medication, while the use of substances can in turn worsen depressive symptoms (World Health Organization, 2024).

Recognizing this connection is important when designing an awareness and support system. Simply providing only general information about the dangers of drugs is likely to be ineffective for students who are using substances to cope with underlying mental health challenges. Instead, an effective system should go beyond awareness campaigns. It should include features that help identify early signs of mood disorders, provide education about the relationship between mental health and substance use, and guide students toward appropriate support. By addressing both the emotional and educational needs of students, such a system can better prevent substance abuse and offer meaningful help to those who may be struggling with depression.

2.5 Consequences of drug abuse among students

The literature cites a number of negative impacts that result from drug and substance abuse that need urgent intervention in university populations. Substance use is associated with poor academic performance, the worsening of mental health issues, and has even caused overdose deaths in some cases (Boden & Day, 2023; World Health Organization, 2024). The Daily Monitor's investigative series documents sad beginning and raises concerns on campuses in Uganda, noting that some students who try out these substances end up with addiction and going through serious personal harm or even death at worst (Akullu, 2025).

The societal costs, including disrupted family life and the long-term health burden, further highlight the public health need for an effective campus-centered response.

2.6 Awareness, prevention and support systems: what works and what is missing

Evidence from both WHO and academic reviews has suggested that multi-component strategies are the most promising approach. WHO recommends integrated prevention, which incorporates education, early screening, access to mental health and addiction services, and policies that reduce availability of the drugs amongst young people (World Health Organization, 2024). However in areas like Seychelles, by 2020 all in-patient facilities were shut down leaving the people in Seychelles with no help (BBC Africa Eye Documentary, 2023).

Boden and Day (2023) highlight that much of the published work focuses on prevalence and patterns, but there is less evaluation of prevention or harm-reduction interventions in university settings, particularly within the UK and Ireland context and in this case Uganda as well. Regionally, programs led by national bodies, such as Kenya's NACADA, show potential in awareness and community engagement but are often limited by resources and evaluation gaps.

In Uganda, for example, while universities have counseling units and awareness activities from time to time, investigative reporting shows the services are underutilized, and barriers such as stigma, confidentiality, and poor visibility reduce their impact (Akullu 2025) also drug abuse is not a topic that is casually held among many people leaving support systems to places like

rehabilitation centers, however, efforts among Ugandan developers to develop easy to access platforms are starting to increase, systems like Mindlyfe and Mediloop are to be released soon . Crucially, there is a lack of peer-reviewed research on the effectiveness of digital platforms or mobile apps as tools for sustained awareness, screening, and confidential support in African university settings.

2.7 Research gaps and the case for a digital awareness/support system

The reviewed literature reveals several important gaps. First, there is a lack of local, evidence-based research in Uganda that robustly quantifies student substance use and examines co-morbid mental health conditions over time.

Second, existing interventions are rarely evaluated, resulting in uncertainty about which awareness formats effectively change behavior.

Third, there is little documented experience with digital, student-centered interventions in low- and middle-income contexts, despite WHO recommendations that digital tools can expand reach and confidentiality. These gaps strongly justify the current study: developing, testing, and evaluating a web-based Drug Abuse Awareness and Support System tailored to university life at MUBS would directly address calls in the literature for practical, evaluated, and context-sensitive interventions.

2.8 Conclusion

The literature reviewed shows that drug abuse among university students is driven by a combination of accessibility, peer influence, psychological stress, and weak preventive systems. Co-morbidity with depression is common and complicates simple awareness messaging. Current awareness and support efforts are fragmented and under-evaluated, and local reporting in Uganda reveals an active supply environment that sustains student use.

Global guidance from WHO and findings from international reviews suggest multi-component and digitally-enabled approaches could improve prevention and linkage to care. Therefore, there is a clear and evidence-based rationale for developing an adaptive, confidential, and interactive digital system that educates students, screens for risk (including depressive symptoms), and links them to support services, the objectives guiding this project.

3. PROJECT METHODS

This chapter outlines the methodology that guided the design and development of the mobile-based drug abuse awareness system, focusing on university students at Makerere University Business School (MUBS). The section details the research design, target population, sampling techniques, development process, data collection methods, anticipated constraints, and ethical considerations.

3.1 Research design/ Research approach

This project adopts the Design Science Research (DSR) approach as the guiding methodology for both the research and development aspects. In this approach, the team will attempt to build an information system artifact through identifying the business requirements and thereby defining a solution to the existing problem of drug abuse among university students (Weber, 2010; Hevner et al., 2004; Au, 2001).

