Web-Based Donation Management System With Multi-Payment Integration And Fundtracking For Secure And Verified Charity

A Capstone Project Proposal

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BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

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CHAPTER 1

THE PROBLEM AND ITS STATEMENT

Introduction

The rapid advancement of financial technology has significantly transformed charitable donations, enhancing convenience, security, and transparency in the online giving process. Modern digital platforms now support multiple payment options including digital wallets like GCash and PayPal, along with traditional bank transfers and often include fund tracking features that allow donors to monitor the impact of their contributions. Technologies such as blockchain also contribute to transparency by ensuring donation records are immutable and tamper-resistant, while artificial intelligence (AI) and machine learning enhance fraud detection, safeguarding donors from scams and ensuring only legitimate organizations benefit from online donations.

Despite these innovations, many existing online donation platforms still struggle with key challenges, particularly around transparency, security, and accessibility issues that are especially pronounced for small to medium-sized charitable organizations. A critical concern is the lack of structured charity verification processes, which make it difficult for donors to distinguish legitimate charities from fraudulent ones. Equally important is the often insufficient attention to data privacy and security. The sensitive nature of donor information, including personal and financial details, makes these platforms prime targets for cyberattacks and data breaches. A failure to implement robust security measures can lead to the exposure of this data, resulting in financial losses, identity theft, and a severe erosion of trust in online giving. Additionally, many platforms lack comprehensive fund tracking and centralized directories of verified nonprofits, reducing visibility and public trust – crucial factors for smaller organizations seeking financial support.

This study is being conducted in collaboration with two charitable organizations: Buklod Samahan ng Nagkakaisang may Kapansanan ng Mamatid, a local group that supports persons with disabilities in Mamatid, and the Institute for Foundational Learning (IFL ICDMI),

a nonprofit institution that provides holistic development programs for underprivileged communities. Both organizations face significant challenges in managing online donations effectively, offering transparent financial reports, and increasing visibility among potential donors due to limited access to advanced technological tools. These challenges highlight the need for a centralized, secure, and user-friendly donation platform to enhance donor trust and improve operational efficiency.

To address these needs, this study proposes the development of a Web-Based Transparent Donation Management System that aims to improve transparency, accountability, and accessibility in online donations. The system will serve as a centralized platform where verified charities and nonprofit organizations including Buklod Samahan and IFL ICDMI can register, manage their profiles, and update donation records. It will implement a structured charity verification process to ensure that only legitimate organizations are listed, thus increasing donor confidence. Though it will not process transactions directly, the platform will provide a directory of verified charities, fund tracking reports, and updates on how funds are allocated and utilized. Key features of the system will include role-based access for distinct user groups, each with specific responsibilities and interactions within the system

Donors, who are users wanting to contribute to charities, will have role-based access to browse a directory of verified charities, view charity profiles, make one-time or recurring donations, specify if their donation is for a general fund, a specific project, or emergency relief, choose to donate anonymously, and view reports on how their donations are utilized.

Charity administrators, who are representatives of verified charitable organizations, will have access to features and will be obliged to register and undergo a verification process (including document uploads and approval/rejection based on background checks), create and manage a charity profile (including uploading their mission statement, project details, impact stories, and financial reports), manage donation campaigns and projects, log and manage donation records, and provide reports on fund allocation and utilization.

System administrators are responsible for the management and oversight of the entire system, and will manage the charity registration and verification process (including approving or rejecting applications), user accounts and roles, system security and integrity, and monitor compliance with platform standards.

These role-based features will include donation tracking with real-time visibility into where funds are allocated across projects, charity verification tools such as document uploads and background checks for manual approval by system admins, and automated and manual reporting tools, such as financial summaries, contribution reports, and campaign performance metrics. By offering a secure, transparent, and easy-to-use platform, this study seeks to bridge the gaps in existing donation platforms and provide smaller charitable organizations with the tools they need to manage donations more effectively. Ultimately, this system aims to foster trust between donors and institutions, encouraging greater participation in online giving and promoting meaningful causes through increased donor engagement.

Objectives of the Study

The primary objective of this study is to develop a web-based transparent donation management system that enhances security, efficiency, and accountability in online charity transactions. The system will address fraud risks, lack of transparency, and donor trust issues by implementing fund tracking, charity verification, and multi-payment integration (GCash, PayPal, and bank transfers). Furthermore, the system's quality will be evaluated using the ISO/IEC 25010 quality model to ensure it meets industry standards. This will ensure that all donations are properly accounted for, securely processed, and allocated to verified charitable organizations

Specific Objectives:

1. To develop a user and organization verification module that allows system administrators to review legal documentation and approve or reject registrations, ensuring only verified users and accredited charities are included on the platform.

2. To implement a donation tracking feature that records received donations, categorizes them based on designated campaigns or purposes, and updates fund utilization data in real time to enhance transparency in fund management.

3. To design and develop a fund tracking display accessible to donors, presenting donation records and fund utilization information provided by charity administrators.

4. To integrate user authentication for donors, charity administrators, and the system administrator to control access to system functionalities and protect user data.

5. To employ data encryption techniques to secure sensitive information stored within the system's database, such as user credentials and charity details.

6. Evaluate the proposed software through end-user feedback based on the following criteria of ISO/IEC 25010:2021:

    6.1. functional suitability;

    6.2. usability;

    6.3. performance efficiency; and

    6.4. reliability.

7. Evaluate the proposed software through system development experts based on the following criteria of ISO/IEC 25010:2021:

    7.1. security;

    7.2. maintainability;

    7.3. reliability; and

    7.4. portability.

Scope and Limitations

This study focuses on the development and implementation of a Web-Based Donation Management System With Multi-Payment And Fundtracking For Secure And Verified Charity, providing a centralized platform where accredited nonprofit organizations can register, update donation records, and enhance transparency for potential donors. A key aspect of this system is the inclusion of essential reporting features. The system will serve as a directory of verified charities, allowing donors to find legitimate organizations to support while equipping nonprofit administrators with tools to manage their profiles, track received donations, and generate reports on fund utilization. It is designed to accommodate charities, ensuring that only verified organizations are listed to prevent fraudulent activities. Donors will be able to browse registered charities, view their profiles, and check donation records, while charity administrators will oversee fund tracking and provide transparency reports, including summaries of donation inflows and fund allocation. Website administrators will be responsible for charity verification and compliance monitoring to maintain the integrity of the platform, and will utilize system-generated reports to monitor donation activity and identify potential discrepancies.

The duration of the study is constrained by a limited academic timeframe, focusing on developing a functional web-based transparent donation management system that enhances transparency and accountability in online giving. The system will not handle direct financial transactions but will act as an informational platform, displaying the official donation channels of verified charities, such as GCash, PayPal, and bank transfers. It will provide donors with a secure directory of accredited nonprofit organizations, allowing them to make informed decisions while ensuring that charities can manually log and update donation records for better transparency.

The proposed system will include several key features designed to enhance transparency and efficiency in managing online donations:

User Registration and Authentication: Ensures secure access for different types of users, including donors, charity administrators, and system administrators. Each role will have designated permissions. Donors can manage personal profiles, update their information, and view their donation history. Charity administrators can access organizational settings and donation logs. System administrators will oversee all accounts, enforce security protocols, and monitor compliance.

Charity Verification and Approval Process: Implements a document-based validation system where nonprofit organizations upload legal credentials and regular audit reports in PDF. System administrators will conduct background checks and determine application approval or rejection to ensure only accredited organizations are listed on the platform.

Charity Management and Campaign Creation: Verified charities can manage their organization profile, including their mission, project information, financial statements, and impact stories. Charity admins can create and update multimedia fundraising campaigns with defined goals, target amounts, deadlines, progress bars, and attach media such as photos and videos with descriptive captions. Campaigns can be shared across social media platforms to reach wider audiences.

Donation Management: Donors can make one-time or recurring donations and designate them for general use, specific projects, or emergency relief. Users may also choose to donate anonymously. Donors will have role-based access to charity directories, profile views, and transparency reports showing how their donations were used.

Donation Logging and Fund Tracking Reports:The system features automated fund tracking that provide donors with immediate visibility into how their contributions are allocated and spent. As donations are processed, the system automatically updates fund utilization dashboards, linking each donation to specific project milestones and outcomes. Donors can access dynamic reports showing project status (ongoing, completed), progress metrics, and financial breakdowns. For every contribution, the system generates official receipts and

acknowledgment letters, accompanied by real-time updates on the project's progress and impact, ensuring a seamless and transparent giving experience.

Searchable Directory of Registered Nonprofit Organizations: Donors can search and filter verified charities by category, location, or donation activity, and access each charity's details including their mission, previous initiatives, and supported payment methods.

Administrative Tools for Charity Management and Compliance Monitoring: System administrators will manage charity and user accounts, monitor audit uploads, and remove non-compliant organizations. They ensure adherence to platform rules and oversee fundraising transparency across all campaigns.

Communication and Engagement: The platform will support automated email and SMS notifications, alerting users about donation confirmations, campaign updates, verification outcomes, and administrative decisions.

Reporting of Donation Contributions: Donors will receive a detailed contribution summary, while charities will have access to fundraising performance reports for analytics and transparency

Despite the system's goal of enhancing transparency, accountability, and efficiency in donation management, several limitations must be acknowledged due to technological constraints, resource availability, and the academic scope of this study:

1. No Direct Payment Processing – The system does not handle financial transactions or integrate with payment gateways. Instead, it serves as an informational and tracking platform, displaying official donation channels such as GCash, PayPal, and bank transfers. Donors will still need to process payments externally, and charities will verify received donations.

2. Limited Initial Charity Onboarding – To demonstrate system functionality, the study will onboard only selected charities, each operating in different areas of social welfare.

Expanding to multiple organizations and scaling the platform for a broader audience is beyond the scope of this research.

3. Limited Timeframe and Academic Constraints – The development of this project is constrained by a limited academic timeframe. As a result, the system prioritizes essential features such as charity verification, fund tracking, and donor transparency. Advanced capabilities like automated fraud detection, artificial intelligence, or blockchain integration are outside the scope of the current implementation but are anticipated in future improvements.

4. Foundational Security Compliance Only – The system integrates basic security features including role-based access control, encrypted data storage, and administrative monitoring. While these measures support data protection and user privacy, the system may not fully meet enterprise-level security standards or compliance with frameworks such as PCI DSS or ISO/IEC 25010 Due to academic and resource constraints, more advanced safeguards such as penetration testing, intrusion detection, or regulatory certification are not yet implemented

This study is specifically focused on developing a web-based donation management system that enhances fund tracking, charity verification, and donor engagement. However, the research is delimited by the following factors:

1. Not a Crowdfunding Platform – The system does not allow individuals to create fundraising campaigns or collect direct donations. It serves solely as a listing and tracking tool for verified charities.

2. Exclusive to Selected Charities – The study will be limited to selected non profit organizations for testing and demonstration purposes. While the system is designed for scalability, onboarding multiple charities beyond these initial organizations is outside the scope of this research.

3. No Automated Fraud Detection or Blockchain Integration – While blockchain and AI-based fraud detection are commonly used in advanced donation platforms, these technologies will not be implemented in this study due to technical and time constraints. The system will rely on manual verification processes to maintain security and legitimacy. However, it will not undergo full-scale commercial testing or certification for large-scale implementation.

4. Academic Research Scope – This system is being developed as an academic requirement and is not intended for immediate commercial deployment. Future upgrades, optimizations, and regulatory compliance efforts will be required before world implementation.

Significance of the Study

This study focuses on the development and implementation of a Web-Based Transparent Donation Management System with Fund Tracking, designed to enhance transparency, security, and verification of charity donations. The significance of this research lies in its ability to address key challenges faced by charitable organizations and donors, improving trust, efficiency, and accountability in the donation process. By providing a centralized platform for verified charities and incorporating comprehensive reporting and analytics features, the system aims to ensure that donations are properly recorded, tracked, and managed, strengthening donor confidence and improving the overall impact of charitable initiatives. The detailed reporting and analytics will provide donors with concrete evidence of how their contributions are utilized, fostering trust and encouraging continued philanthropic support.

1. Charitable Organizations: The study will provide valuable insights for Buklod Samahan ng Nagkakaisang may Kapansanan ng Mamatid, and Institute for Foundational Learning (IFL ICDMI) by streamlining their donation management processes, enhancing fundraising strategies, and improving program effectiveness. The reporting

and analytics features will allow these organizations to track donation trends, understand donor behavior, and optimize their fundraising efforts.

2. Donors: This study empowers donors by providing transparency and concrete evidence of how their contributions are utilized, fostering trust and encouraging continued philanthropic support. With fund tracking and detailed financial reporting, donors can make informed decisions, ensuring their contributions directly benefit the intended recipients.

3. Communities / Beneficiaries of Charity: The findings will contribute to the development of more responsive and effective charitable programs, ensuring that the needs of beneficiary communities are adequately addressed, ultimately improving their quality of life. The system's reporting capabilities will help charities demonstrate the impact of their programs, strengthening their accountability to beneficiaries.

4. Regulatory Bodies: The research will aid regulatory bodies such as system administrators, accounting departments, and financial auditors in ensuring compliance, accountability, and transparency within the donation management process. Insights from this study will help establish best practices for monitoring fund distribution, enforcing financial accountability, and maintaining the integrity of charitable organizations.

5. Future Researchers: This study will serve as a valuable reference for researchers in the field of philanthropy and nonprofit management. By offering a structured approach to donation transparency and accountability, it provides a foundation for future studies, inspiring further investigation into key challenges and best practices within the charitable sector.

Definition of Terms

The development and implementation of a Web-Based Donation Management System With Multi-Payment And Fundtracking For Secure And Verified Charity involves various concepts and technical aspects that contribute to its functionality and effectiveness. Understanding these terms is crucial for designing and operating the system efficiently.

Following are the technical terms used in the study:

1. Fund Tracking – The ability to monitor, verify, and display logged donation transactions within the system. This feature ensures that donors, charities, and administrators have up-to-date financial records, improving transparency and accountability.

2. Multi-Payment Integration – A feature that allows charities to list their official donation channels, such as GCash, PayPal, and bank transfers, within the system. The platform itself does not process transactions but serves as a reference for donors to contribute securely through external payment that allows donors to choose their preferred mode of payment, increasing accessibility and ease of use

3. ISO/IEC 25010:2021 – An international standard that defines software quality evaluation criteria, including functional suitability, performance efficiency, compatibility, interaction capability, security, maintainability, and portability. In this study, the system will be assessed based on these quality characteristics to ensure its effectiveness, efficiency, and alignment with industry standards for software quality.

4. Web-Based Platform – A system that operates through a web browser instead of requiring a software installation. This ensures accessibility across multiple devices and locations, allowing donors and charities to interact with the platform remotely.

5. Compliance Monitoring – A feature that enables administrators to oversee charity registration, track fund allocation reports, and ensure compliance with transparency standards. This function helps prevent fraudulent activities and maintains trust within the system.

Additionally, the study includes the following conceptual terms:

1. Donation Management System – A platform designed to facilitate the collection, tracking, and reporting of donations. This system helps streamline the donation process for both donors and recipient organizations.
2. Transparency and Accountability – Fundamental principles that ensure donation transactions are visible and verifiable. Transparency builds trust among stakeholders, while accountability ensures that funds are used appropriately.
3. Charity Verification – The process of authenticating nonprofit organizations before allowing them to receive donations through the platform. This step ensures that only legitimate and registered charities can participate, preventing fraudulent activities.

This chapter presents a review of related literature and studies relevant to web-based donation management systems. It explores key concepts, methodologies, and technological advancements that enhance transparency, security, and efficiency in charitable transactions. The discussion includes multi-payment integration, fund tracking, and secure verification mechanisms to ensure donor confidence and fraud prevention. The reviewed sources provide insights into existing donation platforms, identifying their strengths and limitations. By examining these studies, the researchers aim to establish a foundation for developing a system that addresses gaps in transparency, security, and accessibility in online charitable giving.

CHAPTER 2

INTRODUCTION

This chapter presents a review of related literature and studies relevant to web-based donation management systems. It explores key concepts, methodologies, and technological advancements that enhance transparency, security, and efficiency in charitable transactions. The discussion includes multi-payment integration, fund tracking, and secure verification mechanisms to ensure donor confidence and fraud prevention. The reviewed sources provide insights into existing donation platforms, identifying their strengths and limitations. By examining these studies, the researchers aim to establish a foundation for developing a system that addresses gaps in transparency, security, and accessibility in online charitable giving.

Conceptual Literature

A Transparent Donation Management System is essential for ensuring accountability and trust between nonprofits and donors. Effective transparency practices reassure donors that their contributions are used responsibly, strengthening the credibility of charitable initiatives. A well-designed system incorporates transparency measures, such as clear reporting mechanisms and accessible fund allocation insights, which enhance donor confidence, engagement, and long-term contributions. These measures include:

Role-Based Access Control (RBAC) in our donation management platform enforces strict separation of permissions tailored to each user group’s needs. Donors can access only their personal transaction history and donation receipts, preventing exposure of others’ data. Charity administrators are restricted to managing their organization’s campaign details and financial reports, while system administrators hold elevated privileges to approve user accounts and verify charities. This granular access design reduces risks of unauthorized data exposure, such as viewing other donors’ contributions or manipulating financial information, and ensures compliance with privacy standards. By rigorously applying least privilege principles, RBAC safeguards sensitive information, promotes accountability, and sustains

user trust. Mehra [1] emphasizes that such targeted access controls are essential in platforms where transparency and data integrity directly impact stakeholder confidence.

