

# CRYSTALLINE

A Project Report

Submitted By

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Under the Guidance of

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**VADODARA**

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# PARUL UNIVERSITY

## CERTIFICATE

This is to Certify that Project - 2 -Subject code 203105400 of 8<sup>th</sup> Semester entitled “Crystalline” of Group No. PULSE 218 has been successfully completed by

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and other team members under my guidance in partial fulfillment of the Bachelor of Technology (B.TECH) in Computer Science and Engineering of Parul University in Academic Year 2022-2023.

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## **Abstract**

There are many charitable events, such as the PM Care Fund, where donors are uncertain about how their donations are being used. In the past few years, cryptocurrencies like Bitcoin and Ethereum have gained popularity, and the awareness of blockchain technology has increased as a result. People have demonstrated their faith in cryptocurrencies by embracing and implementing them. Therefore, we will establish a system that utilizes blockchain to ensure transparency in charitable donations and transactions, thereby increasing trust.

The article discusses the problems associated with fraudulent activities in charitable donations, which has resulted in a lack of trust in charitable organizations. The solution proposed is to use blockchain technology to increase transparency and credibility in the charitable sector. The article provides an example of a charity donation system created using a blockchain distributed ledger and software engineering methods. The system aims to ensure transparency and credibility in charitable giving and transactions, which will increase public trust in charitable organizations.

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# Chapter 1

## Introduction

As we all know Charity is an act of kindness, where people who are financially capable donate their money or assets to needy people or organizations that help people. Various unfair frauds and scams based on charity have been witnessed because of that, people who want to donate hesitate before donating their money. We will try to provide them with a more trustworthy and reliable environment for donation with transparency using blockchain technology.

In recent years, India's charity exposed a variety of problems, which caused a trust crisis towards India's charity among the public, and further led to India's charity being once deadlocked. This paper designs a charity donation system by using a blockchain distributed ledger and software engineering method, aiming to use blockchain to get through the related links of charity donation, to improve the transparency and credibility of donation behavior. There are various charity events. We all know about PM care funds where the people or the donors don't get a clear idea about where the fund has actually been utilized.

In the past two or three years, we all have seen the rise of cryptocurrencies like Bitcoin, Ethereum, etc., and other new things like NFTs, due to which awareness among people has increased about blockchain. People have shown their trust by adapting and implementing cryptocurrencies.

So, we will be developing a system to bring transparency to charity like trust's transactions and donations using Blockchain.



# Chapter 2

## Literature Review

### 2.1 Smart Contract: Attacks and Protections

Author - SARWAR SAYEED , HECTOR MARCO-GISBERT AND TOM CAIRA

Date of publication - 30th Jan'2020

**Abstract** - This paper tells us about the security issues, deployments, various attacks and precautions that can be taken when addressing Smart Contracts. Vulnerabilities, malware, bugs and exploitation(4 categories) are discussed in the article. The article has mentions 10 security tools to counter check the vulnerabilities.

**Conclusion** - Decentralized digital agreements can now be formed without the need of a third party, thus it has attracted a lot of attention from various industries. However, no matter how transparent it is, it is still vulnerable. The article discussed 10 security analysis tools which can help identify potential exploits. The accuracy was not perfect and some vulnerabilities still slipped by. This concludes that, with time, as the potential of the platform rises, security issues will rise as well as it's resistance towards it.

## 2.2 Ethereum White Paper

Author - Vitalik Buterin

Date of publication - 2013

**Abstract** - This article is written by the founder of Ethereum before launching ETH in 2015. He talks about the history and the working/mining of bitcoins and then brings up the concept of Ethereum and its application while talking about mining and blockchain. He further discusses about its application, currency, implementation and how it results as a Decentralized application.

**Conclusion** - Ethereum was originally brought out as a cryptocurrency working on blockchain whilst having more features like, withdrawal limits, and financial contracts etc, via a programming language. Ethereum does not directly support those applications, but can be used in various methods to achieve so. Ethereum protocol provides countless possibilities to create various applications rather than having a single purpose.

## 2.3 SmartInspect: Solidity Smart Contract Inspector

Authors - Santiago Bragagnolo, Henrique Rocha, Marcus Denker, Ste'phane

Ducasse Date of publication - 5th July'2018

**Abstract** - The article discusses about how solidity works and once deployed how it's impossible to debug or make changes, this leads to unexpected bugs and errors. The paper addresses the lack to inspect abilities of deployed contracts. It motivates the use of SmartContract, which allows developers to make changes without the need of redeploying.