By following DSR, the research team will move beyond describing the problem and instead focus on designing and implementing an artifact which is a Drug Abuse Awareness System in this case, that addresses the issue in a direct, innovative, and practical way. The team will design logical models of the web application using structured modeling tools such as Entity Relationship Diagrams (ERDs). After that, we will undertake the development of a working prototype that effectively supports drug awareness and educational outreach among students.

The DSR process model framework will follow these six phases explained below;

| Phase | Research objective | Proposed Method | Expected Result |
|-------------------------------|--|--|---|
| Problem Identification | To understand the extent of drug abuse among university students and existing gaps in awareness and support. | Interviews with students Observation | A summary of the strengths and weaknesses of the existing system being used by the university |
| Objectives Definition | To define what the app should achieve in addressing drug abuse and supporting students. | Group discussions Brain storming sessions | A list of well-defined, achievable objectives that guide the app's features and design. |

| | | | |
|-------------------------------|---|--|--|
| Design and Development | To design and develop a Drug Abuse Awareness System with interactive and informative features. | Use of Entity Relationship Diagrams (ERDs) Visual Studio code for compiling the mobile application Github, MySQL, etc. | Logical design of the system System elaboration diagrams Physical/actual design interfaces |
| Demonstration | To show how the system works and how it can help student's access drug abuse information and support. | Live demonstration of the prototype to a sample of students and stakeholders. | Stakeholder feedback on usability and effectiveness. |
| Evaluation | To assess how well the system meets its objectives and serves its intended users. | Usability testing, feedback forms, and analysis of user interaction. | Successful defense of the system to supervisors |
| Communication | To share the research findings and demonstrate the value of the developed system. | Documentation, project report writing, class presentations | |

3.2 Project Organization (Client)

The main stakeholders of this project include university students, university counseling offices, and staff at Makerere University Business School. The direct beneficiaries of this system are students who might have a tendency toward drug abuse, student and university counselors, and faculty members who take part in student welfare.

The system will be targeted at a population of about 200 students during the development and testing phase. This selected number provides a diverse range of opinions and feedback from

participants while keeping within a level that is manageable within the project timeline and available resources.

3.2.1 Sampling Design/ Sampling Technique

The sample will be randomly selected from the population of approximately 15,000 students attending Makerere University Business School. We will use a sample size of 200 students.

Estimation of appropriate sample size is important to ensure that our results are reliable and valid. Krejcie and Morgan (1970) estimated that a sample size of approximately 375 students would be required for a population size of this level for a sample to be statistically representative and correct. However, given the scope and limited resources available for our project, we have decided to use a sample of 200 students as our sample size.

For this, we use Simple Random Sampling technique since it ensures there's an equal chance for each student to be selected. This method will help us avoid selection bias since our sample will accurately represent the diversity of MUBS students.

3.3 Sources of Project Data

The research will rely both on primary and secondary data sources to gain insight and information into the drug abuse problem amongst students and define the system requirements. This mixture of sources will be beneficial in taking a look at the issue and developing a well-informed solution to offer support to the already affected.

Primary Data: This includes information collected through in-person or online interviews conducted with students, university counselors and administrative staff.

Secondary Data: This involves data from scholarly articles and documents, reports on youth drug abuse, and already existing drug prevention applications.

3.3.1 Requirements Elicitation Techniques

To ensure that our system meets the user needs, we applied several participatory and observation-based techniques which include the following:

Interviews: These will be conducted with selected students and counseling staff both in-person and online to understand needs and expectations.

Focus Group Discussions: These discussions will enable us to obtain varied feedback in a more platform user participatory setting.

Observation: This will help us in understanding current awareness campaigns there contribution to student's wellbeing and digital usage habits.

Mind Mapping: This will be essential to visualize and organize ideas and requirements needed for system planning and development during brain storming sessions with participants and stakeholders.