Project Management enables charities to set clear goals, budgets, and timelines while tracking progress in real time. Donors can see how much has been raised versus targets, follow updates on project milestones, and access impact stories all of which strengthen transparency and trust. The donation management system supports both one-time and recurring donations, giving donors flexibility and control. Donors can also specify whether their contribution is general-purpose, tied to a specific project, or designated for emergency relief efforts. Features like progress bars, financial reporting, and documentation uploads provide detailed insights into fund allocation and project status. This transparency encourages accountability and helps charities make informed decisions while closely monitoring fundraising performance. According to Kharbat and Al-Debei [2], digital project management tools enhance nonprofit operations by providing structured workflows and clear visibility into how funds are utilized.

Regular audit reports are a key feature of our donation management platform, designed to enhance transparency and strengthen the credibility of participating NGOs. By requiring charities to submit periodic, independently audited financial statements, the system ensures that funding is being used in alignment with declared goals and ethical standards. These reports, reviewed by platform administrators, assess not only financial accuracy but also program execution and governance practices, offering stakeholders a clear view into how donations are utilized. In response to concerns raised by FundsforNGOs [3] regarding trust deficits in donor-NGO relationships, our audit mechanism reinforces accountability and discourages misuse of funds. While the cost of third-party audits can be a barrier for smaller organizations, we position audit compliance as a prerequisite for long-term participation, encouraging improved financial practices and positioning NGOs for greater donor engagement, strategic partnerships, and sustainable growth.

Charity verification and authentication are critical to maintaining trust and transparency in our donation management platform. During onboarding, an automated checklist ensures

required documents, such as nonprofit registration and tax IDs, are properly submitted and formatted. Verified submissions are then manually reviewed by administrators to confirm authenticity and identify potential fraud. To protect this sensitive data, we use SHA-256 hashing to ensure document integrity and detect tampering. Addressing issues highlighted by Ahmed et al. [4], our system combines automation, cryptographic safeguards, and human oversight to ensure only legitimate, accountable organizations can operate on the platform.

Transparent fund utilization allows donors to see exactly how their contributions are allocated and spent through detailed breakdowns, project-specific spending summaries, and milestone-based progress reports. For each campaign, donors receive automatic updates showing whether fundraising is ongoing, completed, or in progress, along with acknowledgment receipts. For example, a donor contributing to an education project can view how much was spent on supplies, training, and outreach, and track progress toward key milestones. As She and Sanfey [5] note, while transparency may not directly drive donations, it strongly influences how donors assess an organization's credibility. By embedding these reporting tools into the donation platform, nonprofits build trust, meet regulatory standards, and strengthen long-term donor relationships.

Multi-Payment Integration makes it easier for people to donate by offering popular and accessible payment options like GCash, PayMaya, bank transfers, and credit/debit cards. This flexibility helps remove barriers that often cause donors to abandon the process, especially in regions where certain methods are preferred. For example, a donor in the Philippines can quickly contribute using GCash without needing a credit card. The platform also allows users to save their preferred payment method and set up recurring donations. Based on Ramanatha et al. [6], designing payment systems around actual user behavior leads to higher satisfaction and fewer failed transactions. We also gather user feedback to improve the donation flow making sure it stays fast, simple, and aligned with how people actually give. This not only boosts completed donations but builds trust and encourages repeat contributions.

Donation Reporting & Analytics provides donors with real-time access to detailed reports, including contribution summaries, project-specific fund usage, and overall charity

funding performance. Donors can track where their money goes such as how much of a donation to a medical relief project was used for supplies, staffing, or transport and receive automated reports once a campaign concludes. As Mayapada et al. [7] note, timely financial disclosure builds credibility, especially for donation-reliant charities, while delays may signal instability. Our platform supports scheduled reporting, audit-ready logs, and clear funding analytics, helping organizations maintain transparency, meet regulatory expectations, and strengthen long-term donor trust.

Developing a web-based transparent donation management system requires a clear system architecture to ensure security, efficiency, and accountability. Ries [8] emphasizes aligning architecture with software quality standards to maintain reliability and transparency. A client-server model enables flexible deployment and seamless user-database interaction, ensuring accurate tracking and allocation of funds. Core modules donor management, fund allocation, reporting, and verification enhance accountability by maintaining donor records, directing resources based on needs, generating transparent performance reports, and preventing fraud to safeguard transaction legitimacy.

The choice of technology stack critically affects the system's performance, scalability, and security. React.js provides a responsive, interactive front-end that efficiently handles dynamic content, enhancing user experience. On the back-end, Laravel's MVC architecture and Eloquent ORM facilitate organized server-side logic and efficient database interactions, improving maintainability and scalability. For data storage, relational databases like MySQL or PostgreSQL are preferred over NoSQL options due to their robust support for structured, transactional data and clear relationships among donors, donations, and projects. Kushwaha and Gupta [9] emphasize that protecting sensitive donor information requires strong security measures such as AES-256 encryption, OAuth 2.0 authentication, and adherence to regulatory standards. Leveraging these technologies ensures a secure, scalable, and reliable donation management system that fosters user trust.

User-centric design is critical for charity management systems to meet the distinct needs of donors and beneficiaries. Hackworks [10] stresses that simplifying navigation and

enhancing accessibility, such as multilingual support and interfaces adaptable to low digital literacy, directly increases donor trust and sustained giving. Clear, real-time updates on how donations fund specific projects address donor concerns about transparency, reducing dropout rates. Actively involving beneficiaries in design sessions revealed practical obstacles like limited internet access and language barriers, leading to targeted features such as offline donation receipts and localized content.

This approach also sharpens resource allocation by grounding decisions in beneficiary feedback rather than assumptions, minimizing wasted funds on irrelevant services. Co-creation workshops foster a sense of ownership among community members, strengthening commitment to the platform. Incorporating iterative usability testing based on real user input ensures continual refinement, enhancing ease of use and donor retention. These focused strategies produce a system that is not only more accessible and trustworthy but also more impactful in addressing local needs.

Usability testing is essential for refining donation platforms to ensure intuitive, error-free interactions among donors, administrators, and beneficiaries Mirabdolah et al. [11]. By identifying design flaws and reducing cognitive load through iterative evaluations, usability testing improves accessibility and security, minimizing transaction errors and abandonment. Although often associated with healthcare and education, these principles are critical for donation systems, where sensitive financial data demands seamless, trustworthy workflows. Early user involvement and tools like prototyping and task analysis enable tailored features such as easy donation tracking and fund verification that directly address user needs. This targeted approach boosts donor confidence, transparency, and long-term engagement, strengthening nonprofit sustainability as digital giving expands.

Despite the clear benefits of transparent donation management systems, several challenges persist. Implementing Role-Based Access Control (RBAC) often introduces administrative complexity, risking misconfigurations that can delay user access and frustrate

stakeholders. Regular independent audits, while crucial for accountability, impose financial and operational burdens that may exclude smaller nonprofits or divert funds from core programs. Although user-centric designs aim to improve accessibility, many beneficiaries still face barriers due to limited internet access and low digital literacy, limiting true inclusivity. Transparency efforts also raise privacy concerns, as detailed reporting risks exposing sensitive donor or beneficiary information if not carefully managed. Multi-payment integration enhances convenience but complicates system security and compliance, requiring constant adaptation to regional regulations and increasing operational costs. Usability testing improves platform design but is resource-intensive and may fail to capture the diverse needs of marginalized users, potentially overlooking key accessibility issues. Additionally, transparency alone does not guarantee increased donations, as donor behavior is influenced by complex social and emotional factors. Heavy reliance on technologies like React.js and Laravel exposes the system to cybersecurity risks and demands continuous maintenance, which can strain nonprofit resources. Finally, much of the supporting research originates outside the donation context, highlighting a need for more focused empirical studies to better tailor solutions to the unique dynamics of charitable giving.

Review of Related Literature

The increasing adoption of web-based donation management systems has transformed how charitable organizations handle donations, particularly in terms of security, transparency, and accessibility. Blockchain technology plays a crucial role in improving trust and accountability in financial transactions. According to Eisdspa et al. [16], blockchain ensures tamper-proof and verifiable ledger systems, reducing reliance on intermediaries while fostering donor confidence. This decentralization minimizes fraud risks and enhances transparency in donation tracking. However, one of the challenges they noted is that blockchain implementation requires technical expertise and can be costly for small nonprofits, limiting its practicality for widespread adoption. Christie [17] highlights that distributed ledger technologies promote trust in charitable organizations by offering transparent and immutable financial records, reducing concerns about fund mismanagement. Nevertheless, she also

acknowledges that integrating such technologies can raise scalability and user accessibility concerns, especially for less tech-savvy users or those in underdeveloped regions.

Moreover, the use of smart contracts within blockchain-based systems automates donation processing, ensuring that funds are allocated precisely as intended by donors. Despite this benefit, smart contracts can be rigid once coded, they cannot be easily modified without risks, which could be problematic in cases where donation intentions change post-transaction or require flexibility. Security challenges in digital payment platforms also require attention. Sahi et al. [18] emphasize the importance of encryption techniques and AI-powered fraud detection in mitigating risks associated with online donations. Effective security measures ensure that donor transactions remain protected from cyber threats while maintaining seamless user experiences. However, their study also indicates that implementing such security systems increases development complexity and cost, which could be a burden for nonprofit startups. Additionally, Khalil et al. [19] found that incorporating multi-payment options, such as GCash, PayPal, and online banking, increases accessibility and encourages donor participation.

This flexibility allows nonprofit organizations to cater to a broader audience, ensuring that potential donors are not limited by payment restrictions. On the downside, they also mentioned that supporting multiple payment platforms can complicate system integration and maintenance, increasing the need for regular updates and potential security vulnerabilities across multiple channels. Digital wallets have emerged as a preferred method for processing recurring charitable donations. Sirisawat et al. [20] discuss how the future of digital donation crowdfunding relies on secure payment methods and donor-friendly interfaces. Khalil et al. [19] also emphasize that e-wallet adoption significantly impacts donor retention, with convenience and security being primary factors influencing continued donor engagement. However, they also note a drawback: digital wallet systems may face inconsistent regulations across countries, leading to potential compliance issues for global charities.

Furthermore, transparency in nonprofit financial reporting enhances credibility. Donor perceptions of nonprofit transparency, as noted by previous research, suggest that open

financial tracking systems improve trust and encourage higher donor retention rates. Organizations that employ blockchain-based financial reporting provide real-time access to transaction histories, further strengthening donor confidence. Still, the literature indicates that constant real-time data reporting can overwhelm system resources and raise data privacy concerns, especially when sensitive donor information is involved. During crisis situations, reliable donation platforms become even more essential. Wu and Zhu [20] explore the role of service-oriented charity systems in ensuring efficient fund allocation and fraud prevention during the COVID-19 pandemic. Their findings align with existing literature on secure digital payments, emphasizing the need for automated verification and real-time tracking to maintain donor confidence.

However, the study also points out the challenge of system downtime during high-traffic crisis periods, which may delay fund disbursement or negatively affect donor trust. In disaster relief efforts, speed and transparency in fund disbursement are critical, making innovative digital donation systems a necessity. Blockchain-enabled crowdfunding continues to gain traction in the nonprofit sector. Sirisawat et al. [21] state that blockchain-based donation platforms improve fund allocation, reduce administrative costs, and enhance transaction traceability. Anandkumar et al. [22] reinforce the idea that decentralization in crowdfunding efforts helps address trust issues and security concerns in donation management. However, both studies acknowledge that blockchain adoption remains limited by public awareness, legal uncertainty, and integration barriers with existing financial infrastructure. The integration of smart contracts within blockchain systems further enhances efficiency, as they allow automatic disbursement of funds based on predefined conditions, ensuring compliance with donor intentions but again, this raises the risk of inflexibility and system dependence on flawless coding.

Review of Related Studies

Adopting digital wallets for charity donations presents several challenges, especially in influencing donor behavior. Studies on digital wallet adoption suggest that e-wallets significantly impact donor trust and engagement. According to Khalil et al. [23], factors such

as ease of use, security, and convenience are critical to donor retention. Their study revealed that digital wallets streamline the donation process, encouraging repeat contributions. However, they also acknowledged that some users express concerns about data privacy and the reliability of mobile apps, especially during system downtimes or in regions with weak internet connectivity. This aligns with Sirisawat et al. [24], who highlight the growing reliance on digital wallets in modern fundraising. Nevertheless, they note that donor adoption is sometimes hindered by lack of trust in digital platforms, particularly among older or less tech-savvy populations. These studies suggest that nonprofit organizations should prioritize secure and user-friendly e-wallet integrations to maintain long-term donor engagement. Given our system's goal of ensuring seamless and secure donation processing, incorporating widely used digital wallets like GCash and PayPal will enhance accessibility and donor participation.

Service reliability in online donation platforms is another significant challenge. Wu and Zhu [25] emphasize that automated verification, encryption-based fraud prevention, and real-time tracking minimize fraudulent transactions, ensuring that financial aid reaches beneficiaries efficiently. Their findings indicate that organizations with robust security protocols experience a reduction in financial fraud cases. However, they also point out that implementing these features requires substantial technical infrastructure and funding, which can be difficult for small organizations to sustain. Additionally, real-time tracking mechanisms may introduce latency or system performance issues if not optimized properly. This supports the need for our system to integrate multi-factor authentication and blockchain verification to strengthen security and improve donor confidence.

The integration of blockchain technology in crowdfunding has shown improvements in financial security and accountability. Sirisawat et al. [26] suggest that blockchain-enabled platforms enhance transaction traceability and streamline fund distribution. However, they also noted that the technical complexity and high cost of blockchain infrastructure remain significant barriers for nonprofits with limited resources. Anandkumar et al. [27] highlight the role of smart contracts in automating fund disbursement, ensuring that donations are used as intended. While automation provides efficiency, they also warned of the risks related to coding

errors or vulnerabilities in smart contracts, which could lead to misuse or misallocation of funds. These studies suggest that blockchain-based solutions can mitigate financial management risks and enhance transparency. Given our system's focus on secure donation management, incorporating blockchain technology and smart contracts will optimize fund allocation and ensure donor trust.

Governance strategies in nonprofit organizations also influence donor trust. Yang and Zhao [28] found that nonprofits with regulatory compliance frameworks and third-party audits benefit from increased donor confidence and funding stability. Following ethical guidelines strengthens donor relationships and promotes sustained financial support. However, they also caution that maintaining strict regulatory compliance requires additional administrative effort and may slow down decision-making processes, especially in fast-paced fundraising campaigns. This is particularly relevant to our study, as incorporating best practices in governance may enhance donor engagement within our proposed system.

Furthermore, emotional communication strategies play a key role in donor engagement. Park et al. [29] suggest that organizations using emotion-driven storytelling experience higher donor engagement and financial contributions. Personalized messaging and targeted outreach strategies strengthen donor relationships, ensuring long-term support for charitable causes. Storytelling that conveys the real-life impact of donations fosters an emotional connection with donors, increasing their willingness to contribute. However, the study also warns that overuse of emotional appeals may lead to donor fatigue or skepticism if not backed by factual reporting and transparent fund usage. Given the importance of donor retention, integrating compelling storytelling techniques into digital donation platforms could benefit our system.

The findings from these studies provide valuable insights into the security, transparency, and efficiency of modern digital donation management systems. By integrating secure payment methods, enhancing fraud prevention mechanisms, and leveraging blockchain technology, nonprofit organizations can improve donor trust and engagement in online giving platforms. The adoption of these innovative approaches ensures that charities

remain financially sustainable while providing transparency and security in their donation processes. As our study aims to develop a smart and secure donation platform, these technological advancements and best practices serve as key considerations in our system's design.

Theoretical Framework

This study is anchored on two complementary theoretical models: the ISO/IEC 25010:2021 Software Quality Model and the Technology Acceptance Model (TAM).[20][35], Together, these frameworks support the development and evaluation of the proposed Web-Based Donation Management System With Multi-Payment and Fundtracking for Secure and Verified Charity, addressing both its technical quality and user adoption potential.

The ISO/IEC 25010 model provides a structured and internationally recognized approach to evaluating the quality of software products. It defines a set of quality characteristics that ensure the system is not only functional, but also reliable, efficient, secure, and maintainable. This model is especially relevant to the first and second objectives of this study, which aim to develop a secure and transparent platform and to evaluate the system's performance based on software quality criteria.[35]

- Functional Suitability – Evaluates whether the system provides the required functions accurately and completely, such as charity verification, donation campaign management, and real-time fund tracking.
- Performance Efficiency – Assesses the system's responsiveness and stability during peak usage, especially when handling donation records and generating reports.
- Compatibility – Ensures the system can operate across different web browsers and can display donation channels like GCash, PayPal, and bank transfers without integration issues.
- Security – Focuses on safeguarding user and organizational data through access control, secure storage, and data protection mechanisms.

While ISO/IEC 25010 guides the technical quality of the system, the Technology Acceptance Model (TAM) addresses the user's perspective, specifically their willingness to adopt and use the system. [20] Developed by Davis (1989), TAM identifies two core factors that influence technology adoption:

- Perceived Usefulness (PU) – The extent to which a user believes the system will enhance their task performance. In this study, this refers to how the system helps donors and charity staff track funds, build trust, and improve transparency.
- Perceived Ease of Use (PEOU) – The degree to which the system is easy to learn and navigate. This reflects the design's accessibility for both tech-savvy and non-technical users.