**Conclusion** - The paper talked about the difficulties in inspecting solidity contracts and suggests to use SmartInspect, which allows inspection of contracts on Ethereum platform. It allows user to see the contents of a contract using its source code without the need of redeploying it or unnecessary decoding.

## 2.4 Defining, Categorizing And Defending Against Online Fraud

Author - JoakimKaˆvrestad

Date of publication - 2014

**Abstract** - Online frauds are crimes that are and has been increasing rapidly through the years. Various reports shows that this is happening in India as well as internationally. This article aims at classifying terms that can be used to identify online frauds. Further, this article also suggests a defense mechanism for use to counter such frauds.

**Conclusion** - There are many types of online scams/frauds, e.g Loan scams,identity theft,credit card frauds etc. These crimes have existed ever since internet went public and over the years have grown to match the current technological pace. The article talks about SL (situated learning) which includes you getting an assessment of your situation and staying a step ahead of your fraudster.The article continues and discusses moral/ethical aspects and how it affects one economically and its impact on our society.

## 2.5 Is ‘smart contract’ really a smart idea?

Author - MarkGiancaspro

Date of publication - August 2016

**Abstract** - Smart contracts and Blockchain are new terms as compared to the regular existing legal contracts. With the rapid age of coming,smart contracts have full potential to replace the classic.With transparency at it’s primary weapon, it can wage an easy war against the opaque existing legal contracts. This article discusses about the potential problems of legalization and the legal aspects that rise when smart contracts are used within law jurisdictions.

**Conclusion** - The article made it clear that there are benefits as well as downfalls to the smart contracts being introduced into our daily lives. Advantages such as transparency, commercial efficiencies, anonymous transactions are followed by the unwillingness of governments and banks to accept it. There are various stigmas as well as rules, which smart contracts are not bound to.

## 2.6 Blockchain Technology Innovations

Author - Tarek Ahram

Date of publication - 8th June 2017

**Abstract** - Digital world has produced efficiencies, new innovative products, and close customer relationships globally by the effective use of mobile, IoT (Internet of Things), social media, analytic and cloud technology to generate models for better decisions. Blockchain is recently introduced and revolutionizing the digital world bringing a new perspective to security, resiliency and efficiency of systems. While initially popularized by Bitcoin, Blockchain is much more than a foundation for crypto currency. It offers a secure way to exchange any kind of good, service, or transaction. Industrial growth increasingly depends on trusted partnerships; but increasing regulation, cyber crime and fraud are inhibiting expansion. To address these challenges, Blockchain will enable more agile value chains, faster product innovations, closer customer relationships, and quicker integration with the IoT and cloud technology. Further Blockchain provides a lower cost of trade with a trusted contract monitored without intervention from third parties who may not add direct value. It facilitates smart contracts, engagements, and agreements with inherent, robust cyber security features.

**Conclusion** - From this particular research paper we come to the conclusion that how new innovative technologies like IoT, cloud computing, cyber security, cryptocurrency, etc can effectively and efficiently develop using blockchain technology. Here author mentioned how blockchain technology is used in the cloud-based application Health Chain it is very interesting and gives us a basic idea about the uses of blockchain.

## 2.7 Blockchain Technology in Finance

Author - Jayanth Rama

Date of publication:- 2017

**Abstract** - The banking and financial-services industry has taken notice of blockchain technology's many advantages. This special issue explores its unlikely origins, tremendous impact, implementation challenges, and enormous potential.

**Conclusion** - We can conclude what are the uses of blockchain technology in banking and finance. One of the uses of blockchain, smart contracts, how it can change old banking and financial system effectively and make them more efficient and fast.

## 2.8 Transforming Libertarian Cryptocurrency to Finance and Banking

Author - Ittay Eyal

Date of publication:- 22 September 2017

**Abstract-** The financial technology (FinTech) sector sees high potential value in cryptocurrency blockchain protocols, or distributed-ledger technology (DLT). However, the requirements and guarantees of blockchains for cryptocurrencies do not match those of FinTech-from transaction throughput to security primitives and privacy. The author explores how blockchain research beyond Bitcoin is closing these gaps and some of the challenges that remain.

