DECLARATION

I, **NSHUTI Pacifique,** undersign that this project entitled "**Startup Business Capital and Crowdfunding Platform**" is my work that has not been submitted to any school, institution, or university.

NSHUTI Pacifique   **March, 2021**

APPROVAL

I, **KAZUNGU Jean Emile** I approve that this research project has been submitted under my guidance, support, and approval.

KAZUNGU Jean Emile   **March, 2021**

DEDICATION

I dedicate this thesis to my beloved parents and families for their love, endless support, encouragement, and sacrifices. To my friends who never stop supporting me every step of the achievements.

ACKNOWLEDGEMENT

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LIST OF ABBREVIATIONS

ERD: Entity Relationship Diagram

DFD: Data Flow Diagram

US: United States

SME: Small and Medium Enterprise

GDP: Gross Domestic Product

FSB: Financial Services Board

UK: United Kingdom

HDD: Hard Disk Drive

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ABSTRACT

This study aimed to create a platform named FutureSeeds and that will allow entrepreneur students of social startup businesses to register their business on our platform and get a crowdfunding space where the crowd (Individual people, Organizations) will be able to view and donate to different projects according to their interest without the aim of having something in return, This will remove the gap left by other European and western crowdfunding platforms are majorly designed for their purposes with no consideration of my case study or the society of Rwanda. FutureSeeds exist to give access to services or products tailored to the Rwandan community as well as to improve their lives as they aim of a social startup business. The methodology used in this research is the spiral model as the easiest way to design and implement a system. Data was collected using interviews. I recommend the future researchers find other different gaps existing in past researchers that are only made to benefit the finding for their particular countries and in conclusion I would like to thank the institution.

CHAPTER ONE: INTRODUCTION AND BACKGROUND TO THE STUDY

1.0 Introduction

Social business capital and crowdfunding platform is aimed to provide a crowdfunding platform for social startup business, the main problem statement will be discussed in this chapter as we are trying to solve the youth unemployment issue by creating a computerized system that is aimed to allow startups register themselves and the audience to donate to a particular startup using a direct payment online with Mobile Money. This project report was conducted on Westerwelle Startup Haus in Kigali, an organization that supports the ecosystem of entrepreneurship among the youth of Rwanda which also will benefit from this research.

1.1 Background to the Study

The crowdfunding landscape is incredibly dynamic. It's an industry unlike any other, born out of need and built up by creativity. During my time working as a crowdfunding consultant, I've seen campaigns for everything from a potato salad to an Emmy-nominated documentary. While space can be diverse and quirky, it is an extremely effective tool when used correctly.

Today, rewards-based crowdfunding (obtaining funds for a project in exchange for a product, service, or experience) has grown to be a massive industry, with an estimated US$17.2 billion raised in 2017. That's quite the leap since its mainstream debut in 2003, and we're still seeing significant shifts each year.

The emergence of crowdfunding can be traced back to the early 2000s with the founding of ArtistShare, the first crowdfunding website on record, which allowed fans to make contributions to support an artist's musical endeavors. ArtistShare gave the public unprecedented access to creators and allowed independent musicians to finance their work without a record label. It opened up the music industry to more people than ever before.

Gradually, others began to catch on. If it worked for the music industry, where else could this model be used? Thanks in large part to the Internet and social media, it was possible to harness the power of an audience to create something, often with little to no money upfront. For many creatives, crowdfunding was a beacon of hope to make their dream projects come to life.

The crowdfunding model continued to expand and the later 2000s gave birth to two of its most popular platforms: Indiegogo and Kickstarter. These rewards-based sites became synonymous with crowdfunding, and creators of all backgrounds and disciplines began putting their ideas online to secure the capital needed to make them a reality. Ideas spread like wildfire.