By combining ISO/IEC 25010:2021 and TAM, this study ensures that the proposed system is evaluated from both a software engineering perspective and a human-computer interaction standpoint. This dual-framework approach enhances the platform's ability to meet its primary objectives: to develop a secure, user-accepted, and performance-driven donation management system tailored for transparency and trust.

Conceptual Paradigm

The conceptual paradigm of this study is guided by the Input-Process-Output (IPO) model, incorporating the ISO/IEC 25010: 2021 Software Quality Model and the Technology Acceptance Model (TAM) to ensure both technical excellence and user satisfaction in system development. The Input consists of core elements necessary for building a secure, efficient, and user-friendly donation management platform. These inputs include user requirements from key stakeholders donors, charity staff, and administrators each with distinct needs related to payment convenience, donation tracking, system management, and transparency. To meet international standards, the system is evaluated based on ISO/IEC 25010 quality characteristics: functional suitability, performance efficiency, compatibility, and security. Furthermore, the TAM components Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) guide the system's design philosophy to ensure the platform is not only effective but

also easy to use. Lastly, technical resources such as GCash, PayPal, and bank integration APIs are utilized to support diverse and secure payment options.

In the Process phase, the study applies two major models: the ISO/IEC 25010:2021 Software Quality Model, which informs the system's functional and non-functional requirements, and the Technology Acceptance Model, which ensures that the system design aligns with user expectations and promotes system adoption. The development process includes both backend and frontend implementation, UI/UX design informed by ease of use, and feature development focused on perceived usefulness. These are followed by iterative testing and evaluations to ensure the system meets quality and usability standards.

The Output is a fully functional Web-Based Donation Management System with Multi-Payment and Fund Tracking, designed to provide a secure, verified, and transparent platform for charitable giving. The system ensures that donors can confidently contribute using various payment channels, while charities and administrators are equipped with tools for verification, fund tracking, and reporting. By merging software quality standards with user acceptance principles, the platform is positioned to deliver both trustworthiness and a positive user experience

Synthesis

The reviewed literature and studies consistently emphasize the importance of building donation management systems that ensure transparency, security, and accessibility. These sources informed the conceptual direction of this project, particularly in identifying common problems such as donor hesitation due to fraud, limited payment access, and a lack of verifiable fund tracking. Research by Smith and Jones [25] and Lee et al. [26] confirmed that integrating multiple payment options and reliable fund-tracking mechanisms plays a significant role in building donor trust and encouraging sustained engagement core goals of this study.

Additionally, the literature highlighted that many existing donation platforms, although digitized, still suffer from issues such as lack of verification, data inconsistencies, or outdated

processes. Thompson and Rodriguez [26] and Carter and Wilson [27] outlined the importance of centralized systems for compliance and the challenges of verifying legitimacy insights that directly relate to this project's inclusion of charity verification features and audit logs. Davis and Patel [28] further stressed the issue of interoperability between payment gateways, which informed the decision to use common and accessible platforms such as GCash, PayPal, and bank transfers to maximize donor accessibility.

Security also emerged as a recurring concern. While encryption and secure logins are often used, the review reinforced the importance of additional safeguards like limited admin access and regular verification, which are being incorporated into this system's architecture. These measures were chosen to reflect the findings in the literature that donors are more confident when systems protect both their data and the credibility of the charities they support.

By integrating the lessons drawn from both the literature and related studies, this project will apply these best practices to develop a Web-Based Donation Management System with Multi-Payment Integration and Fund Tracking. The system will implement manual transaction logging and secure authentication while requiring charity verification before fund allocation. These features aim to close the gaps found in existing systems, ensuring that donation processes are transparent, secure, and trusted just as called for in the prior research and as outlined in the problem and objectives of Chapter 1**.**

CHAPTER 3

Research Design

This study adopts a Mixed Methods research design to examine both the technical functionality and user experience of the Web-Based Donation Management System With Multi-Payment And Fundtracking For Secure And Verified Charity. This approach integrates quantitative data gathered through structured surveys and system performance metrics with qualitative insights obtained from interviews and open-ended feedback. The combination allows for a balanced analysis, capturing both measurable outcomes such as usability ratings and system response times, as well as subjective perspectives from end-users and stakeholders.

Through this design, the researchers aim to generate a comprehensive understanding of how the proposed system addresses existing issues in donation transparency and fund management. Quantitative findings will offer statistical evidence of the system's effectiveness, while qualitative data will provide contextual depth to interpret user needs and satisfaction. Consequently, the mixed methods approach ensures that the system is evaluated not only by technical standards but also through real-world relevance and user-centered impact.

Respondents of the Study

This study will be conducted at two selected charitable institutions located in the City of Cabuyao, Laguna: Buklod Samahan ng Nagkakaisang may Kapansanan ng Mamatid and the Institute for Foundational Learning (IFL). These organizations have been chosen as the research sites due to their active participation in community-based charitable activities and their relevance as potential users and beneficiaries of the proposed Web-Based Donation Management System with Multi-Payment and Fund Tracking for Secure and Verified Charity.

A total of 30 respondents will participate in the evaluation process of the system. The sample will include 20 end users, subdivided into two groups. The first group will consist of 10 representatives from partner charitable organizations, specifically staff members and administrators from Buklod Samahan ng Nagkakaisang may Kapansanan ng Mamatid

(BSNKMM) and the Institute for Foundational Learning (IFL). These individuals are involved in managing donations and ensuring organizational transparency. They will assess system features, including user registration, fund tracking, profile management, and report generation. The second group will include 10 active or potential donors from the local community, who currently support or intend to support charitable causes. Their evaluation will focus on the system's accessibility, ease of use, transparency in donation tracking, and overall user satisfaction. In addition, 10 web experts will be included in the sample. These individuals possess relevant backgrounds in web development, system architecture, or software engineering. They will evaluate the system's technical performance based on key software quality criteria, including functionality, scalability, maintainability, security, and compliance with the ISO/IEC 25010:2021 software quality model.

The sample size of 30 respondents was determined based on purposive sampling, a non-probability sampling technique used to select individuals who possess relevant experience or are directly involved with the intended use of the system. This method ensures that only participants with the appropriate background and knowledge will provide feedback, thus contributing to a more accurate and meaningful evaluation.

The charitable organization representatives and donors will be selected in coordination with the administrators of Buklod Samahan ng Nagkakaisang may Kapansanan ng Mamatid and Institute for Foundational Learning. Meanwhile, the web experts will be selected through academic networks and referrals, ensuring that they meet the required qualifications in system evaluation.

This structured selection and evaluation process will ensure a comprehensive assessment of the system from both end-user and technical perspectives, helping validate the effectiveness, usability, and reliability of the developed platform.

Table 1: Respondents of The Study 8

Organization	Category	Number of Respondents
Buklod Samahan ng Nagkakaisang may Kapansanan ng Mamatid	Partner and Charitable Representatives Active or Potential Donors	5 5
Institute for Foundational Learning	Partner and Charitable Representatives Active or Potential Donors	5 5
External	Web Experts	10
Total		30

Table 1: presents the breakdown of the 30 total respondents who participated in the evaluation of the Web-Based Donation Management System with Multi-Payment and Fund Tracking for Secure and Verified Charity.

Respondents from the Buklod Samahan ng Nagkakaisang may Kapansanan ng Mamatid and the Institute for Foundational Learning (IFL) were selected to represent both administrative users and potential donors of the platform. Each organization contributed 5 representatives who manage or oversee donation processes, and 5 active or potential donors from the community engaged in charitable giving.

In addition to the 20 respondents affiliated with the partner organizations, 10 web experts were included as external evaluators. These professionals were selected based on their expertise in web development, system architecture, and software quality standards. Their input was critical in evaluating the platform's technical performance, security, and maintainability in accordance with the ISO/IEC 25010:2021 standard.

Data Gathering Procedure

Data Gathering Tools

To support the development and evaluation of the Web-Based Donation Management System With Multi-Payment and Fundtracking for Secure and Verified Charity, the study employed a mix of both qualitative and quantitative research approaches. These methods were used to gather relevant feedback from end users (donors and charity staff) and technical experts. The system was designed to promote transparency, security, and efficiency in online donations and fund tracking addressing common challenges in manual donation workflows.

Qualitative and Quantitative Approach: The qualitative approach involved gathering detailed insights from actual system stakeholders through guided interviews and open-ended survey items. This provided contextual understanding of transparency issues, organizational practices, and user expectations. The quantitative approach, on the other hand, made use of structured questionnaires and evaluation forms. These instruments collected measurable data on system usability, reliability, and functionality using Likert-scale items based on the ISO/IEC 25010 software quality model. The combination of these approaches ensured a well-rounded analysis of the system's real-world effectiveness and technical soundness.

Questionnaires: Structured questionnaires were distributed to both donors and charity staff to gather quantitative feedback. These surveys covered areas such as system usability, interface design, convenience of accessing donation information, and transparency of fund reports. Both Likert-scale and open-ended questions were included to capture a wide range of responses. The questionnaires were distributed both physically and digitally to ensure accessibility and inclusiveness.

User Feedback Survey: After the system was developed, a user feedback survey was administered to 20 end users (10 donors and 10 charity representatives). The survey measured user experience with core features such as donation viewing, profile navigation, multi-payment display, and transparency reporting. The instrument included a 5-point Likert scale to evaluate perceptions of usability, relevance, and satisfaction, along with optional open-ended responses for additional suggestions.

System Evaluation Checklist: A system evaluation checklist was developed and distributed to 10 web experts and IT professionals. This checklist was based on the ISO/IEC 25010 software quality model, covering evaluation criteria such as functionality, reliability, performance efficiency, maintainability, and security. This tool ensured a consistent and objective assessment of the system's technical quality, structure, and overall performance.

Observations: During on-site visits, researchers conducted informal observations of the operational workflows within partner organizations. These observations provided additional insight into how donation records are managed, what processes are still manual, and how reports are shared with donors. These real-world observations supported the refinement of system features to better match actual practices.

Evaluation and Scoring

This study will employ a systematic evaluation process to assess the overall quality and performance of the proposed Web-Based Donation Management System with Multi-Payment and Fund Tracking for Secure and Verified Charity. The evaluation will be conducted by a total of 30 respondents, consisting of 20 end users and 10 web experts. The group of end users will include 10 representatives from partner charitable organizations and 10 active or potential donors. These respondents will evaluate the system based on five key quality attributes: functional suitability, performance efficiency, interaction capability, reliability, and usability. These criteria are designed to determine how effectively the system meets user expectations in terms of its functionalities, responsiveness, ease of use, interactive experience, and overall stability during actual operations.

The web experts will assess the system from a technical standpoint, focusing on functional suitability, interaction capability, maintainability, security, and scalability. Their evaluation will examine the system's ability to reliably deliver its intended functionalities, its capacity to facilitate secure and stable operations, its potential for long-term maintenance and future upgrades, and its capability to accommodate possible growth in users or data volume over time.

The evaluation criteria used for both end users and web experts are aligned with the ISO/IEC 25010 software quality standards, which provide a comprehensive, structured framework for measuring both the user-centered and technical dimensions of software systems. This ensures a balanced, well-rounded assessment that reflects the practical needs of charitable organizations and donors, as well as the technical requirements essential for the system's sustainable performance and future adaptability.

Data Analysis Plan

This study will employ a structured and systematic approach to analyzing the data collected from both the development and evaluation phases of the proposed Web-Based Donation Management System with Multi-Payment and Fundtracking for Secure and Verified Charity. The aim of this analysis is to derive meaningful insights into the system's usability, functionality, and technical performance, as well as to assess how well it addresses the real-world needs of its stakeholders namely charitable organizations, donors, and technical experts To begin, the responses collected from identified respondents comprising charity organization representatives, donors, and web experts will be categorized based on predefined evaluation criteria such as functional suitability, performance efficiency, interaction capability, reliability, maintainability, and security. Quantitative data obtained through structured survey questionnaires will be statistically processed. Since the survey instruments use ordinal data types (e.g., a Likert scale ranging from "Strongly Agree" to "Strongly Disagree"), the median will be employed as the primary measure of central tendency. This method is suitable for ordinal scales and will yield a more accurate reflection of the overall sentiment and system performance across the evaluation categories. The processed data will

be presented using visual formats such as frequency tables, bar graphs, and pie charts to facilitate clearer comparisons and interpretation.

In addition to the quantitative analysis, qualitative data gathered through client interviews with representatives from the partnered charity organizations will be analyzed using thematic analysis. These interviews explored key operational areas such as current donation practices, challenges in maintaining transparency, donor engagement methods, and feature requirements. By systematically identifying recurring themes and stakeholder priorities from the interviews, the researchers will gain contextual depth that supports and enhances the quantitative findings. This dual approach ensures that the system is evaluated not only in terms of technical adequacy but also in its alignment with the actual needs and expectations of its users.

Once all data has been processed and categorized, the findings will be interpreted with reference to the ISO/IEC 25010:2021 standard, a widely recognized framework for software quality evaluation. This framework provides structured benchmarks for determining the system's effectiveness in meeting both user-centered and technical requirements. The analysis will focus on whether the system sufficiently addresses the issues of donation transparency, fund traceability, and secure interaction within the charitable sector.Finally, the results will be documented in a clear and organized format, ensuring that both the quantitative statistics and qualitative insights are effectively presented. This structured presentation will support the formulation of evidence-based conclusions and actionable recommendations for future development or deployment of the system.

System Development

The development of the Web-Based Donation Management System with Multi-Payment and Fund Tracking for Secure and Verified Charity will utilize the Agile Software Development Life Cycle (SDLC) methodology. Agile's flexibility and iterative approach are designed to foster close collaboration between the development team and stakeholders, ensuring that the system evolves effectively to meet both functional requirements and

business objectives. The project consists of four interrelated systems, and the Agile methodology will support continuous development and refinement across all components. Below is a detailed explanation of the six key phases of Agile SDLC, as applied to this capstone project.

Planning: In the Planning phase, the development team works closely with stakeholders, including project advisors, charity organizations, and potential system users, to define the project scope, objectives, and system requirements. This phase is crucial for understanding the specific needs of the system, including features like donation tracking, multi-payment integration (e.g., PayPal, GCash, bank transfers), and charity verification. During this phase, the team will conduct interviews, surveys, and brainstorming sessions with stakeholders to gather detailed insights into the challenges faced by charities, donors, and administrators. The collected data will help shape the system's user stories, which capture the features from the end-user's perspective. These user stories will then be used to create a product backlog, which serves as a prioritized list of features and functionalities. The product backlog is flexible, allowing for adjustments as new insights are gathered throughout the project's lifecycle. This planning phase ensures that the system aligns with both the stakeholders' needs and the overall project objectives, providing a clear direction for the next phases.

Design: The Design phase focuses on planning out the architecture, user interface (UI), user experience (UX), and database structure. The development team will work on creating wireframes and mockups for the user interface, ensuring that the system is user-friendly and accessible to both technical and non-technical users. Additionally, the team will define the system's technical architecture, including the backend (using Laravel), frontend (React), and database design. The database will be structured to handle user data, donation records, payment transactions, and charity verification information in a secure and scalable manner. During this phase, the team will also plan for integrating various payment gateways (such as PayPal, GCash, and bank transfers) to facilitate secure transactions. Security measures will be a key consideration in the design phase, as the system will handle sensitive

donor information and financial transactions. The goal is to create a robust, secure, and scalable foundation for the system that meets both functional and non-functional requirements.

Development: The Development phase is where the system's features and functionalities are implemented based on the designs created in the previous phase. The development will follow an Agile sprint-based approach, with the team working in short, time-boxed cycles (sprints) to build and integrate specific features. In the early sprints, the team will focus on implementing core functionalities, such as the donation tracking module and the payment gateway integration. These modules will allow donors to

make secure donations, while administrators can track and manage the funds in real-time. The system will also include features like charity verification to ensure transparency and trustworthiness, as well as user authentication to safeguard access to sensitive data. Each feature will be developed incrementally, and regular feedback will be gathered from stakeholders to ensure the system meets user expectations. The iterative development approach allows the team to refine and enhance features after each sprint, ensuring that the system evolves in alignment with real-world needs.

Testing: The Testing phase is an ongoing process that runs parallel to development. In Agile, quality assurance (QA) is integrated into each sprint, ensuring that issues are identified and resolved early. Each feature that is developed will undergo thorough testing to ensure it meets functional and non-functional requirements. Unit testing will be conducted to verify that individual components, such as payment processing or donation verification, work as expected. Integration testing will ensure that the different system components, like donation tracking and payment processing, work together seamlessly. User Acceptance Testing (UAT) will involve real users (e.g., charity administrators and donors) testing the system to ensure it meets their needs and is easy to use. Given the critical nature of security and data integrity for this capstone project, special emphasis will be placed on ensuring that sensitive donor information is handled securely. The system will undergo security testing to identify and address potential vulnerabilities related to financial transactions and user data.

Continuous testing throughout the development cycle ensures high-quality delivery and minimizes the risk of post-launch issues.