**Conclusion-** This research paper shows us some of the benefits of blockchain technology, gives some info about bitcoin how FinTech can affect by blockchain technology, shows us the pros and cons of blockchain in FinTech.

## 2.9 Is non-fungible token pricing driven by cryptocurrencies?

Author - Michael Dowling

Date of publication:- 24 April 2021

**Abstract-** In early 2021, non-fungible tokens (NFT) became the first application of blockchain technology to achieve clear public prominence. NFTs are tradable rights to digital assets (images, music, videos, virtual creations) where ownership is recorded in smart contracts on a blockchain. Given the NFT market emerged out of cryptocurrencies, we explore if NFT pricing is related to cryptocurrency pricing. A spillover index shows only limited volatility transmission effects between cryptocurrencies and NFTs. But wavelet coherence analysis indicates co-movement between the two sets of markets. This suggests that cryptocurrency pricing behaviors might be of some benefit in understanding NFT pricing patterns. However, the low volatility transmissions also indicate that NFTs can potentially be considered as a low-correlation asset class distinct from

cryptocurrencies.

**Conclusion-** We can conclude how the NFT price seems completely different than cryptocurrency in terms of volatility transmission. This has interesting implications for investment portfolios, as low-correlation assets are highly desirable for their diversifying characteristics. We need further investigation of NFT pricing to other asset classes to confirm the low-correlation status of NFTs.

## 2.10 The Risks and Challenges of Implementing Ethereum Smart Contracts

Author – Christopher G. Harris

Date of publication - 14-17 May 2019

**Abstract** - Smart contracts are designed to facilitate the performance of trackable and irreversible transactions without the need for third-party involvement. Therefore, as a result of this lack of oversight, it is essential that these smart contracts are written and properly tested. In this paper, we examine some of the prominent risks and challenges involved with writing and implementing smart contracts and discuss how each of these challenges can be overcome. We focus on contracts executed on Ethereum, the most prominent smart contract platform.

**Conclusion** - In this research paper, the author showed that there are some risks in using smart contracts. Challenges like its unchangeable so once we deploy the contract we can not do any changes to it. Other risks are Ethereum based bugs like arithmetic bugs, truncation bugs, singleness bugs, etc.

## 2.11 Past, present, and future of user interface software tools

Author: Brad Myers, Scott E. Hudson.

**Abstract** : User Interface is a excitingly creative field to work with a sit involves a lot of logical temptation to acquire what a human brain can gain by the most visual manner possible, hence as from past experiences we have grown our user interface, to a level that now it is a never ending creative field to work with as it improves day by day, and so much more to it is been added, we have

learn a lot of things about how optimal and with few adjustments we can make a significant change on outlook of a particular website or application as all of it relies on the UI and UX.

**Conclusion:** Rather than keeping things how they are we can always upgrade them with improving them by making technical improvements and working on themes for projects as the industry works in pipeline and UI UX is a preprocess of it all hence it should be mandatory to be focused on.

## 2.12 User interface modeling in UMLi

Author : Robin Jeffries; James R. Miller Cathleen Wharton; Kathy M. Uyeda

**Abstract :** The User interface in a software or website plays a vital role in preceding with the best outcomes and out reaching more people to have more interaction With the user, hence model linga user interface is a process where we evaluate what a user is gonna feel and think and replicate while using the software/website. For modeling a UI we require a certain experience in designing and need to understand why this is the model and what it will it reflect on a user's mind. Now with everything is accessible easily we can create UI UX with more precision in and with improved techniques.

**Conclusion :** As we build a software it is not just for the one who develops it, its for various other people for whom that is been made hence it should be easy to understand and we should get a clear picture of what icon to choose and what it represents, everything should be compact and self- descriptive as it will be very effective way of modeling UI.

## 2.13 Through the Interface - Activity Approach to UI Design

Author : Susanne Bodker

**Abstraction:** A proper knowledge, of how human brain gets comfortable around a particular set of alignment or color which makes the Interface attractive and makes outstanding from previous designs, will be the goal of modeling any Interface as per the User's need. Such as text editing software are now upgraded with 3D, just to make everything up to the trend, everyone upgrades their previous version of software to the modern world specifications.

**Conclusion:** It's important to make an Interface which is not overwhelming to a user, and its designed in a decent manner which is not very congested nor too empty, it should have necessary things/buttons/texts with minimum space for Display optimization. And with better human interaction , many websites use Personal Digital Assistant (PDA). Hence upgrading our Interaction with user.