(**Théo, 2019**)

While spending two months in Africa in early 2018 learning about the local startup ecosystem, I was exposed to the harsh reality of the lack of funding options available to African small & medium enterprises (SMEs), including technology startups. Entrepreneurs have few places to turn to fund their businesses, and investors have a difficult time assessing African companies. The time has come to introduce new and different funding models to supplement venture financing. One model in particular equity crowdfunding caught my attention given its applicability to emerging markets. I set out to learn more and to connect with the group of trailblazers who are working to bring equity crowdfunding to Africa, to better understand how it can boost investment and innovation within the continent.

(Forbes, 2019)

The overview of crowdfunding in the eyes of Forbes magazine is stated as follows: crowdfunding has taken off globally and has begun to gain traction in Africa, because of the new opportunities it provides individuals or businesses looking to raise awareness and funds for their ideas and products. It has increased the pool of potential idea-backers around the world from a select few investors or crowd with experience and capital, to anybody with internet access.

But, not all types of crowdfunding are created equal. Crowdfunding models include donation-based crowdfunding (in which donors are not typically granted anything in return for their donation), rewards-based crowdfunding (in which backers contribute funds in exchange for some reward--in many cases the item produced by the campaign), equity crowdfunding (in which backers contribute funds to companies in exchange for a piece of equity in the company), and debt/lending crowdfunding (in which lenders provide money and expect their loan to be paid back with interest).

(Daus, 2014)

The potential benefits of successful equity crowdfunding are amplified within emerging markets like Africa. The primary and most obvious benefit is access to capital. In 2017, African tech startups raised US$195 million according to a recent report released by Disrupt Africa, and this figure has almost been equaled in just the first half of 2018. To put this figure in perspective, in 2017, venture deal value in the U.S. reached US$84 billion.

Capital is gradually making its way to Africa, but an infusion of investment is sorely needed given the size of the market and the severity of its developmental needs. The equity crowdfunding regulation process in Africa is in different stages of development depending on the country. In Morocco, there is a drafted crowdfunding legal framework on the Secretary General's desk that will be voted on by parliament in the coming months. Instrumental in the process of getting this framework drafted and voted on are Arnaud Pinier and Eric Asmar.

Pinier launched Smala & Co, the first donation-based crowdfunding platform in Morocco, 4 years ago. He and Asmar have been working to update Morocco's crowdfunding legislation across the various types of crowdfunding, including equity crowdfunding, with the eventual goal of consolidating all types on the Smala & Co platform. However, as Pinier explained, Morocco also has a particularly complex financial regulatory structure to navigate. Each type of crowdfunding is overseen by a different regulatory body, and all regulatory bodies must validate the proposed updated framework or else it cannot be implemented. Other countries, such as South Africa, Ghana, and Kenya, are in much earlier stages of discussions with their respective regulatory bodies.

(Equity Crowdfunding, 2020)

In Rwanda, there is no yet a crowdfunding platform to support social startup business, "Startup support comes from both the private and public sectors, usually in the format of soft financial loans, however, startup mentoring schemes are becoming more prominent and often funded by international development agencies" - Emerging Startups in Kigali.

Even if there exist different business or government partner organizations that support the startup business in Kigali or Rwanda especially, they are helping with networking, working space, internet, and open opportunities, there is no way crowdfunding can be possible.

(Disrupt Africa, 2018)

1.2 Statement of the Problem

The Youth unemployment rate has been rising in Rwanda as of the third quarter of 2020 is standing at 20.7% compared to 19.6% of 2019 according to the National Institute of Statistics of Rwanda. This is a challenge now were even educated youth go out after graduation and stay unemployed and those numbers increase day by day.

Undergraduate and graduate students as the key in leading youth should employ or try to employ themselves to reduce the unemployment rate in youth and third party institutions society and the government should play a big role to support these students to employ themselves even if the rate to achieve this is still low as some ideas exist that need funding or even a scratch to start.