Deployment: Once the core features have been developed, tested, and refined, the system will move into the Deployment phase. Deployment will be done incrementally, starting with a staging environment where the system will undergo final checks and be tested under realistic conditions before going live. After addressing any issues identified in the staging environment, the system will be deployed to the production environment. During deployment, the team will set up secure databases, configure server environments, and implement user access control for different roles, including charity administrators, donors, and system users. The deployment process will be closely monitored to handle any unforeseen issues and ensure that the system remains stable and functional. This phased deployment minimizes disruption and allows for a smooth transition to live usage, where charity organizations, donors, and administrators can begin interacting with the system.

Maintenance: The Maintenance phase begins after deployment and continues throughout the system's life cycle. The development team will remain engaged, providing ongoing support and addressing any issues that arise after the system is live. This includes fixing bugs, applying security patches, and enhancing system performance. As feedback from users is continuously collected, the development team will use it to guide future updates and feature enhancements. For example, new payment gateways or reporting features might be added to accommodate evolving donor needs. Regular system updates will ensure that the platform remains secure, scalable, and aligned with the needs of charity organizations and donors. This phase ensures the system remains adaptable, up-to-date, and responsive to the changing needs of the users, providing long-term value and sustainability for the system.

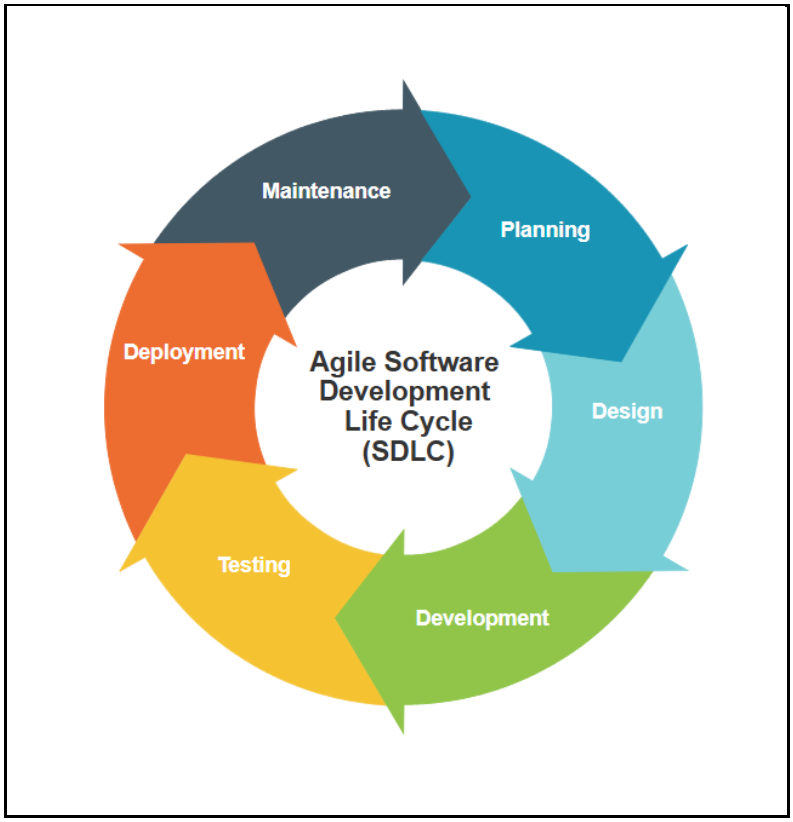


Figure 1: Agile Software Development Life Cycle (SDLC)

To effectively outline the architecture and workflow of the Web-Based Donation Management System with Multi-Payment and Fund Tracking for Secure and Verified Charity, the researchers will utilize Unified Modeling Language (UML) diagrams. These diagrams will include use case diagrams, activity diagrams, sequence diagrams, class diagrams, and entity-relationship diagrams (ERD). These visual tools will illustrate the system's processes, user interactions, and database structures, providing a clear representation of the system's functionality. By employing UML diagrams, the researchers will establish a comprehensive blueprint for the system, enhancing communication among stakeholders and ensuring a structured approach to the development process.

The use case diagram depicts the interactions between users and the Web-Based Donation Management System, outlining the specific tasks each user can perform. It defines the system's scope and clarifies the roles of various actors, such as donors and charity administrators. This diagram helps ensure that all key user requirements are identified and incorporated into the system's design.

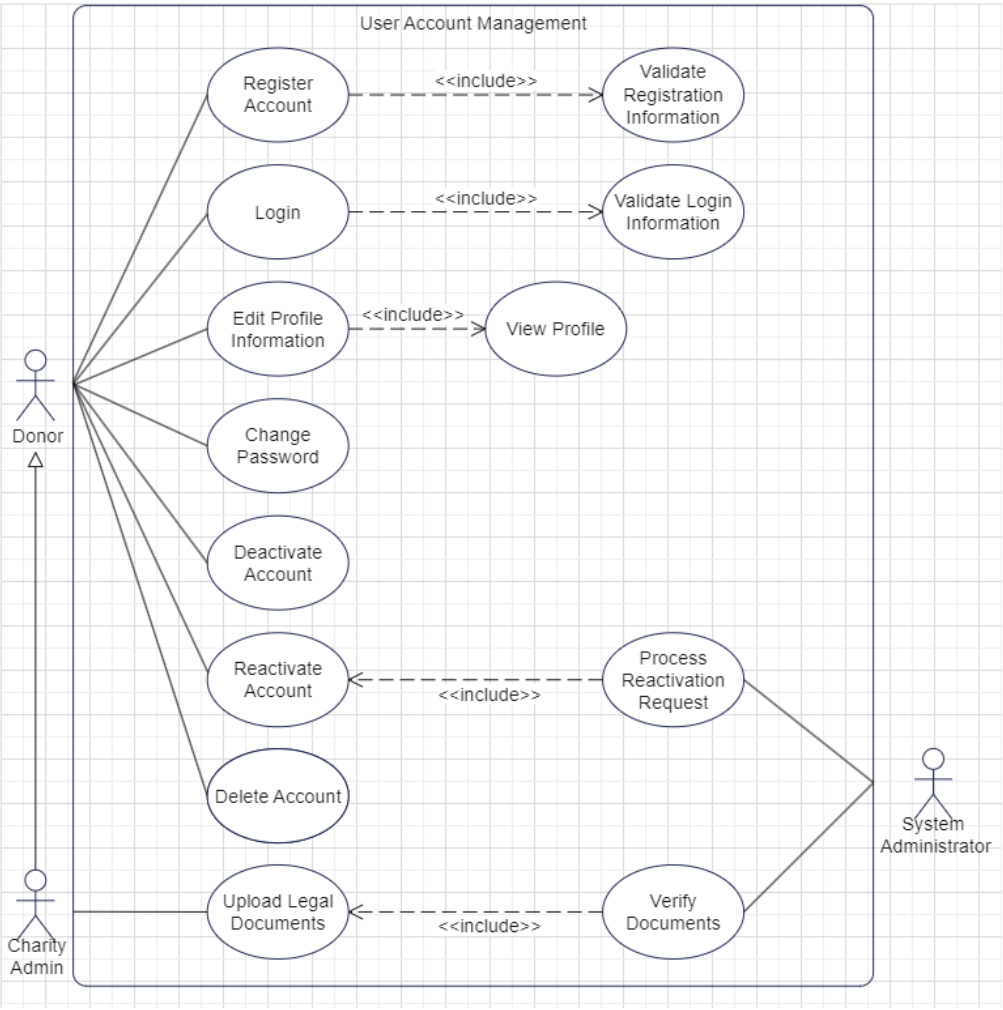


Figure 2: Use Case Diagram for User Account Management

This diagram illustrates the flow of user registration within the system. The main actor is the User, who initiates the process by selecting the “Register” option. From there, the user must select an account type, either Donor or Charity, which determines the specific registration form they will fill out. This selection leads to either the “Donor Registration Form” or “Charity Registration Form.” Both forms require the user to input personal information. The “Input Personal Info” use case includes key subprocesses such as “Check for Duplicate Account,” “Validate Email,” and “Validate Password Strength,” ensuring the quality and security of user data. Regardless of success or failure, the registration process ends with a prompt for the user to log in. This structure ensures that new users are properly filtered and guided into the system based on their role.

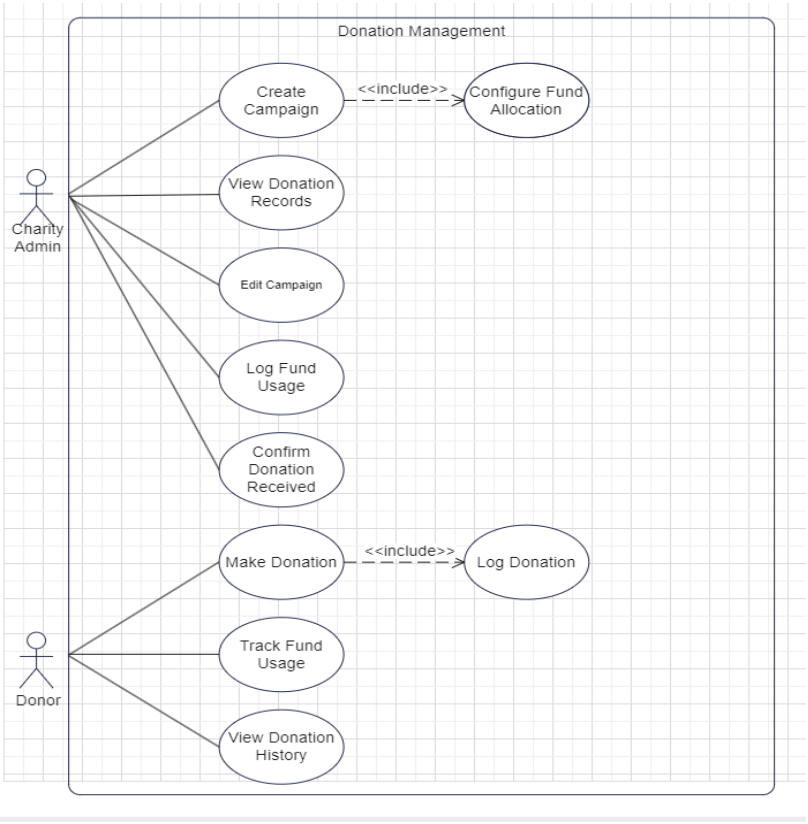


Figure 3: Use Case Diagram for Donation Management

This diagram outlines the administrative functionalities available to the Admin through the Admin Dashboard. The admin begins by managing users through the "Manage Users" use case, which includes viewing "Registered Donors/Charities." This enables oversight and monitoring of all user accounts. The admin can then take actions such as "Suspend Account" or "Delete Account," both of which extend from the user management function. The admin also handles "Manage Verification Requests," where they may either "Approve Verification Request" or "Reject Verification Request," depending on the charity's submitted documents. Additionally, the admin can "View Notifications," which may trigger the "Respond to Inquiries" use case. The admin can also manage their personal information through "View Profile," which is extended by "Edit Profile." This diagram captures the admin's comprehensive authority over the platform's user and verification processes.

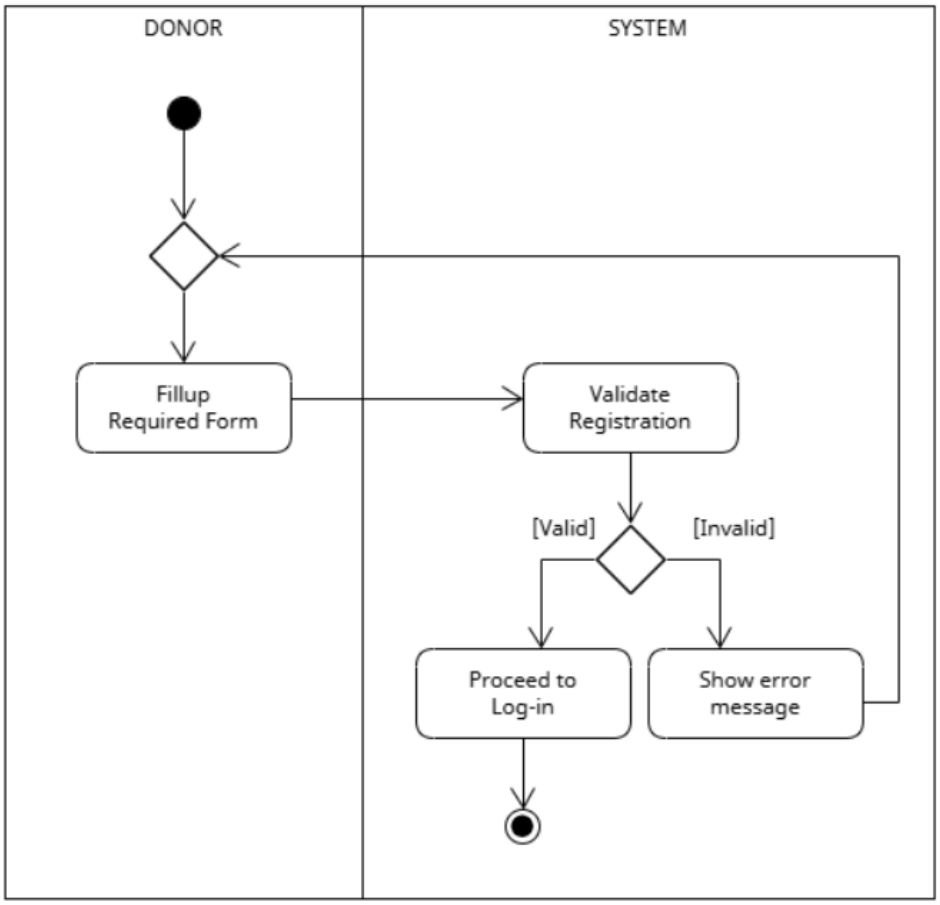


Figure 4: Activity Diagram for Account Registration of Donor

Shows how the Donor, complete the registration form, and submit their account. The system assigns the correct role, validates inputs, and stores the user credentials securely for login.

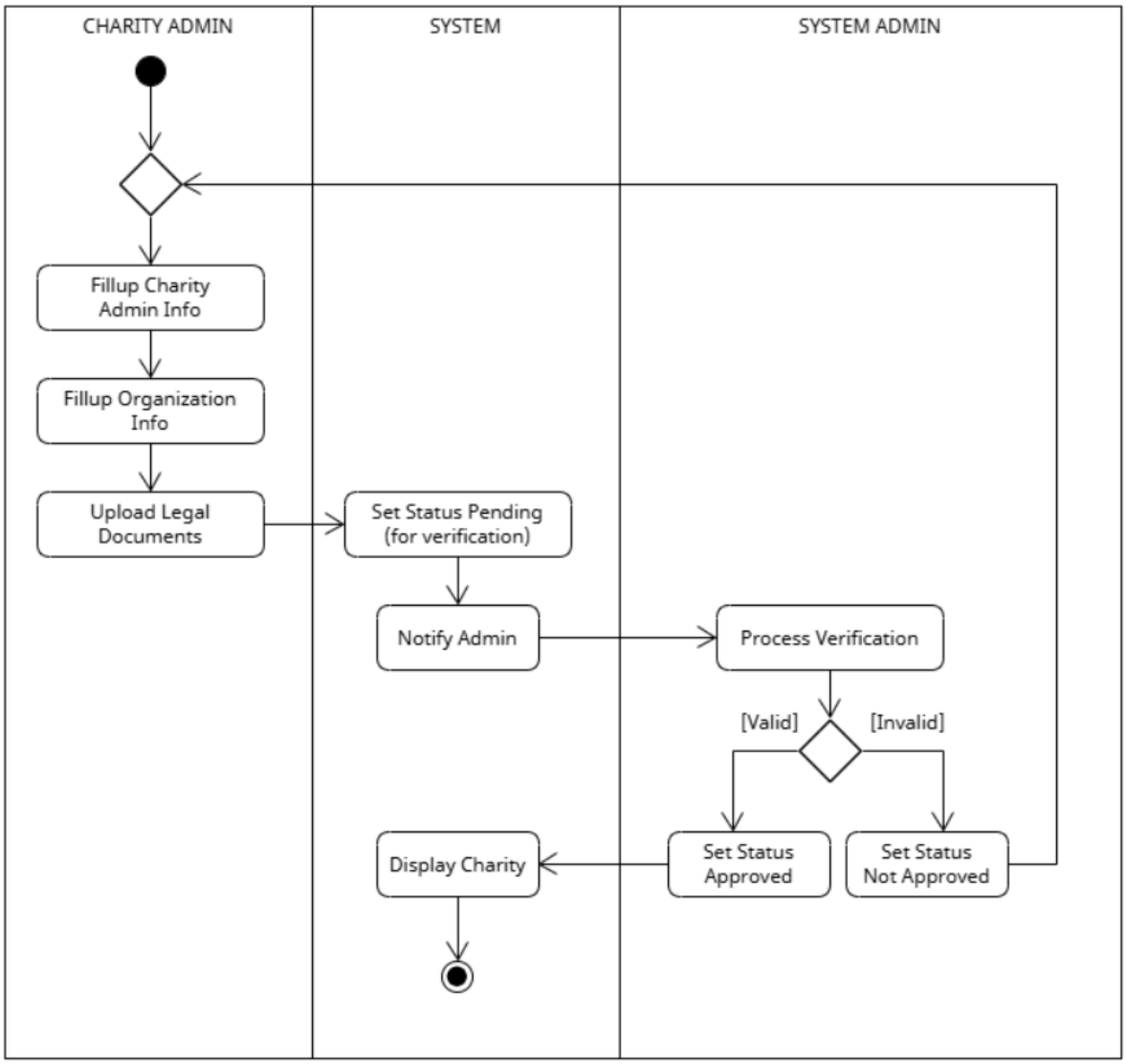


Figure 5: Activity Diagram for Account Registration of Charity Admin

Describes how Charity Admins register their organizations by submitting credentials and uploading verification documents. The system stores the input and flags the record for admin review, ensuring legitimacy before listing.