## 2.14 Effect of User Interface Design in a Multimedia Courseware

Author: Dr.Azlan Abdul

**Abstraction:** Students are the main focus of the society as they are the leading pillars to the future which will result in improvement and modernization hence to get interaction and attention of them to focus on what to do on a site , the Interface comes to picture as it will guide them through out the thing and this will bring change and creativeness in the society, And due to the Pandemic, all students need to be encouraged for learning ONLINE, World has changed so far, before going out we map-out our day routine in our phone, we get lost we track the way out in our phone.

**Conclusion:** The Interface Design should be easy to go through , children get distracted easily and faster hence the design should be clean and gentle with subtle colors and margin, with non distracting design it will be easier for one to focus on the content and be on track of course, hence students will pay attention with which they will utilize their time and improve themselves in their choice of field.

## 2.15 Directions for 3D user interface research VR Games

Author: Anthony Steed

**Abstract:** The VRtoday in a common person's reach is not dissimilar to the lab VR 30 years before, hence this technology has come so far and is spreading along so well that many concepts are building over VR, out of which the most profitable

Industry is the game industry,Hence the 3d User Interface has also shown well hype over this decade, VR is on base of a 3 dimensional algorithm which is a 3d software which allocates 3d space for to us which not really exists but it's there virtually hence its virtual reality. This can



bring

interesting evaluations along future and is a hope for more social development of a being in this era by VR. From writing on paper to writing on computer we have evaluated our terms and now where we are with making record of Real world in Virtual Space.

**Conclusion:** This paper was just about a VR game and how it has improved its 3DUI (3 Dimensional User Interface) while there are some good design guidelines and tool kits, best practice is still emerging.

## 2.16 Impact Factors for Online Donation Behavior of Bank Customers

Date of publication - October 2017

**Abstract:** Donation in various service channels of financial institutions helps people in need and makes great impact on social charity. The purpose of this paper is to analyze impact factors of donation behavior by customers of financial businesses. Before, the questionnaires of this research were designed, interviews with customers were conducted first for the purpose of constructing effective questionnaires. Then, questionnaires were answered by 205 bank customers. Correlation analysis, chi-square and Bayesian Network were used to test consumers' online donation. Correlation is used to describe the degree of income and online donation. Meanwhile, chi-square tests and conditional probability are used to test whether there is a significant association between trust, online donation and donation fields. The findings are that the correlation between the average income and online donation as well as an underlying relationship between trust and online donation.

**Conclusion** - Online donation is an emerging field for the operation of banks. Some banks are trying to find out an effective way to attract more donations in order to increase the cash flow. This research therefore provides an understanding of the behavior of online donation from banks' customers and proves that the donating preference is closely associated with trust, brand image, and annual average disposable income of customer.

## 2.17 Understanding Online Donor Behavior

Author:- Micheal L.Shier,Femida Handy

August 2012

**Abstract** :- Online donation platforms, albeit a recent phenomenon, are becoming more important for human service nonprofits, allowing them to reach a broader target population of donors at relatively little cost. In developing countries such as India, internet use is flourishing, and this has allowed fund-raisers to reach a population hitherto difficult to reach. A cross-sectional research design was utilized to survey donors of one online donation program in India (n = 479). This research was exploratory, investigating the factors that influence people's willingness to donate online, including the socio-demographic characteristics of donors. Results show that gender, perception of the organization, and influence from others are variables that influence the likelihood of donating online. Further research and implications for human service nonprofits seeking to undertake online charitable campaigns are discussed.

**Conclusion** :- In the past decade, the Internet has changed many relationships, whether it is among individuals, non-profits, businesses or government, and to all combinations between these actors. Nonprofits doing fund-raising have used (and continue to use) labor- intensive processes of soliciting donations for their cause, such as cold calling, door-to- door collections, direct-mail, and local fund-raisers. Now, nonprofits can reach millions through the Internet, which has become ubiquitous worldwide. This research investigated what the leading constructs are in determining whether or not an individual donates money online in comparison with what is understood to predict offline donating behavior.