In 2018 When I was a digital marketer in former VOLTA Irrigation now Nilefarms Ltd operating in Rwanda, our business needed funding equivalent to $30,000, and using the existing crowdfunding platforms we have not yet get successful even if we were having a great idea of empowering smallholder farmers to triple their income and produce enough food with our less cost irrigation hardware.

The crowdfunding platforms we used wasn't tailor-made for startups like use with the same demographics, they exist to support their purpose and their community and leave behind more

than 500 startups in Kigali, and more than 5000+ startups across Africa are facing the same issue as us, we are lacking funding from own environment and even from their people.

1.3 Objectives of the Study

1.3.1 General Objective

The main objective of this study is to create a crowdfunding platform tailored for startup businesses in Rwanda.

1.3.2 Specific Objectives

Here are the specific objectives of this study.

1. To create an electronic crowdfunding platform.
2. To design a form for the crowd to fund their interesting startup.
3. To create space for marketing a startup business idea.
4. To integrate a payment API for the crowd to donate for startup.
5. To enable startups, withdraw money their donated money.
6. To provide transaction reports and statistics.

1.4 Research Questions

1. How do startups gain from crowdfunding?
2. How do crowds identify their interesting startup?
3. How do startup market their idea.?
4. How do the crowd donate money?
5. How do startups?
6. How do startups collect money from the crowd?

1.5 Significant of the projects

1.5.1 Organization Interest

The Westerwelle Startup Haus Kigali promotes entrepreneurship, social-economic growth, and job creation in any sector, as this study will also contribute to their aim if we are here to bring in a new way of promoting entrepreneurship as a platform that will start working with the entrepreneurs they host.

1.5.2 Personal Interest

The implementation of this study will lead me to fulfill the requirements to get the A1 (Advanced Diploma) in Information technology. This leads also to improvement in my skills by learning new things and putting my hands-on experience.

1.5.2 Society Interest

Society is the one to enjoy the outcomes of what "FutureSeeds do", as the startups on our platform are for Social, this means that everything those startups should do is the ones that

change the lives of the community, we are not only helping startups to get capital from the crowd but also, we are helping startups to drive a change to the community.

1.6 Scope of the study

1.6.1 Content scope

"FutureSeeds" will allow startup businesses to register themselves and, the crowd also will be there to identify interesting ideas and they can fund from that using a direct payment online with Mobile Money.

1.6.2 Geographical scope

This study is limited to cover startup businesses in Kigali city.

1.6.3 Time scope

This study needs months to finish up validation and programming work. From January 2020 up to January 2021.

1.7 System Modules

Administrator Panel: He will be able to read applications from different startups and confirm startups so that they can appear on our website.

Crowd Area: The area on our platform where the people will be able to view different startups and they can learn more about them.

Entrepreneur's area: This is the area that will be managed by one of the startup members and will be able to create crowdfunding campaigns and then collect money to their bank details or mobile money.

Cash Flow Management: a section that will be responsible to manage and handle the transactions record.

1.8 System Platforms

1.8.1 Minimum Hardware Requirements
- Laptop with Intel Celeron 3040, 2GB RAM, 60 GB HDD
- Network Infrastructure with 1mbps Internet speed

1.8.2 Minimum Software Requirements
- Browser (Enabled Cookies)
- HTTPS Enabled

1.9   Organization of the study

This thesis of ours consists of the following five chapters:

Chapter one: We included Problem statements in the community, the General objective of our project and Specific objectives of our thesis, our interest, Society interest, and what motivated us from doing so.

Chapter two: The literature review

Chapter three: Methods and analysis of the system

Chapter four: System Design

Chapter five: Recommendation and Conclusion

CHAPTER II: LITERATURE REVIEW

2.1 Introduction

This chapter covers the literature about crowdfunding, startup business, platform, and kinds of literature that have been covered in this thesis.

2.2 Definition of key terms

2.2.1 Crowd:

A crowd is a large number of people who gather together for a common short-term or long-term purpose.