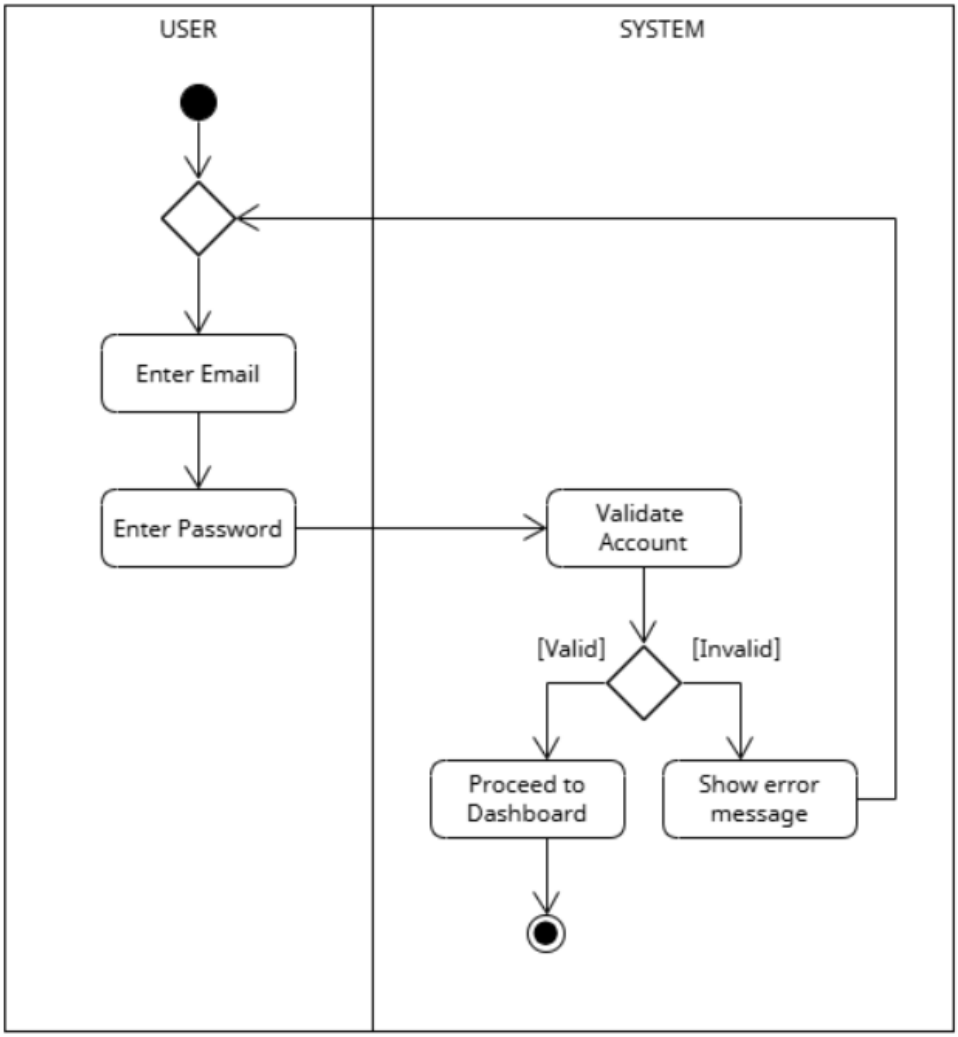


Figure 6: Activity Diagram for User Login

This activity diagram illustrates the login process for any system user (Donor, Charity Admin, or System Admin). It begins with the user's intention to access their account, proceeds through the submission of credentials, and includes system validation. If the credentials are correct and the account is active, access is granted. Otherwise, the system provides an error or account status notice. This process ensures secure entry and access control based on role and account status.

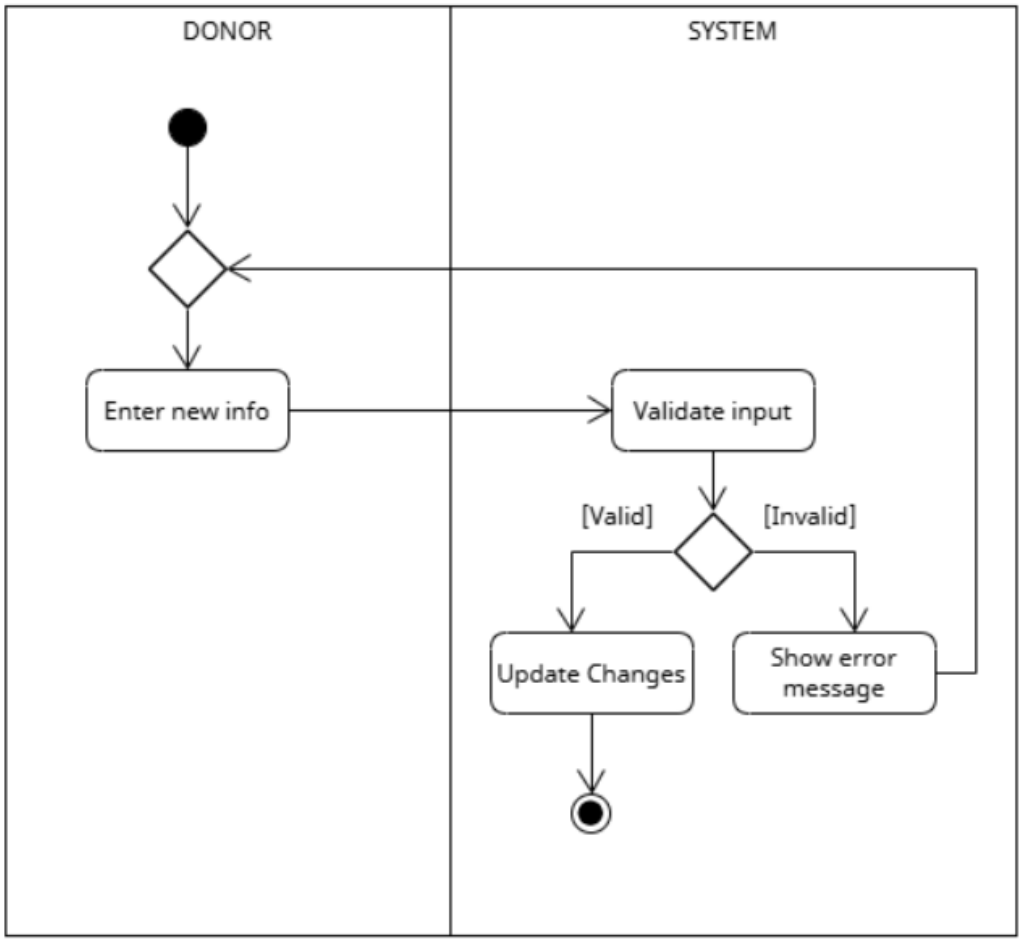


Figure 7: Activity Diagram for Donor Edit/Update Profile

This diagram outlines the process by which a donor updates their personal account information, including name, contact details, and profile image. The system first fetches the current profile data, validates any updated fields, and stores the new values in the database. Confirmation is displayed upon success. This feature allows donors to maintain up-to-date contact details, which supports better communication and personalization within the platform.

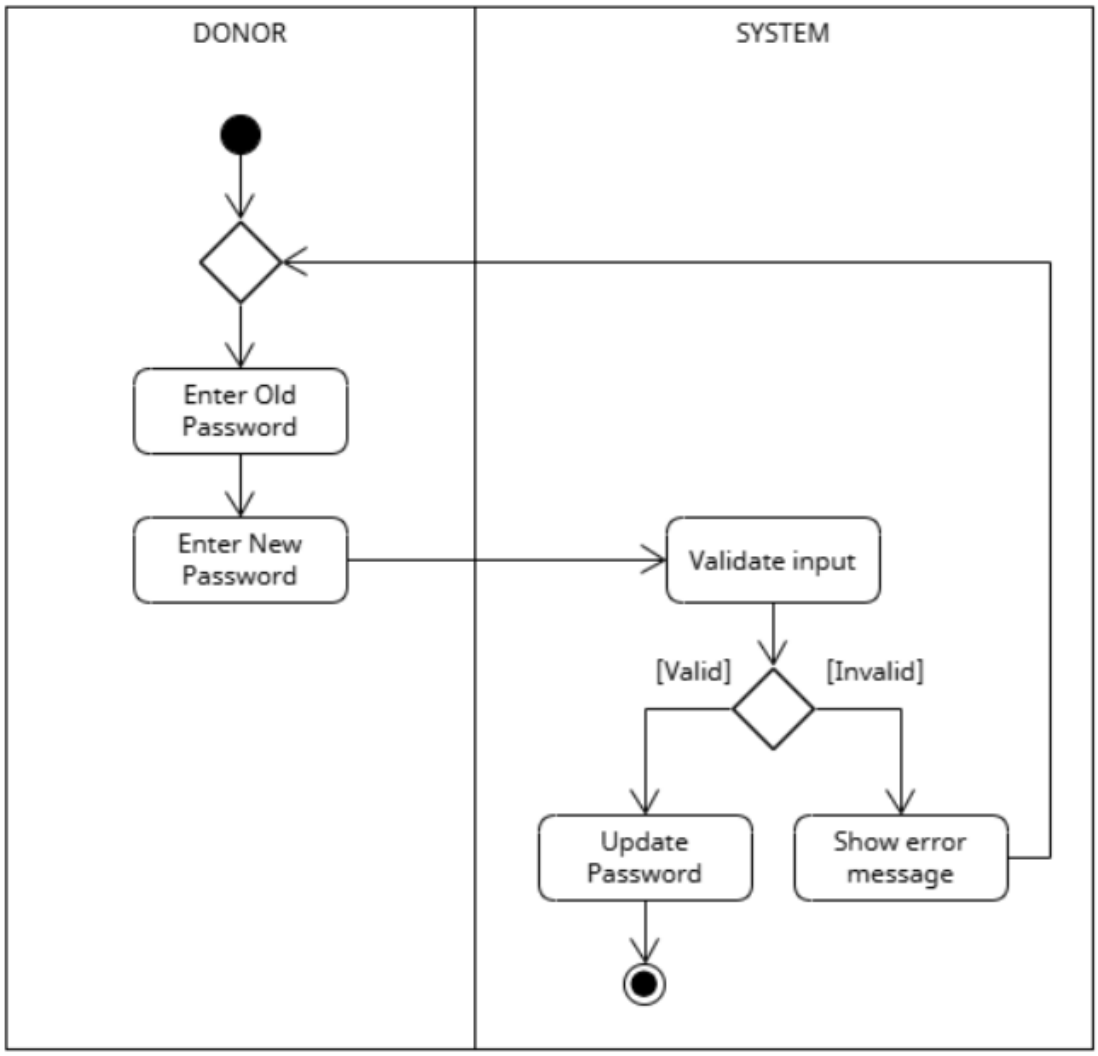


Figure 8: Activity Diagram for Donor Change Password

This activity diagram shows the flow for users who wish to change their account password. It begins with the input of the current password for verification, followed by entry and confirmation of the new password. The system ensures the new password meets required strength standards before updating it. This enhances account security and ensures password confidentiality is maintained.

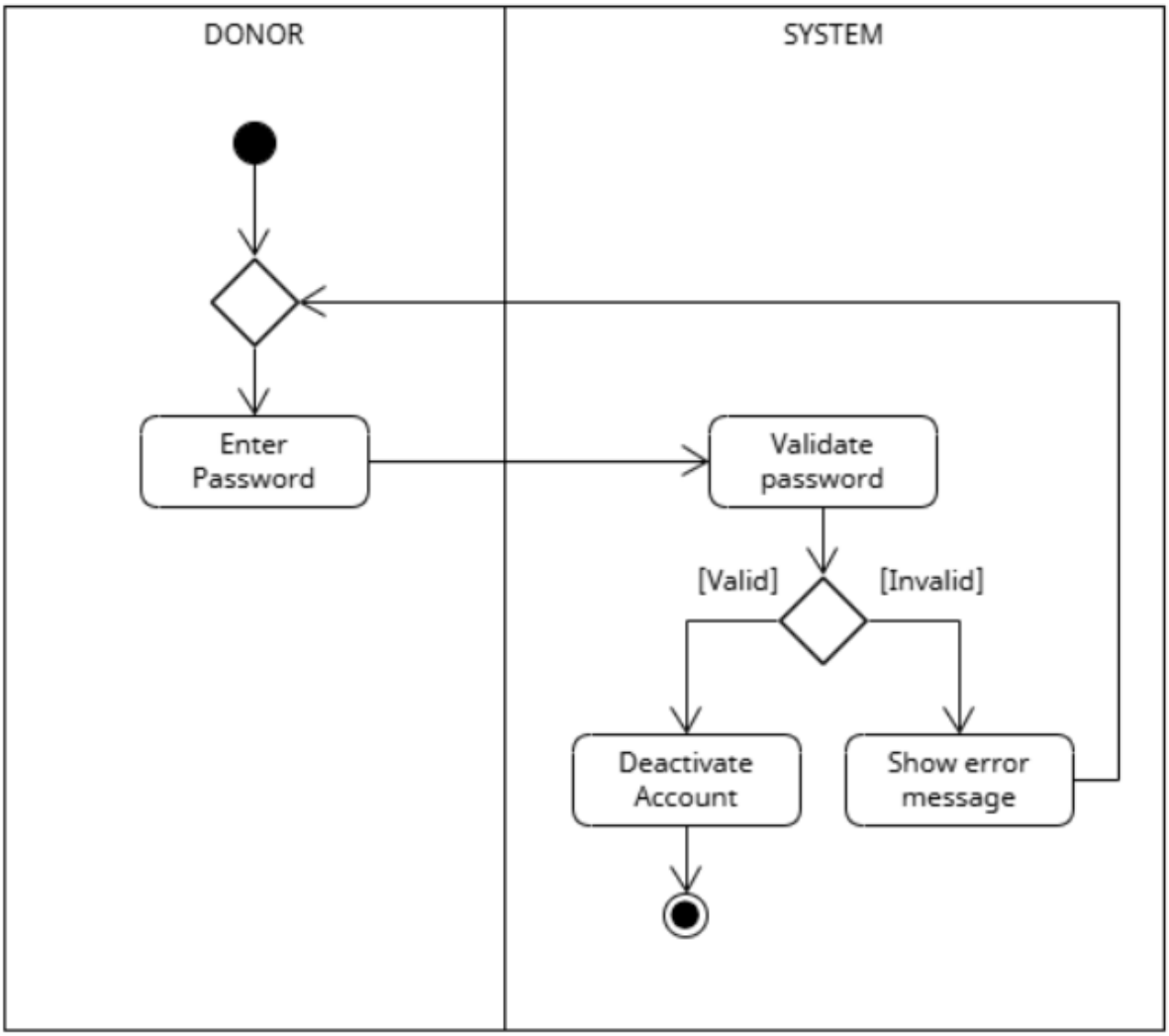


Figure 9: Activity Diagram for Account Deactivation

This process details how a user (Donor or Charity Admin) deactivates their account. After confirming the action, the system marks the account as inactive and logs the action for administrative purposes. The session is terminated, and the user is logged out. This provides a reversible option for users who no longer wish to access the system temporarily while maintaining data integrity.