## 2.18 A Web-based blood donation and Medical Monitoring

Author:- Moh. Nabil , R. Ihab, H. El Masr, S. SaidS

**Abstract**:- Medical monitoring requires instant visibility across data sources and access to dynamic analyses. However medical monitoring among patients, perform in-stream medical advice, remains a challenging problem. Blood banks suffer frequent shortage of blood due to lack of blood donations, hence blood donation requests are frequently seen on social media for patients who urgently require blood transfusion with specific blood group. Recently, worldwide efforts have been undertaken to utilize social media and smart phone applications to make the

blood donation process

more convenient and provide a concrete information system that allows donors and blood donation centers to communicate efficiently and coordinate with each other to minimize time and effort required for blood donation process.

**Conclusion:-** In this paper, a Web-Based Blood Donation and medical monitoring system was proposed based on cloud and mobile platforms. The proposed mobile platform utilizes a smart phone android application to allow users to access system functionality easily. The proposed system facilitates communication between patients, blood donors, medical experts and blood banks to ease process of medical observation and blood donation. The proposed system also has a database which saves blood donors, patients and blood banks information. The system developed was hosted on cloud utilizing various cloud hosting features such as high reliability, availability, scalability and data security. It integrates the electronic medical records and blood information scattered among different blood banks to improve blood donation service quality.

## 2.19 Implementation of a Web-Based Organ Donator

Author:-Nakeva Redmond Laura

Harker October 2017

**Abstract:-** The lack of available organs is often considered to be the single greatest problem in transplantation today. Internet use is at an all-time high, creating an opportunity to increase public commitment to organ donation through the broad reach of Web-based behavioral interventions. Implementing Internet interventions, however, presents challenges including preventing fraudulent respondents and ensuring intervention uptake. Although Web-based organ donation interventions have increased in recent years, process evaluation models appropriate for Web-based interventions are lacking.

**Conclusions:** We determined fraud and low uptake to be serious threats to this study and further confirmed the importance of conducting a process evaluation to identify such threats. We suggest checking participants' IP addresses before study initiation, selecting software that allows for automatic duplicate protection, and tightening minimum requirements for intervention uptake. Further research is needed to understand how process evaluation models can be used to monitor implementation of Web-based studies.

## 2.20 Examining charitable giving in real-world online donation

Author:- Matthew R. Sisco Elke U. Weber

**Abstract** :- The current study uses big data to study prosocial behavior by analyzing donations made on the GoFundMe platform. In a data set of more than \$44 million in online donations, we find that 21% were made while opting to be anonymous to the public, with survey results indicating that 11% of these anonymous donations (2.3% of all donations) are not attributable to any egoistic goal. Our results suggest that men and women were both significantly affected by the average donation amounts visible at the time of their decisions, and men were influenced more. We find that women expressed significantly more empathy than men in messages accompanying their donations.

**Conclusion**:- The current study analyzed contributions made on the GoFundMe platform to examine psychological hypotheses related to charitable giving. By analyzing hundreds of thousands of real contributions, we provide meaningful evidence contributing to several preexisting lines of research.

# Chapter 3

## Flow and Working

### 3.1 Working

The charity system mode proposed is shown in the Figure 1. There are two roles: donors and beneficiaries (Donation charities). The beneficiaries verify their information and create charity projects through the platform. Donors learn about charity projects on the platform, then donate to beneficiaries (charity organizations). Beneficiaries upload their information to the platform for help, they link their wallets through Meta-Mask. The transactions occurred in the stores will be uploaded to the charity platform. The crypto can be exchanged for real money by charity organizations. The flow of funds has been fully recorded on the blockchain, which allows transactions to be tracked and funds prevented from being abused.

The application will be hosted online (web based). We specifically selected a web based platform since we didn't want our project to be limited to a particular platform and be restricted to genuine charities.

The front-end part of this application has been created using JavaScript, React, Tailwind CSS and Vite Framework. The back-end development is based on Block chain and Web3 technology. Smart contracts have been made using remix IDE, ThirdWeb framework for utilizing the Web3 prospects.