2.2.2 Funding:

Providing financial resources to finance a need, program, or project. In general, this term is used when a firm fills the need for cash from its internal reserves, and the term 'financing' is used when the need is filled from external or borrowed money.

2.2.3 Crowdfunding:

Crowdfunding is the use of small amounts of capital from a large number of individuals to finance a new business venture.

2.2.4 Startup:

A startup is a young company founded by one or more entrepreneurs to develop a unique product or service and bring it to market. By its nature, the typical startup tends to be a shoestring operation, with initial funding from the founders or their families.

2.2.5 Crowdfunding Campaign:

is essentially a presentation to the thousands of people located on the platform, helping them learn more about the product or service you are looking to launch. The campaign makes it so that all the information about your business, such as its history, helps bring it to a level that is digestible for potential investors.

2.2.6 Mobile Money:

Is a technology that allows people to receive, store and spend money using a mobile phone. It's sometimes referred to as a 'mobile wallet' or by the name of a specific service such as mPesa, EcoCash, GCash, Tigo Pesa, and many more. There are more than 270 different mobile money services around the world, although they are most popular in Africa, Asia, and Latin America. Mobile money is a popular alternative to both cash and banks because it's easy to use, secure, and can be used anywhere there is a mobile phone signal.

2.2.7 AfriPay

Afripay is a payment gateway that allows its users to send and receive payments from any mobile payment solution regardless of whether you are using the same mobile companies or not as well as credit/debit card payments.

2.2.8 Web Application

A web application (or web app) is application software that runs on a web server, unlike computer-based software programs that are run locally on the operating system (OS) of the device. Web applications are accessed by the user through a web browser with an active internet connection.

2.2.8 Payment Gateway

A payment gateway is a merchant service provided by an e-commerce application service provider that authorizes credit card, mobile money, or direct payments processing for e-businesses, online retailers, bricks and clicks, or traditional brick and mortar. The payment gateway may be provided by a bank to its customers but can be provided by a specialized financial service provider as a separate service, such as a payment service provider.

2.2.9 Used tools and languages

To reach the running software application, different tools and languages are used for Database Management System (DBMS), server-side and client-side programming languages, and network equipment.

2.2.9.1 Xampp Server

Xampp is a free open-source application and a web server like Apache HTTP Server, Mysql, FileZilla, Mercury, and Tomcat servers and written in PHP and Perl programming languages. XAMPP is easy to install on any type of OS (Windows, Linux, Mac OS X) was used to run and test FutureSeeds Web Application as offline access.

2.2.9.2 Hosting Server

A remote server that hosts the FutureSeeds application where it can be accessed online, and for multiple users access and testing.

2.2.10 Database Concept
2.2.10.1 DATA

Known facts that can be recorded and have an implicit meaning or elements that can be manipulated by a computer. The term data refers to quantitative or qualitative attributes of a variable or set of variables. Data are typically the results of measurements and can be the basis of graphs, images, or observation of a set of variables. Data are often viewed as the lowest level of abstraction from which information and then knowledge are derived.

2.2.10.2 A DATABASE

A database is a structure that can store information about multiple types of entities, the attributes of those entities, and the relationships among the entities. Also, a database is a collection of related data

2.2.10.3 Database Management System (DBMS)

A software package to facilitate the creation and maintenance of a computerized database. Database Management System) Software that controls the organization, storage, retrieval, security, and integrity of data in a database. Examples of DBMS: Microsoft Access, Microsoft SQL Server, Oracle, MySQL, Informix, IBM DB2, Sybase, Dbase, Microsoft FoxPro, PostgreSQL, SQL (Microsoft SQL), SQLite, Hyper file, Borland Paradox, Filemaker, Ingres Interbase.15

2.2.11 Web Server

A web server is a computer that stores websites on the Internet and delivers web pages to viewers upon request. This service is referred to as web hosting. Every web server has a unique address, called an Internet Protocol address, that tells other computers connected to the Internet where to find the server on the vast network

2.2.12 Data Modeling

Data modeling is a way to structure and organize data so it can be used easily by databases. Data modeling is the formalization and documentation of existing processes and events that occur during application software design and development. Data modeling techniques and tools capture and translate complex system designs into easily understood representations of the data flows and processes, creating a blueprint for construction and/or re-engineering.