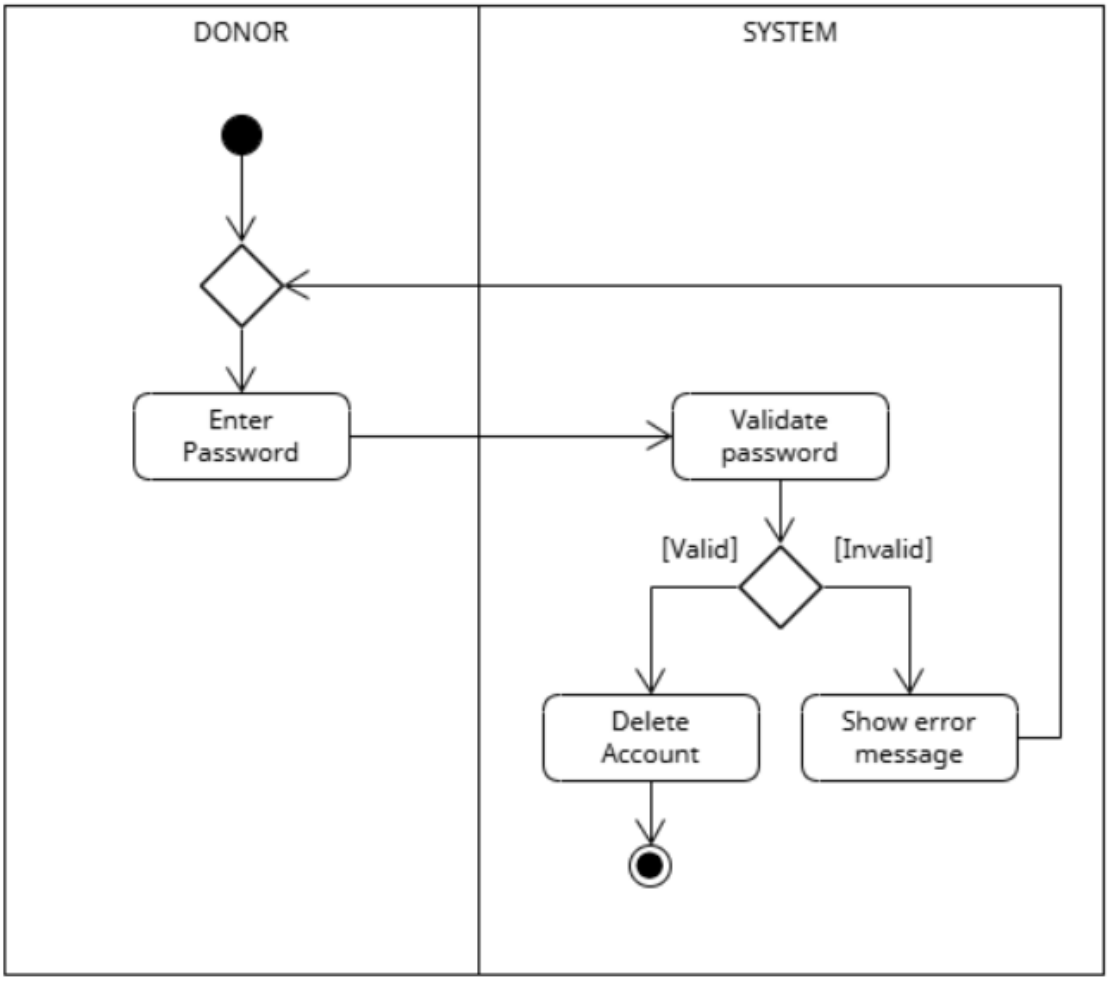


Figure 10: Activity Diagram for Account Deletion

This diagram shows the steps taken when a user requests permanent deletion of their account. The process includes a confirmation step to prevent accidental deletions. Once confirmed, the system removes user records and associated data where permitted. It ensures compliance with data privacy and user autonomy policies.

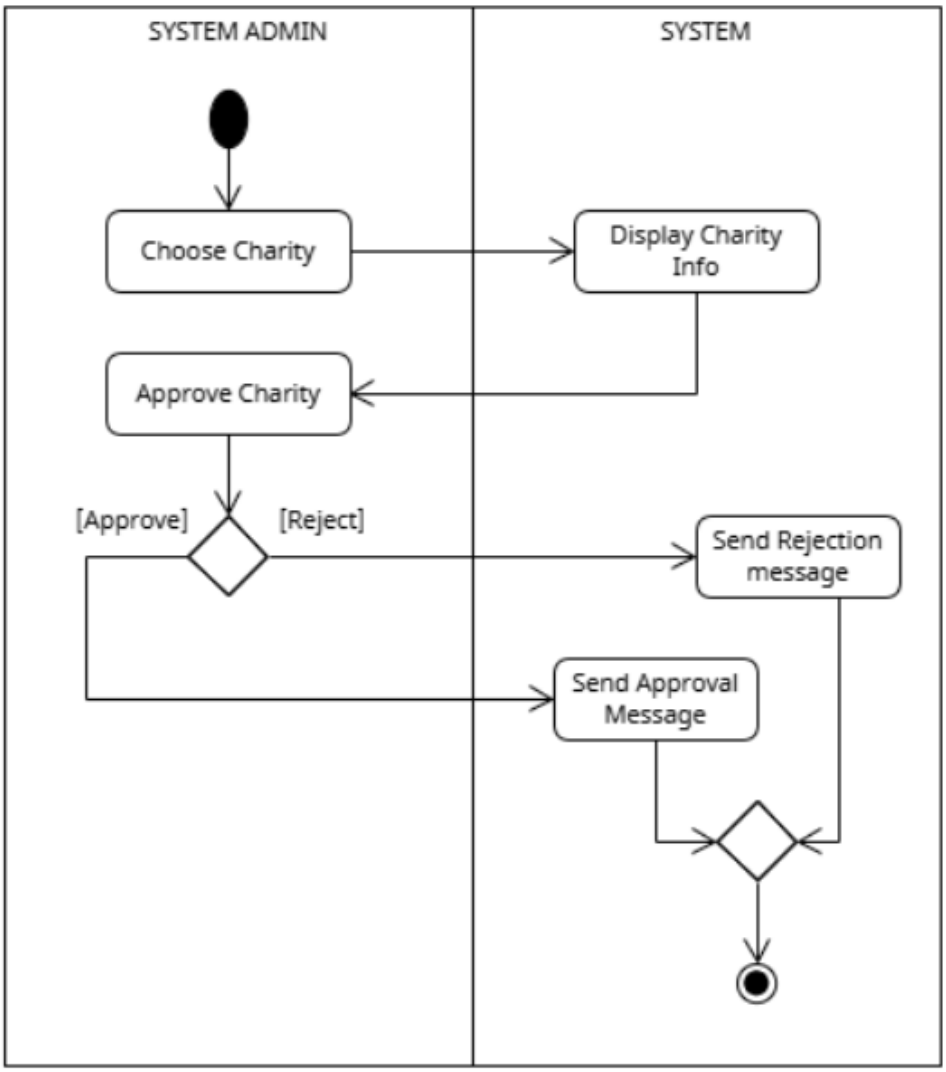


Figure 11: Activity Diagram for Charity Admin Approval (Verification)

This activity diagram depicts the charity verification process carried out by the System Admin. After reviewing submitted legal documents and profile information from a charity registration, the admin chooses to either approve or reject the application. The system updates the verification status and notifies the charity accordingly. This process upholds platform integrity by ensuring only legitimate organizations are listed.

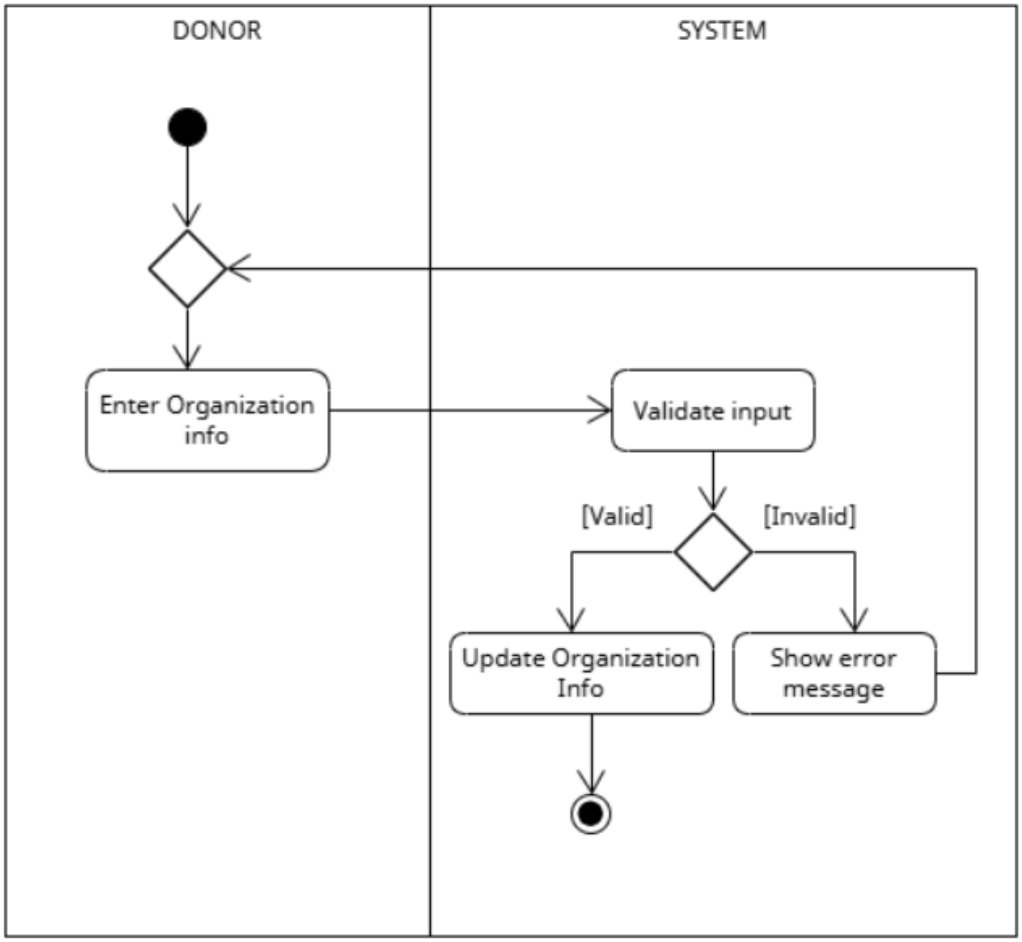


Figure 12: Activity Diagram for Charity Edit/Update Organization

This diagram explains how a Charity Admin updates their organization's profile. Editable fields include mission statement, vision, financial highlights, and contact information. The system validates and saves changes, updating the public-facing charity page. This function allows organizations to maintain transparency and accuracy in their presentation to donors.

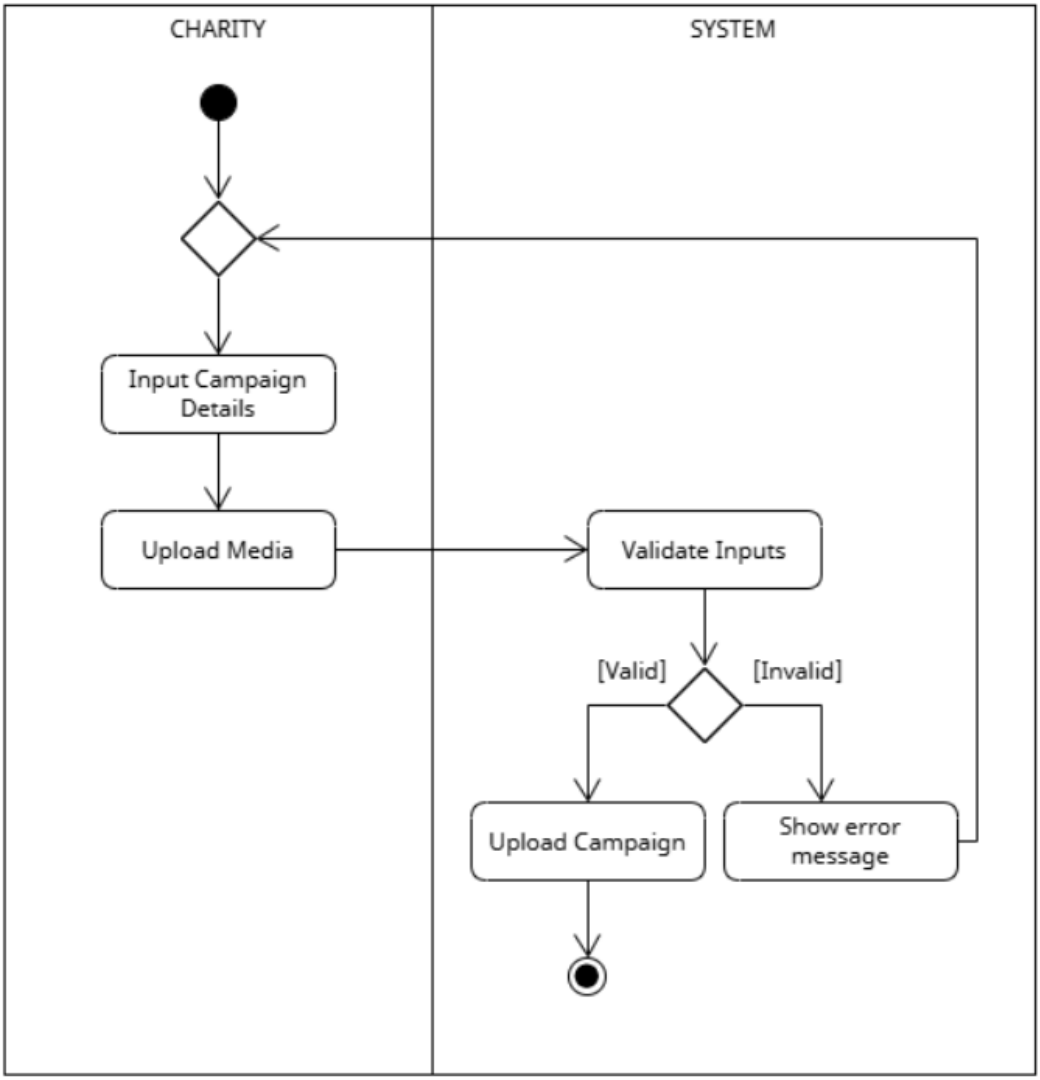


Figure 13: Activity Diagram for Creating Campaign

This activity shows how a Charity Admin initiates a new campaign post. The admin fills in campaign details such as title, description, target goal, deadline, and optional multimedia content. The system validates the form and publishes the campaign to the public directory. This feature enables charities to attract support for specific causes.

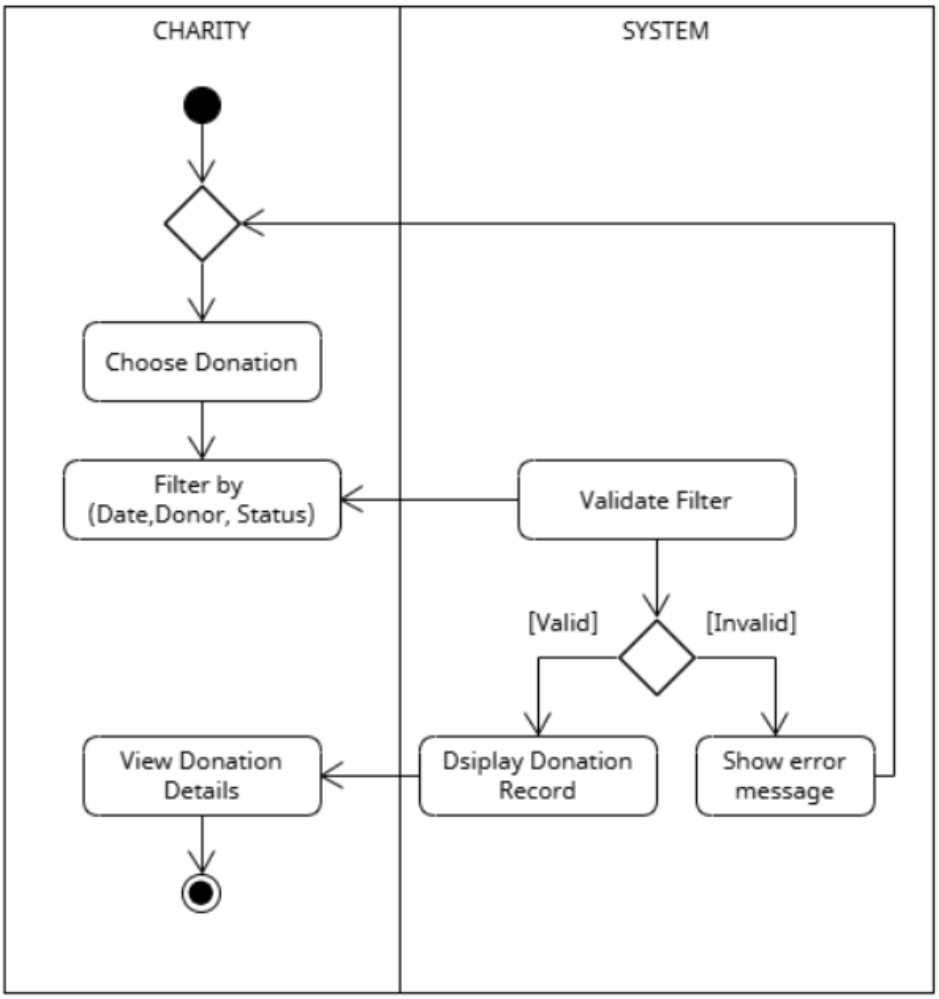


Figure 14: Activity Diagram for Viewing Donation Records

This diagram outlines how Charity Admins view a list of received donations. The system retrieves donation data filtered by criteria such as date, donor, and status. Admins can review specific records, including donor details and uploaded payment proof, facilitating accountability and proper documentation for auditing or reporting.