## 3.2 Flow

### 1. The Design

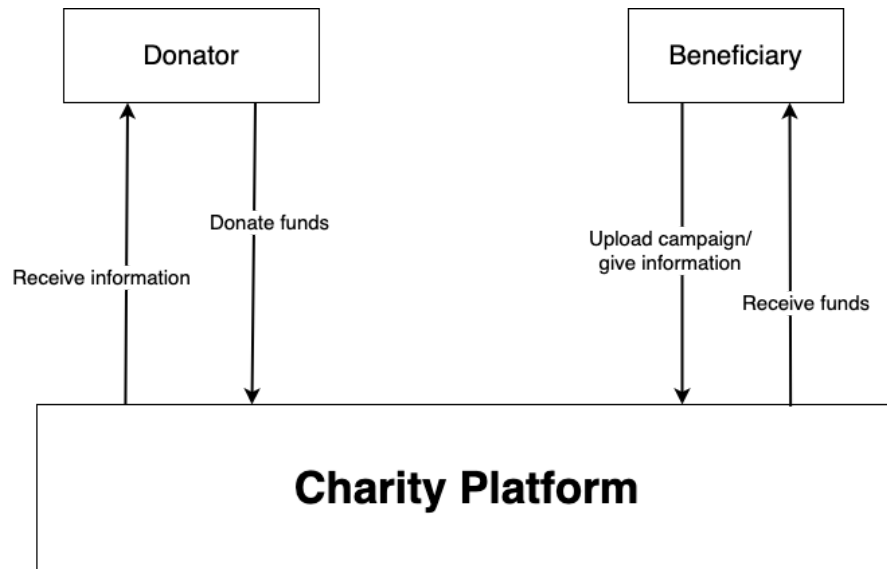


Figure 3.1: Model Design

### 2. DApp Model

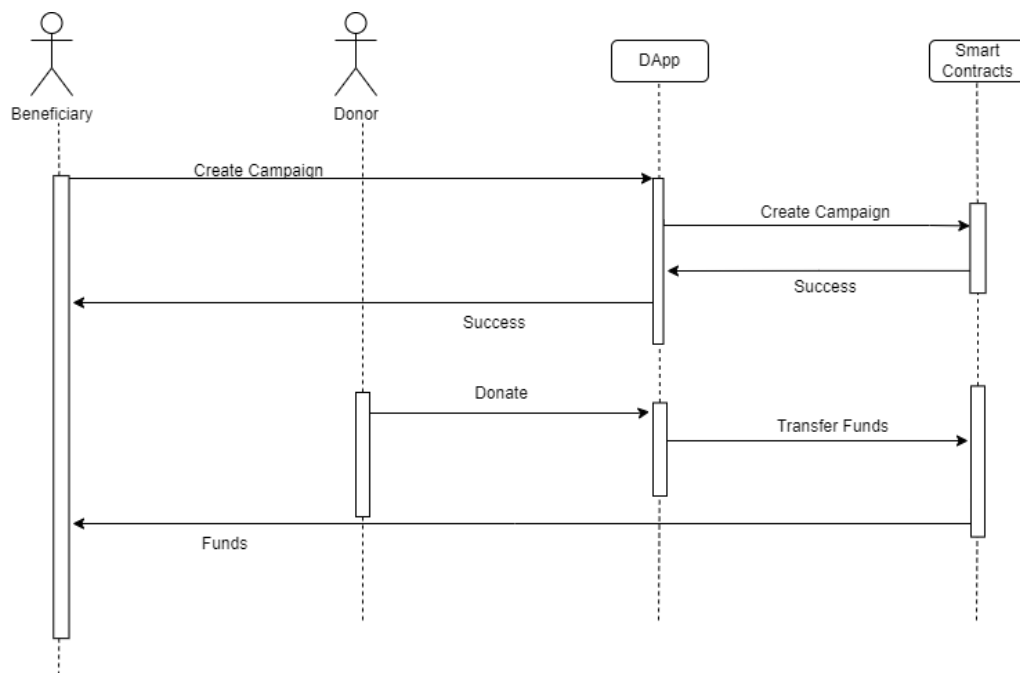


Figure 3.2: DApp Model



### 3. Platform Usage Process

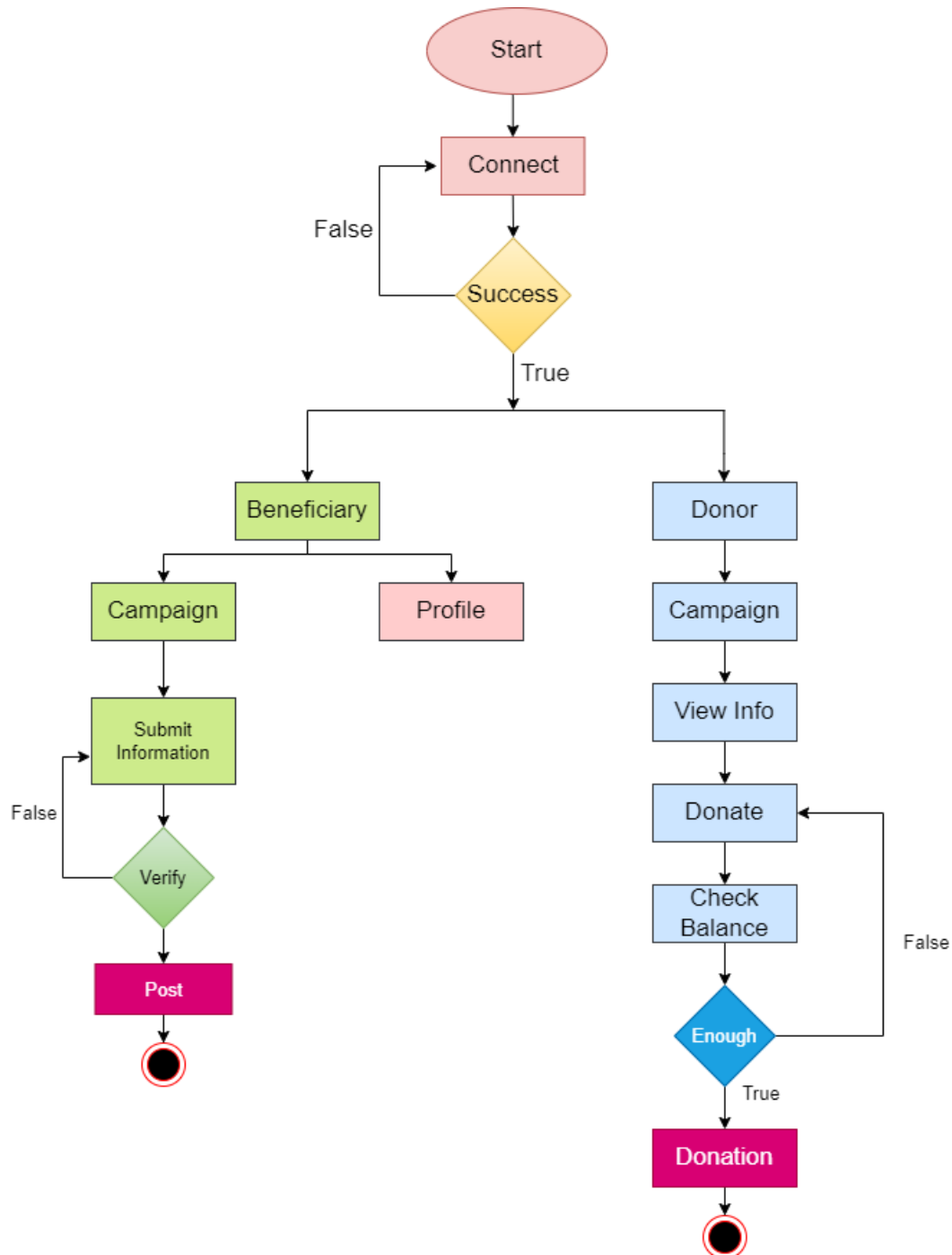


Figure 3.3: Platform Usage Process

# Chapter 4

## Methodology

### 4.1 Blockchain

Blockchain technology is an interlinked systematic chain of blocks that contains transaction history and other user data. It works under the principle of decentralized distributed digital ledger. This technology enables cryptographically secure and anonymous financial transactions among the user nodes of the network enabling the transactions to be validated and approved by all the users in a transparent environment. It is a revolutionary technology that earned its emerging popularity through the usage of digital cryptocurrencies. Even though Blockchain holds a promising scope of development in the online transaction system, it is prone to several security and vulnerability issues. In this paper, blockchain methodology, its applications, and security issues are discussed which might shed some light on blockchain enthusiasts and researchers.

### 4.2 Smart Contracts

Smart contracts, as a new technology in computational law, have very important features: when certain conditions are met, contracts will execute appropriate actions automatically.

In developing our Ethereum smart contracts build in Solidity language, the following technology choices are taken to deploy our smart contract. This section describes the steps taken to deploy our smart contracts designed for trade finance.