2.2.12.1 Entity

The entity is a person, object, place, or event for which data is collected. for example, If you consider the information system for a business, entities would include not only customers but the customer's address and orders as well. The entity is represented by a rectangle and labeled with a singular noun.

2.2.12.2 Table

A table is a set of data elements (values) that is organized using a model of vertical columns and horizontal rows. A table has a specified number of columns but can have any number of rows. Each row is identified by the values appearing in a particular column subset which has been identified as a candidate key

2.2.12.3 Record

In a database, a record (sometimes called a row) is a group of fields within a table that are relevant to a specific entity. for example, in a table called customer contact information, a row would likely contain a field such as ID number, name, street address, city, telephone number, and so on.

2.2.12.5 Field

A space allocated for a particular item of information. A tax form, for example, contains several fields: one for your name, one for your social security number, one for your income, and so on, in database systems, fields are the smallest units of information you can access.

2.2.12.6 Attribute

An Attribute is a characteristic or property of an entity. The term is used in this text exactly as it is used in everyday English. For entity person, for example, the list of attributes might include such things as eye color and height. For Premiere Products, the attributes of interest for the entity customer are such things as customer name street city, and so on. An attribute is also called a Field or Column in many database systems.

2.2.12.7 A PRIMARY KEY

A Primary Key is a column (or a combination of columns) with a unique value for each row. Each primary key value must be unique within the table. The purpose is to bind data together, across tables, without repeating all of the data in every table. The primary key of a relational table uniquely identifies each record in the table. It can either be a normal attribute that is guaranteed to be unique (such as Social Security Number in a table with no more than one record per person) or it can be generated by the DBMS (such as a globally unique identifier, or GUID, in Microsoft SQL Server). Primary keys may consist of a single attribute or multiple attributes in combination.

2.2.12.8 Foreign key

A foreign key is a field in a relational table that matches the primary key column of another table. The foreign key can be used to cross-reference tables. is a key to a table inherited by another table, it can also be called a secondary key? Foreign keys are used to identify the relationship between tables. It is characterized by # in front.

2.2.12.9 Structured query language (SQL)

SQL is a programming language designed for managing data in relational database management systems (RDBMS).is a computer language aimed to store, manipulate, and query data stored in relational databases

2.2.13 WEB-BASED APPLICATION

Web-based application as a software package that can be accessed through the web browser over a network which can be local or internet. The software and database reside on a central server rather than being installed on the desktop system and are accessed over a network. Web-based applications are the 17 ultimate way to take advantage of today's technology in enhancing your organizations' productivity & efficiency. The web-based application allows you to access your business information from anywhere in the world at any time. It also facilitates you to save time & money and improve the interactivity with your customers and partners. It allows

the administrative staff of any organization to work from any location and sales staff to access information remotely 24/7. With a computer connected to the Internet, a web browser, and the right user name and password you can access the systems from any location. Web based applications are easy to use and can be implemented without interrupting your existing work process. The web-based software enables you to interact with the application and data in a fluid and highly responsive manner.

2.3 RELATED LITERATURE

2.3.1 Crowdfunding: A Literature Review and Research Directions.

Crowdfunding has become important in recent years. However, a comprehensive overview of the economic literature on this topic does not exist. This paper provides an overview of the crowdfunding literature, classified by the main actors (capital seekers, capital providers, and intermediaries), and presents important research questions for future research.

(Moritz, Alexandra & Block, Joer, 2014).