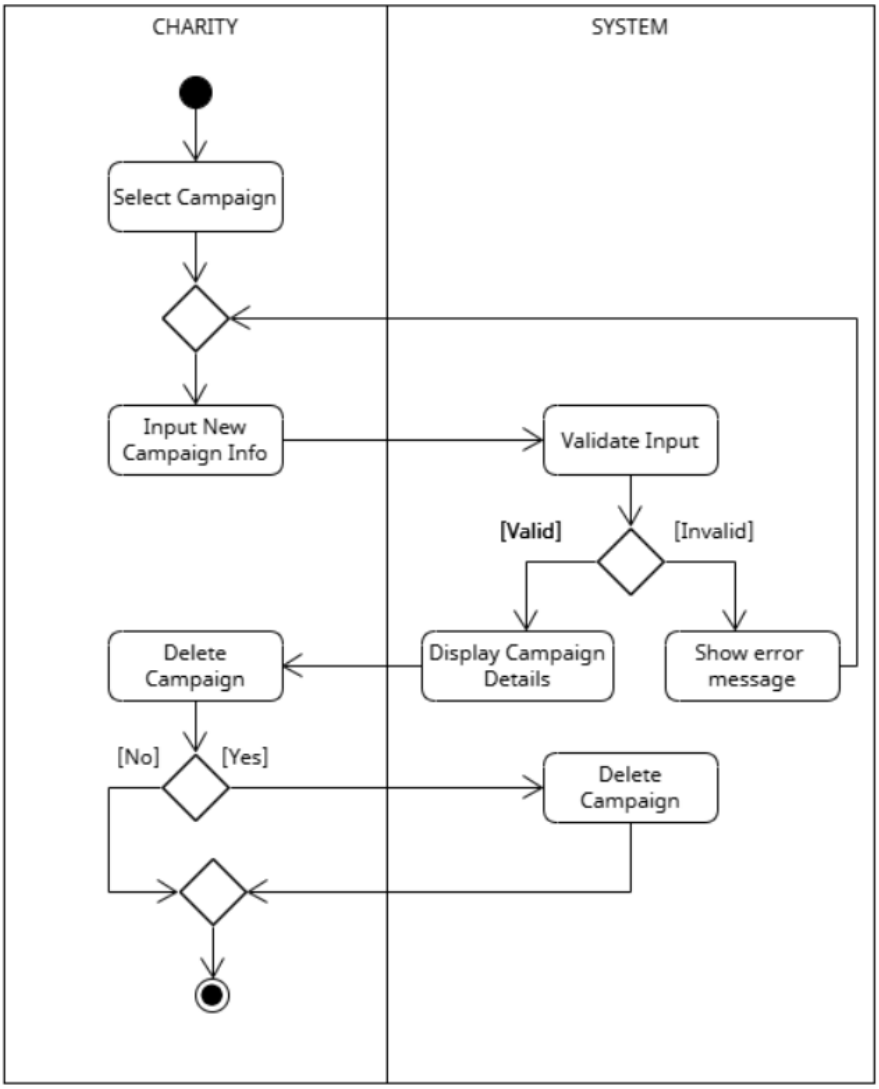


Figure 15: Activity Diagram for Edit Delete Campaign Post

This diagram describes the process used by a Charity Admin to either modify or remove a previously posted campaign. After selecting a campaign, the admin can update the campaign content or choose to delete it entirely. The system saves changes or removes the record accordingly, ensuring that campaign information remains current and relevant.

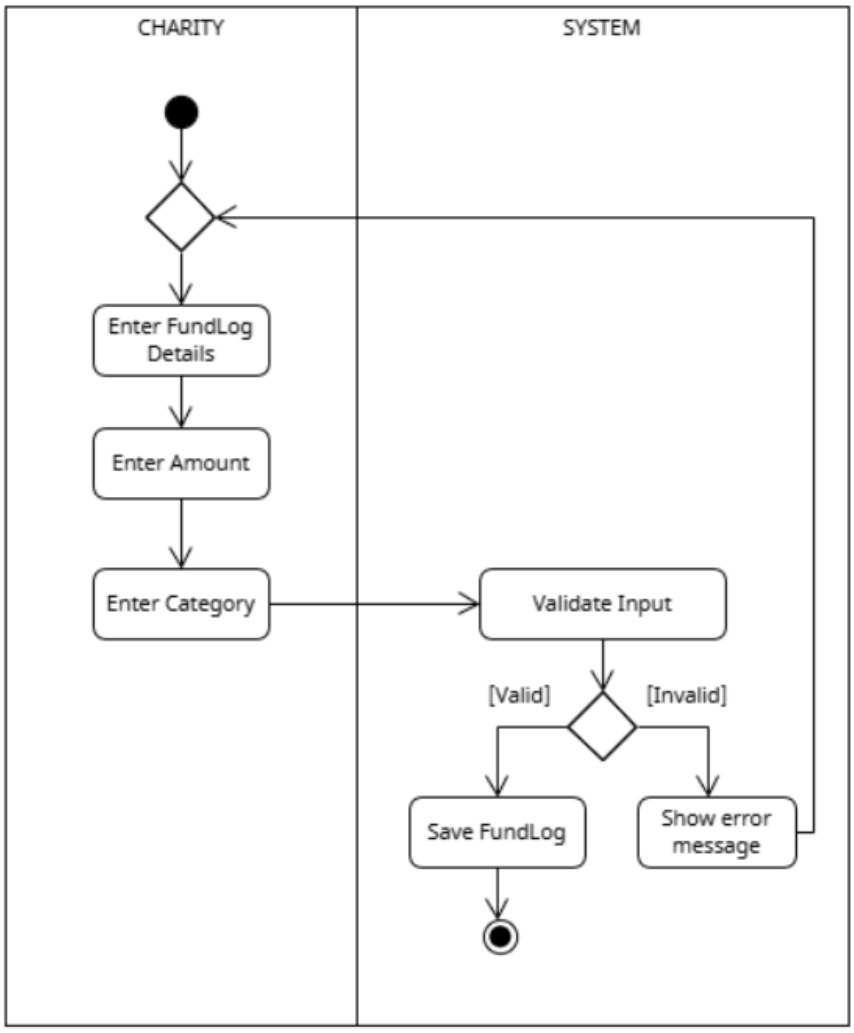


Figure 16: Activity Diagram for Log Fund Usage

This activity diagram captures the steps followed when a Charity Admin records how received donations are spent. Admins input the amount, category, description, and timestamp for each expense. The system stores these logs under the related campaign or donation. This supports transparency and allows donors to view real-time allocation of their contributions.

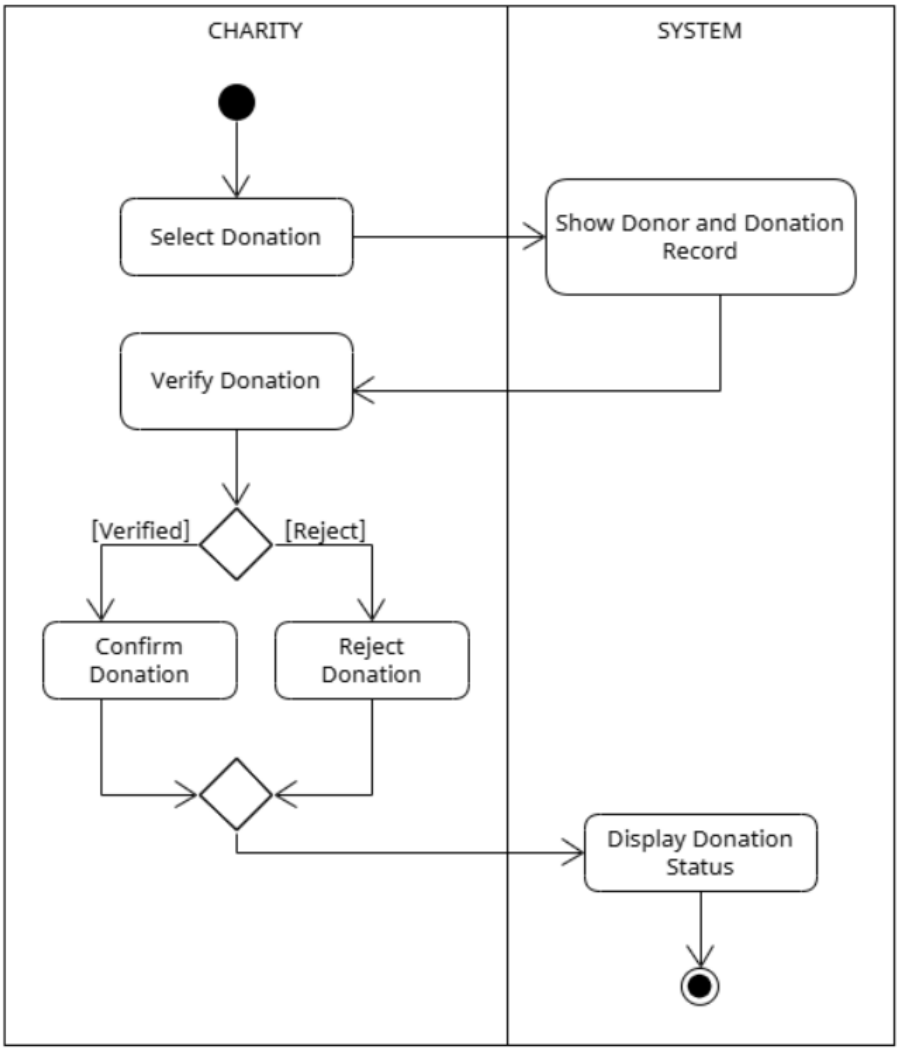


Figure 17: Activity Diagram for Confirm Donation Received

This diagram represents the workflow used by Charity Admins to confirm receipt of a donation. Admins view donation entries with pending status, review uploaded payment proofs, and choose to accept or reject based on validity. Approved entries are marked “Completed,” while rejected entries are flagged with reasons. This process prevents fraudulent uploads and ensures accurate tracking of real contributions.

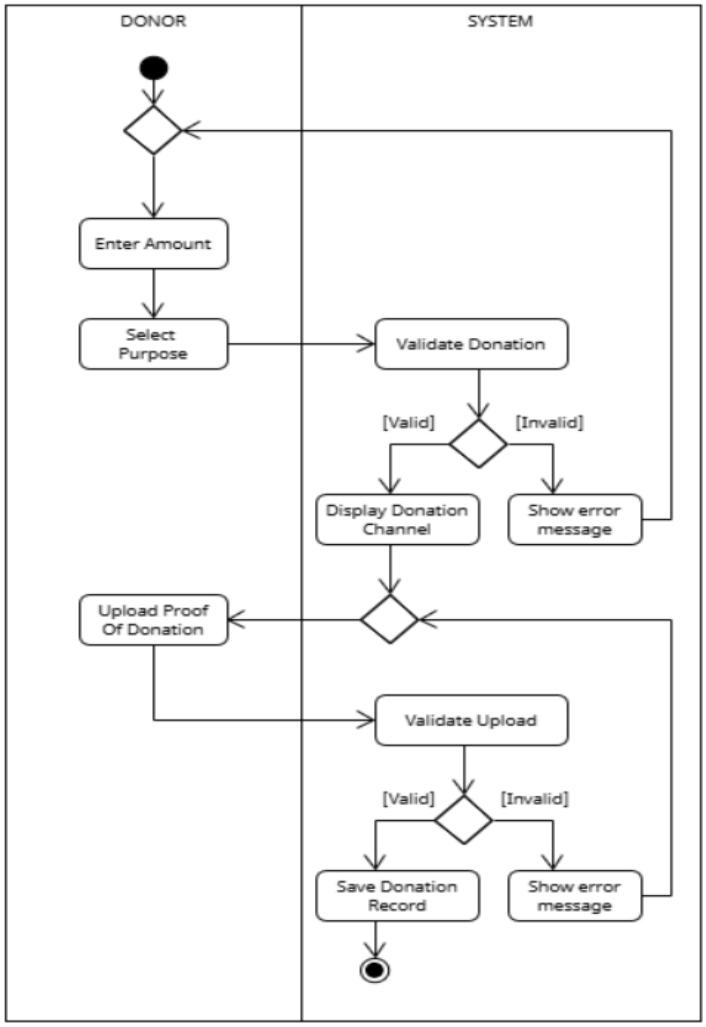


Figure 18: Activity Diagram for One Time Donation

This activity diagram details how a donor completes a one-time donation. The donor selects a charity or campaign, enters the donation amount and purpose, and optionally chooses to remain anonymous. The system generates payment instructions, logs the donation as pending, and awaits proof of payment. Upon upload and validation, the donation is marked as completed. This flow ensures that manual donations are verifiable and traceable.

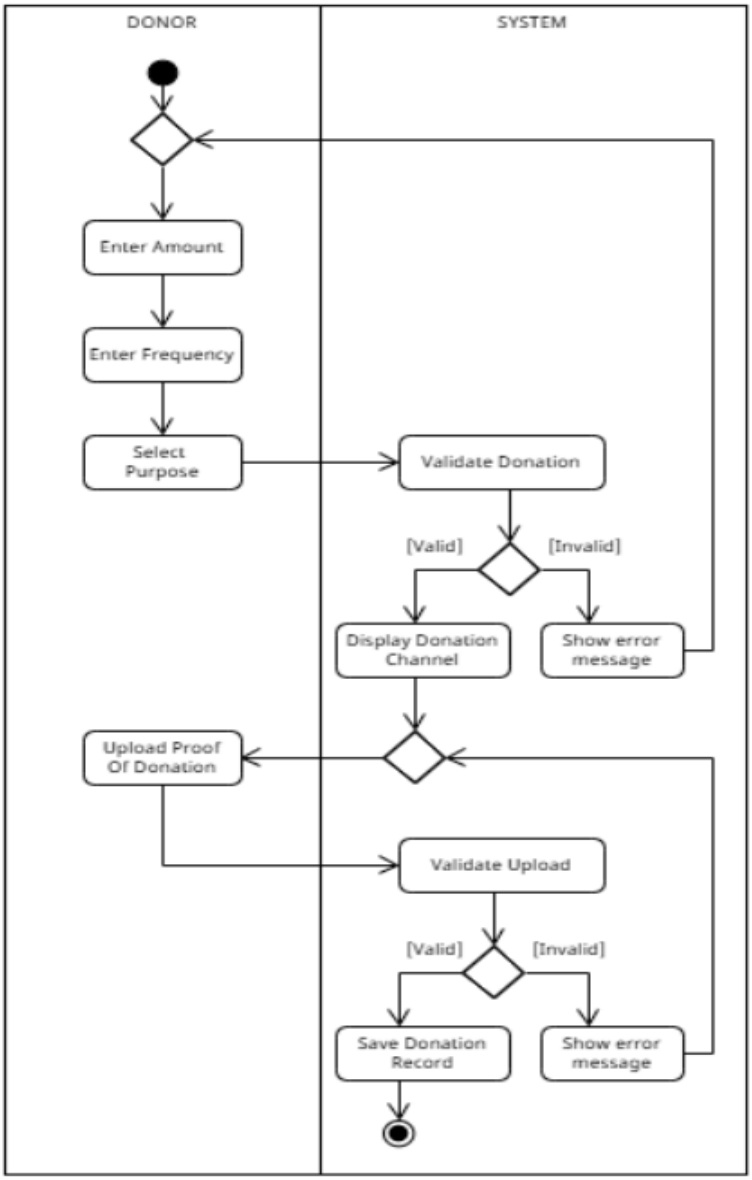


Figure 19: Activity Diagram for Recurring Donation

This diagram outlines how a donor sets up a recurring donation schedule. The donor defines frequency, amount, duration, and purpose. The system records the recurring plan and tracks future contributions manually through donor-uploaded proofs. The system logs each

payment separately and notifies users based on their recurring preferences. This feature promotes sustained donor engagement and consistent funding for charitable causes.