3.4 System Analysis and Design Approach

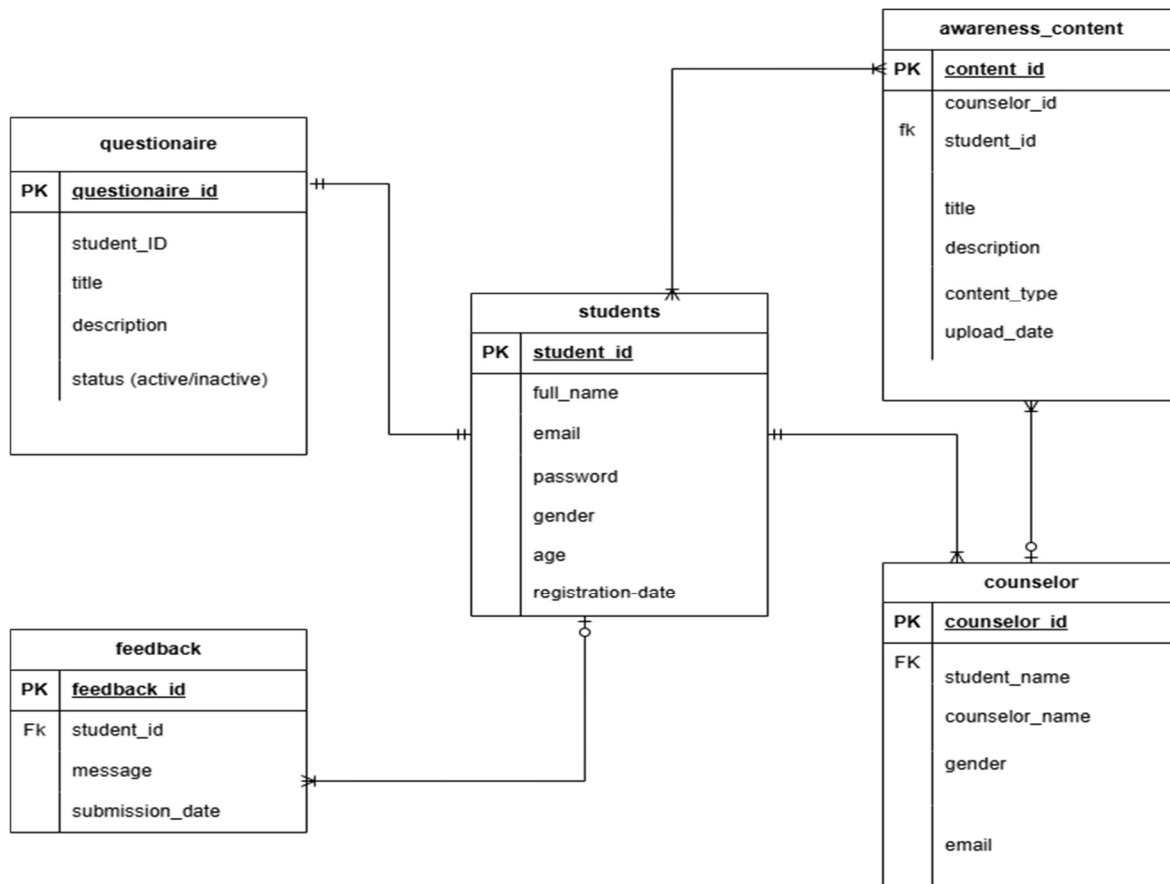
We used OOD for this project because it allows us to divide the app into real-world components like users, content, and notifications. This makes the system easier to operate, update, and scale in the future. We used elements of the Rapid Application Development (RAD) approach and agile development, which will help us get feedback from students early on and improve the app in its early stages of development. This not only involves university students but also satisfies their needs and keeps the app relevant to their needs. Development is at a medium pace, but early feedback from target users will guide our design decisions and improve functionality of the system.

3.4.1 Design Techniques

The system development phase will be illustrated and structured by using the Entity relationship diagram technique and the use case diagrams. ERDs will be used to show how the different entities within the system, such as the users, the awareness content, counselor, and questionnaires, relate and interact to one another in the system.

Entities ; Students, Awareness Content, Questionnaire, Feedback, Counselor

Figure 1;



3.5 Anticipated Project Constraints

While we are confident in our plan, we recognize a few challenges that may arise but also how we intend to close the gap to ensure we deliver on the system:

- i. **Limited technical skills:** Most of team members are still gaining confidence in system development while learning how to use different programming languages and frameworks. We plan to enroll in online courses and rely on tutorials to close this gap.
- ii. **Time constraints:** Balancing this project with academic workload might be tough. We have created a clear timeline with milestones to stay on track with the semester's work load.
- iii. **User participation:** Some students may be reluctant to participate in interviews or testing. We plan to address this through anonymous feedback and assurance of data confidentiality to all the persons whose information we intend to collect.