#### 4.2.1 Remix

The Remix is a web-based Integrated Development Environment (IDE) for creating, running, and debugging smart contracts in the browser. It is developed and maintained by the Ethereum

foundation. Remix allows Solidity developers to write smart contracts without a development machine since everything required is included in the web interface. It allows for a simplified method of interacting with deployed contracts without the need for a command-line interface.

### **4.2.2 Web3**

Web3 (also known as Web 3.0 and sometimes stylized as web3) is an idea for a new iteration of the World Wide Web based on blockchain technology, which incorporates concepts including decentralization and token-based economics. Some technologists and journalists have contrasted it with Web 2.0, wherein they say data and content are centralized in a small group of companies sometimes referred to as "Big Tech". The term "Web3" was coined in 2014 by Ethereum co-founder Gavin Wood, and the idea gained interest in 2021 from cryptocurrency enthusiasts, large technology companies, and venture capital firms.

### **4.2.3 ThirdWeb**

Thirdweb is a platform that provides a suite of tools for creators, artists, and entrepreneurs to easily build, launch and manage a Web3 project. It enables users to add features such as NFTs, marketplaces, and social tokens to their Web3 projects without writing a line of code. thirdweb is a development framework that allows you to build web3 functionality into your applications.

It provides workflows to speed up your development, including:

i. Contracts you can use to build the foundation of your web3 functionality. ii. SDKs to create applications that interact with the blockchain in your favorite languages. iii. Dashboards to manage your contract settings, team permissions, revenue streams, and analytics.

## **4.3 Frontend**

Front-end web development is the development of the graphical user interface of a website, through the use of HTML, CSS, and JavaScript, so that users can view and interact with that website.

### **4.3.1 JavaScript**

JavaScript, often abbreviated as JS, is a programming language that is one of the core technologies of the World Wide Web, alongside HTML and CSS. As of 2022, 98% of websites

use JavaScript on

the client side for webpage behavior, often incorporating third-party libraries. JavaScript is a scripting language that enables you to create dynamically updating content, control multimedia, animate images, and pretty much everything else. JavaScript is designed on a simple object-based paradigm. An object is a collection of properties, and a property is an association between a name (or key) and a value. A property's value can be a function, in which case the property is known as a method.

### **4.3.2 React**

React is a free and open-source front-end JavaScript library for building user interfaces based on UI components. It is maintained by Meta and a community of individual developers and companies. What is React used for? It's used for building interactive user interfaces and web applications quickly and efficiently with significantly less code than you would with vanilla JavaScript. In React, you develop your applications by creating reusable components that you can think of as independent Lego blocks.

### **4.3.3 Tailwind CSS**

Tailwind CSS is an open source CSS framework. The main feature of this library is that, unlike other CSS frameworks like Bootstrap, it does not provide a series of predefined classes for elements such as buttons or tables. Instead, it creates a list of "utility" CSS classes that can be used to style each element by mixing and matching. For example, in other traditional systems, there would be a class `message-warning` that would apply a yellow background color and bold text.

### **4.3.4 Vite**

Vite is a next-generation, front-end tool that focuses on speed and performance. It consists of two major parts: A development server that provides rich feature enhancements over native ES modules: fast Hot Module Replacement (HMR), pre-bundling, support for typescript, jsx, and dynamic import. `Vite.js` allows developers to set up a development environment for frameworks like Vue, TezJS and React and even for Vanilla JavaScript app with a dev server. Moreover, it allows the development team to hot reload in just three commands. Vite supports Rollup.js internally for bundling.

# Chapter 5

## Future Scope

Crystalline can be improved in the future by

1. Creating a better UI/UX
2. Work on more platform(eg. Android, iOS)
3. Getting Meta ready
4. Starting ETH mining to fund the project

Blockchain technology is finding its way into fields as diverse as health records management, digital identity verification, supply chain tracking, and video games. The ability of Ethereum and other blockchains to store and execute computer code has multiplied the number of use cases for this innovative technology.

As time and technology proceeds, smart contracts will basically be indulged in everyone's life, from paying electricity bills to shopping online. This theoretically guarantees that Crystalline's sole purpose as a charity donation could evolve into a multi purpose application.

The future of the metaverse depends on how well it can meet the two basic needs of all people: to connect with other people, and to make things. It is always being improved, and in the near future, eCommerce, sales and marketing, decentralized finance, crypto businesses, etc., should be able to use the metaverse. (With regards to '3.')

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