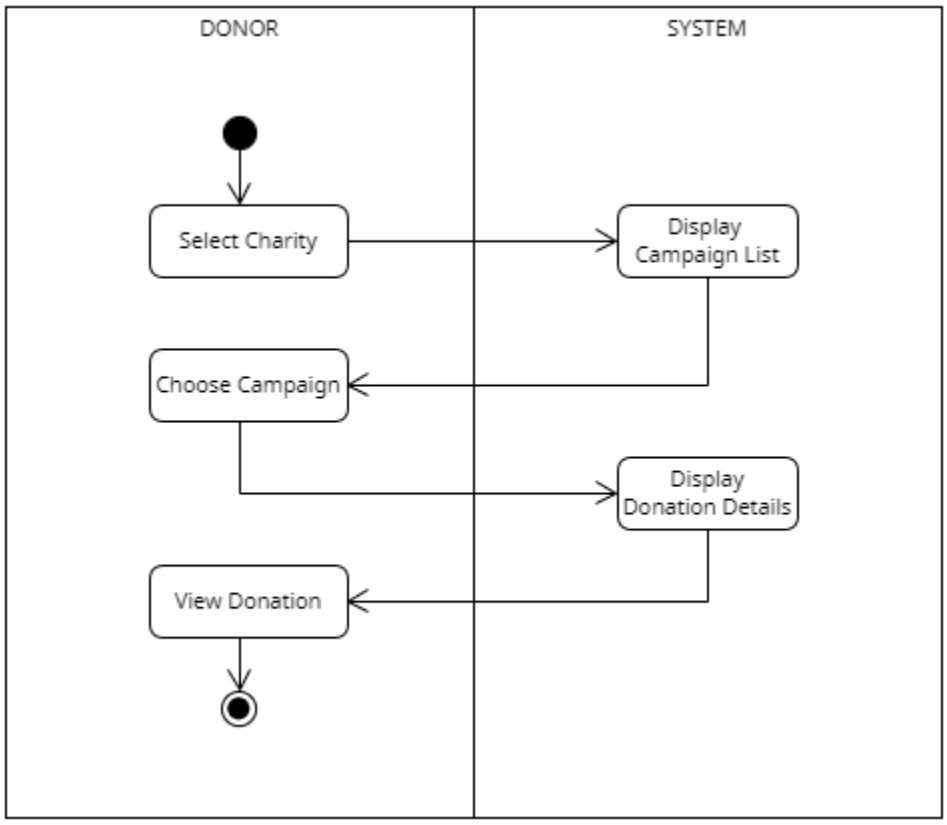
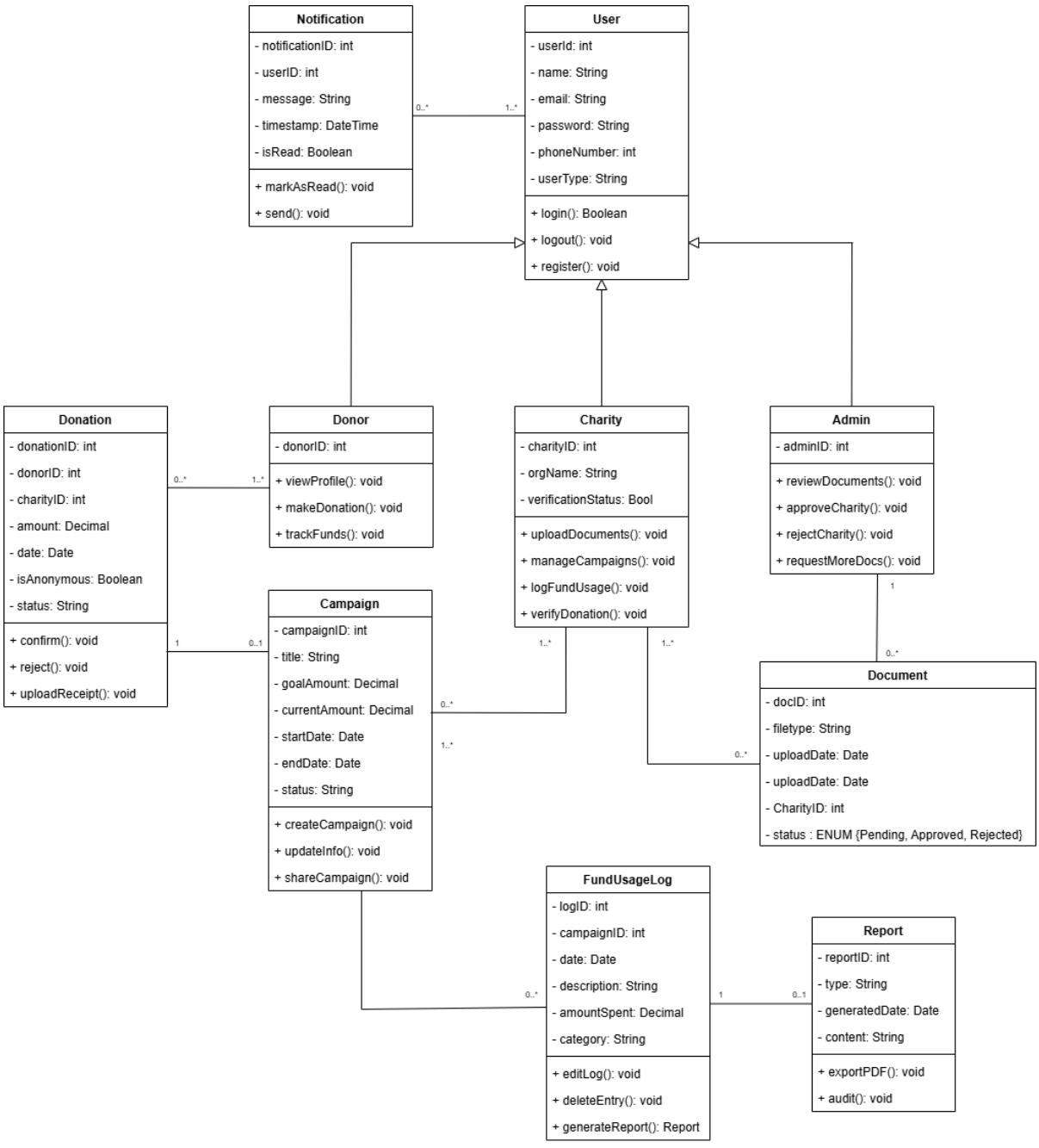


Figure 20: Activity Diagram for Donation History

This activity shows how a donor views their donation history. The system presents a list of all previous donations, including amount, recipient charity, purpose, and status. Donors can drill into each record to view transaction details or receipts. This transparency reinforces trust and provides donors with a clear record of their philanthropic activity.


Notification
- notificationID: int
- userID: int
- message: String
- timestamp: DateTime
- isRead: Boolean
+ markAsRead(): void
+ send(): void
User
- userId: int
- name: String
- email: String
- password: String
- phoneNumber: int
- userType: String
+ login(): Boolean
+ logout(): void
+ register(): void
Donation
- donationID: int
- donorID: int
- charityID: int
- amount: Decimal
- date: Date
- isAnonymous: Boolean
- status: String
+ confirm(): void
+ reject(): void
+ uploadReceipt(): void
Donor
- donorID: int
+ viewProfile(): void
+ makeDonation(): void
+ trackFunds(): void
Charity
- charityID: int
- orgName: String
- verificationStatus: Bool
+ uploadDocuments(): void
+ manageCampaigns(): void
+ logFundUsage(): void
+ verifyDonation(): void
Admin
- adminID: int
+ reviewDocuments(): void
+ approveCharity(): void
+ rejectCharity(): void
+ requestMoreDocs(): void
Campaign
- campaignID: int
- title: String
- goalAmount: Decimal
- currentAmount: Decimal
- startDate: Date
- endDate: Date
- status: String
+ createCampaign(): void
+ updateInfo(): void
+ shareCampaign(): void
Document
- docID: int
- filetype: String
- uploadDate: Date
- uploadDate: Date
- CharityID: int
- status : ENUM {Pending, Approved, Rejected}
FundUsageLog
- logID: int
- campaignID: int
- date: Date
- description: String
- amountSpent: Decimal
- category: String
+ editLog(): void
+ deleteEntry(): void
+ generateReport(): Report
Report
- reportID: int
- type: String
- generatedDate: Date
- content: String
+ exportPDF(): void
+ audit(): void

The UML class diagram for the Web-Based Donation Management System illustrates the overall structure, roles, and interactions between the system's core components. At the heart of the diagram is the User class, which defines common attributes such as user ID, name, email, password, phone number, and user type. This base class is extended by three specific user types: Donor, Charity, and Admin, each with distinct roles and permissions. Donors can view profiles, make donations, and track the utilization of their contributions. Charities are responsible for uploading verification documents, managing donation campaigns, and logging fund usage to promote transparency. Administrators oversee the system's integrity by reviewing submitted documents, approving or rejecting charity applications, and handling verification requests.

The Donation class represents the transaction process between donors and charities, capturing details such as donation amount, date, status, and anonymity preference. Campaign-related activities are managed through the Campaign class, which records each charity's fundraising efforts, including target goals, timelines, and progress. Fund allocation and spending are tracked in the Fund Usage Log, which stores descriptions, categories, and expenditure amounts linked to specific campaigns. These logs can be summarized and audited through the Report class, allowing charities to generate transparent financial reports.

Additionally, the system includes a Notification class that enables communication with users by sending important messages and alerts, while the Document class handles the uploading and verification status of charity-related files. The relationships between these classes are structured to ensure data integrity and role-based access control, supporting modular, scalable, and secure system development. Overall, the class diagram serves as a detailed blueprint that guides the design of a transparent and accountable digital platform for managing charitable donations.

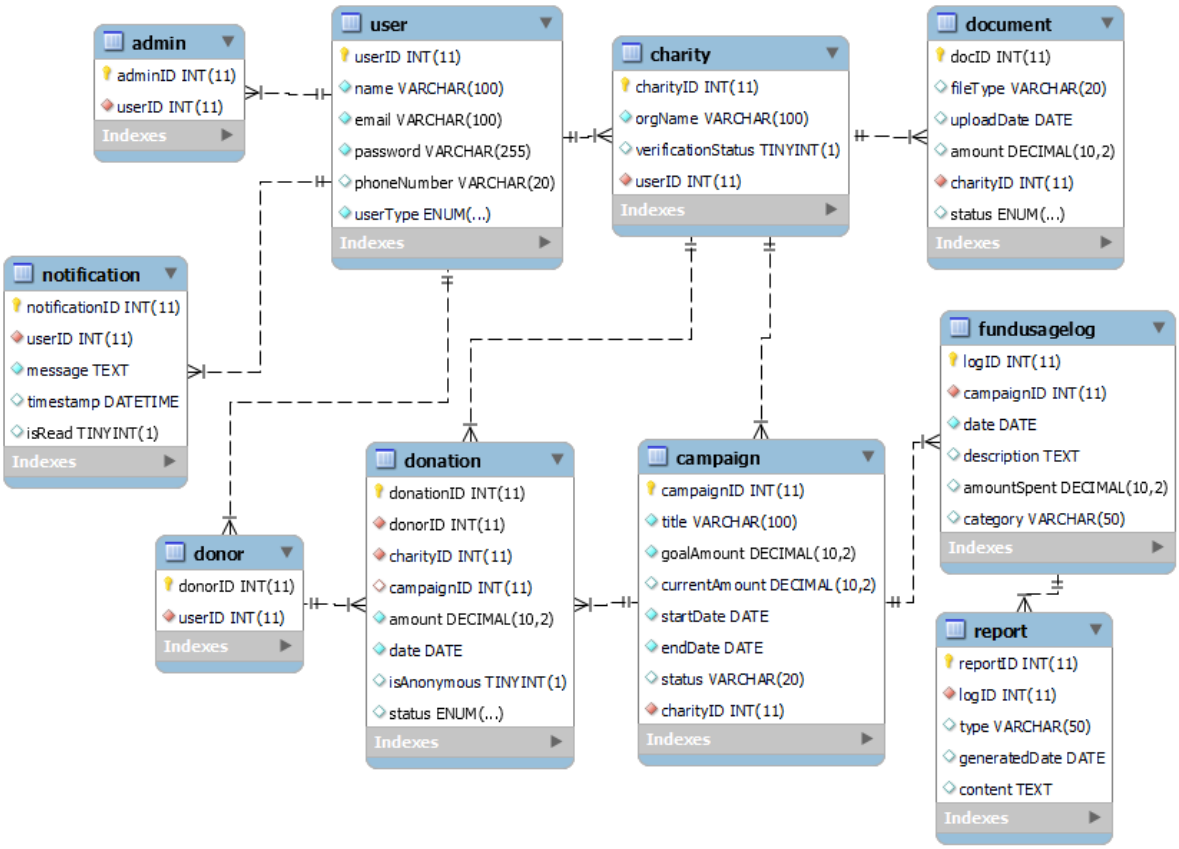


Figure 22

Entity Relationship Diagram

The Entity-Relationship Diagram (ERD) defines the foundational data structure for a web-based transparent donation management system, designed to support secure donation processing, campaign management, user roles, and fund tracking. The central User entity stores essential account and identity information for all platform participants, categorized by role through the userType field. Specific user roles are represented in related entities: Donor, Charity, and Admin, each extending core functionality with role-specific data and actions.

Charitable organizations are managed in the Charity entity and are linked to user accounts. Charities can initiate multiple Campaigns, each defined by attributes such as

fundraising goals, start/end dates, and status. Donors, represented in the Donor entity, contribute funds through the Donation entity, which records the donation amount, date, anonymity preference, and status. Donations can optionally be tied to specific campaigns to track goal progress and contributor involvement.

The system emphasizes financial transparency through the FundUsageLog entity, which captures detailed records of how campaign funds are spent, including purpose, category, and amount used. To further enhance accountability, these logs are summarized in the Report entity, which documents financial activity and can be exported or audited.

Charities submit verification files via the Document entity, where uploaded materials undergo review and approval. Communication between the system and users is facilitated through the Notification entity, which records system-generated messages, read status, and timestamps.

Relational integrity is maintained through well-defined primary and foreign key constraints, enabling one-to-many and optional relationships across entities. This schema supports a secure, scalable, and transparent platform for managing charitable campaigns, donor contributions, and organizational accountability.

Ethical Considerations

In conducting this study on the development of a Web-Based Donation Management System with Multi-Payment and Fund Tracking for Secure and Verified Charity, the researchers are committed to maintaining ethical standards that ensure the protection, privacy, and dignity of all participants and organizations involved. These ethical principles were carefully integrated into each stage of the system development and testing to support transparency and trust within the donation process.

Informed Consent:

Participants involved in testing, including charity representatives and donors, will be fully informed about the purpose, scope, and voluntary nature of their involvement. Prior to

any participation, they will receive an overview of the study, and their consent will be obtained through written or verbal agreement. Participants will have the right to withdraw at any time without any consequence. All participation will be conducted either in local or public testing environments, strictly for academic and developmental purposes.

Confidentiality:

All personal information collected during testing will be kept confidential and will only be accessible to the research team. This includes sensitive data such as full names, contact details, email addresses, banking or GCash details, and supporting documents used to verify charitable organizations. These records will be stored securely, either on encrypted storage or password-protected servers, and will not be shared with any third parties.

Anonymity and Data Protection:

To further protect the identity of the participants, data used in research analysis and reporting will be anonymized. No names or personally identifying details will be disclosed in the presentation or documentation of findings. In addition, the system will be developed with secure data handling practices, including encryption, limited access controls, and secure authentication methods, to ensure the safety of all donor and charity information.

System Integrity and Transparency:

The study prioritizes the ethical delivery of verified and transparent donation services. All donation records shown in the system are manually updated by verified charities and monitored to prevent falsification. No features allow manipulation of funds or fake organizations. During testing, only simulated or sample data are used to avoid ethical risks associated with real financial transactions.

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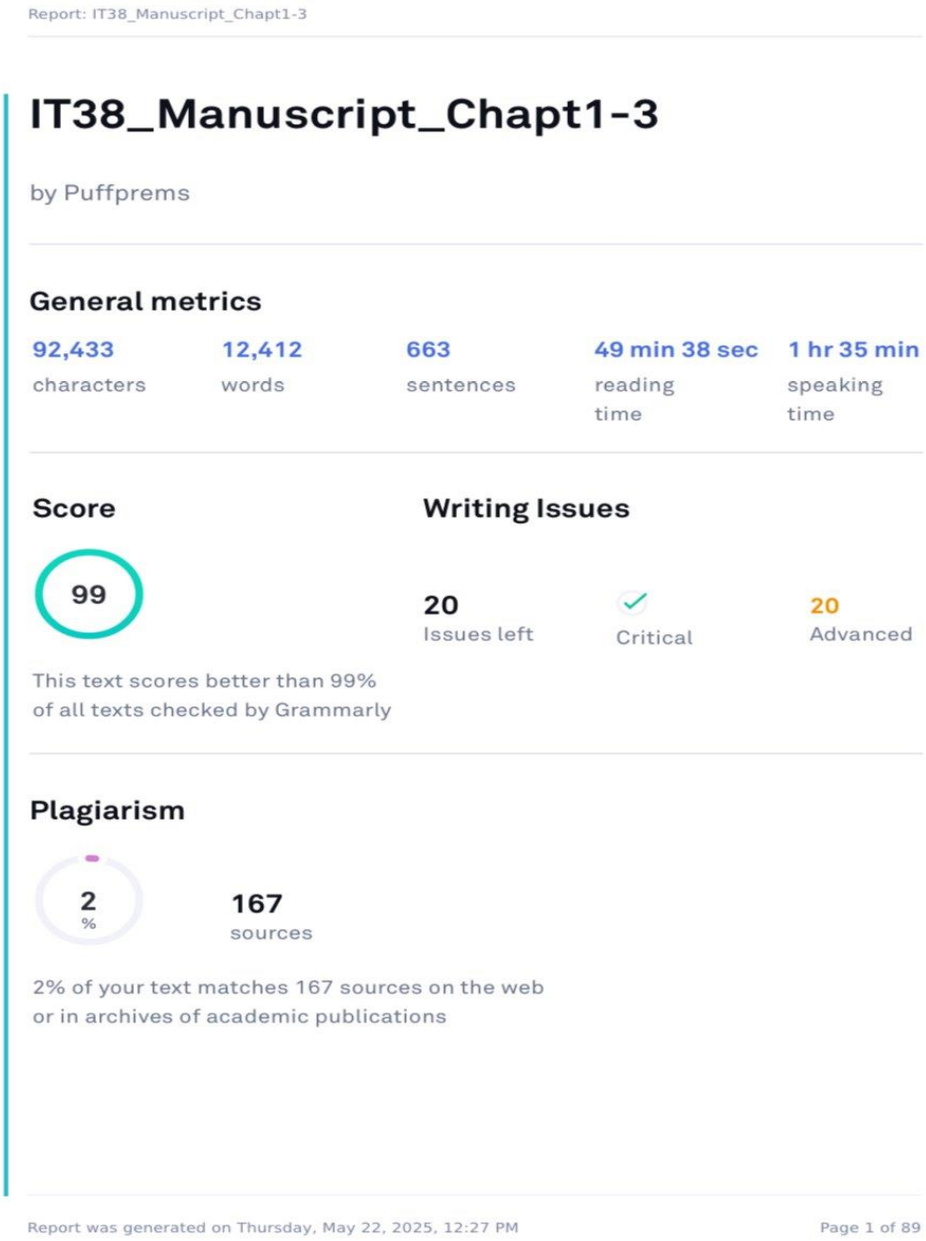
Appendices



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