3.6 Ethical Considerations

This project touches on a very sensitive and rarely discussed topic of drug and substance abuse. It is very important to maintain ethical standards and this is how we intend to do that:

- All participants will be required give informed consent before participating in any form of interviews or participation.
- Nothing concerning the participant personal identifiers will be stored.
- All data collected from participants will be kept confidential and used only for academic purposes.

3.7 Timelines And Milestones

| Phase | Activity | Timeframe | Deliverable |
|--|--|-----------|-------------------------------------|
| Planning & Research | Topic approval, group formation, and initial research | 1 week | Approved project topic & ready team |
| Problem identification & Objectives Definition | Define problem, set goals, develop proposal | 1 week | Approved project topic & ready team |
| System Design | ERD design and system planning | 2 weeks | Finalized system design |
| Development Phase 1 | Basic User Interface creation, backend setup | 2 weeks | structure of system working |
| Development Phase 2 | Add features (questionnaire, feedback, content upload) | 2 weeks | Functional prototype ready |
| Testing & Feedback | Internal testing, bug fixing, user feedback | 1 week | Bugs fixed, system refined |
| Final Presentation Preparation | Final report writing, presentation slides | 5 days | Final version ready |

| | | | |
|---------------------------------|---|--------|---------------------------------|
| Final Submission & Presentation | Project handover, live demo, and presentation | 3 days | Project completed and submitted |
|---------------------------------|---|--------|---------------------------------|

Disclosure

The project team intends to use Artificial Intelligence (AI) tools, specifically Generative AI including chat-gpt, copilot and other tools, to support aspects of the research process for example idea generation, grammar checking, rephrasing of academic content, and guidance on technical documentation. AI will not be used to write our code or do the work for us.

We shall ensure that all outputs generated through AI are critically reviewed and approved by the team and supervisor before it is included in our proposal

All AI usage will be conducted under the guidance of the assigned supervisor to ensure compliance with academic integrity policies. The team shall make sure to double-check anything generated to ensure it is accurate and aligns with academic standards. AI tools will serve as supplementary aids and not as substitutes for the team's intellectual contribution or effort.

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APPENDICES

I: PROPOSED PROJECT BUDGET

Introduction

This budget section outlines the required estimate of human, material and financial resources needed for the successful development of the Drug Abuse Awareness System. The project requires software tools, hardware equipment, internet access, data collection materials, hosting costs, communication expenses, and personnel inputs. The budget aims to give a clear and realistic picture of all the expected expenses at each stage of the project from planning and design, through development and testing, right up to final implementation.

| Item Category | Description | Quantity | Unit Cost (UGX) | Total Cost (UGX) |
|------------------------------|----------------------------------|------------|-----------------|------------------|
| HUMAN RESOURCES | | | | |
| Student Developers | Development & Testing | 1 | 0 | 0 |
| Report Writer | Documentation & Proposal Writing | 1 | 0 | 0 |
| Supervisor Consult | Project Guidance Sessions | 3 sessions | 0 | 0 |
| SOFTWARE REQUIREMENTS | | | | |
| VS Code / Editors | Free Development Tools | 1 | 0 | 0 |
| XAMPP/MySQL/Laravel | Open Source Software | 1 | 0 | 0 |

| | | | | |
|--------------------------------------|--|------------|--------------------|--------|
| Design Tools | Figma/Draw.io (Free versions) | 1 | 0 | 0 |
| HARDWARE REQUIREMENTS | | | | |
| Laptops | Personal Laptops for Development | 2 | 0 | 0 |
| Smartphones | Testing Devices | 2 | 0 | 0 |
| Flash Drive | Backup Storage | 1 | 20,000 | 20,000 |
| DATA COLLECTION | | | | |
| Internet Bundles | For uploading surveys & research | 1 | 15,000 | 15,000 |
| Stationery | Pens, Printing Paper | 1 | 10,000 | 10,000 |
| COMMUNICATION & TRANSPORT | | | | |
| Airtime | Communication with team & supervisor | 1 | 10,000 | 10,000 |
| MISCELLANEOUS COSTS | | | | |
| Refreshments | Group Work Sessions | 3 sessions | 10,000 | 30,000 |
| Contingency | Unexpected Minor Expenses | 1 | 10,000 | 10,000 |
| Total cost | | | 100,000 UGX | |

Total cost

100,000 UGX

II: PROJECT SCHEDULE

The project schedule below illustrates the planned timeline for all major activities using a gantt chart, from the first phase of requirements gathering to the last testing. It provides a visual representation of task durations, start dates, and the sequence of activities, helping to ensure that the project progresses according the plan and meets the expected deadlines.