2.3.2 Crowdfunding: Dynamics of Success Factors and Overfunding

The factors determining the success of crowdfunding projects is one of the central issues for crowdfunding researchers. Quantitative approaches recognise the number of funds targeted as an important control variable. However, little is known about the impact of the funding goal on other factors that impact crowdfunding success. We hypothesise that the effect of crowdfunding success factors varies contingent on the funding goal level. A dataset of 338 crowdfunding projects from the largest German crowdfunding platform StartNext in the years 2015 to 2016 is analysed by conducting regression analyses controlling for varying funding goal sizes. We use the dependent variables success, the degree of success and the number of project supporters and control whether the effect of independent variables such as comments, updates and social media depend on different funding goals. Our study indicates that the impact of the investigated success factors, in fact, strongly depends on the funding goal levels of crowdfunding projects. By grouping projects into clusters of varying funding goals, we find that the impact of individual success factors changes and that the funding goal plays a moderating role for factors impacting project success. Implications for Central European audience: Many crowdfunding studies focus on the most popular US-based platforms like Kickstarter or Indiegogo. We examined projects on the largest German reward-based crowdfunding platform StartNext. These results help both researchers and future entrepreneurs in Europe to better understand supporter behavior. We suggest that future entrepreneurs should be aware that factors influencing the success of a crowdfunding project strongly depend on the set funding goal, which should be adequately considered in future crowdfunding research.

(Pinkow, 2021)

2.3.3. Crowdfunding for Responsible Entrepreneurship

This chapter introduces the key ideas and mechanisms of crowdfunding. On this basis, it highlights how crowdfunding can serve financing and marketing responsible entrepreneurship, paying particular attention to success factors responsible entrepreneurs should consider when conducting a crowdfunding campaign. For illustration, the case of fairafric, a fair-trade and organic chocolate producer that successfully made use of crowdfunding multiple times, is introduced. Building on this case and the empirical literature at the intersection between crowdfunding and responsible entrepreneurship, propositions are formulated. These highlight the growing importance of crowdfunding for responsible entrepreneurs, the increasing professionalization of crowdfunding as well as obstacles for the future development of the phenomenon.

(Tenner Isabell, 2020)

2.4 Research gaps

The research has identified that the previous researchers have created only platforms relating to the environment they live in and tailor them for the specific issues their community are likely to face, this leaves Rwanda behind, where these platforms have any payment options which is mostly used in Rwanda including Mobile Money.

The critical issues that the community of Rwanda faces is different from those from overseas according to the demographics, that is why we needed to tailor a crowdfunding platform to our people of Rwanda especially the young generation who are struggling with employment issues.

CHAPTER THREE: METHODOLOGY AND SYSTEM ANALYSIS

3.1 Introduction

This chapter addresses total system design, which can be defined as "the systematic activity necessary, beginning with the identification of the user need, Methodology used in data collection and tools used in Software development Process.

3.2 System Methodology

The proposed research method that would be adopted is as follows;

Requirement Assessment: A thorough assessment of the currently existing system will be carried out and the requirements of the new system will be clearly defined by interviewing some students' entrepreneurs and business experts.

Application Program: At this stage, the design workflow will be converted to code and debugged.

Testing and Development: The completed application will be tested and deployed on a remote web host, ready for use.

3.3 Information gathering techniques

3.3.1 Interview: An interview is essentially a structured conversation where one participant asks questions, and the other provides answers. In common parlance, the word "interview" refers to a one-on-one conversation between an interviewer and an interviewee.

3.3.2 Documentation: the researcher has conducted a lot of information in libraries, online documents magazines, newspapers, journals, and websites.

3.4 Description of an existing system

3.4.1 The Working Principle

People from different areas across the world are free to create and join existing platforms online that are hosted overseas and they are free to create and join their platforms and create different crowdfunding campaigns and wait for approval, and during the time to cash out, they can also wait for days for their transaction to appear.

3.4.2 The Characteristics of Current System

- Has expensive charges
- Doesn't support Rwanda Francs Currency
- Doesn't support Popular Rwandan Payment Options
- Does not respond or address Rwandan community issues

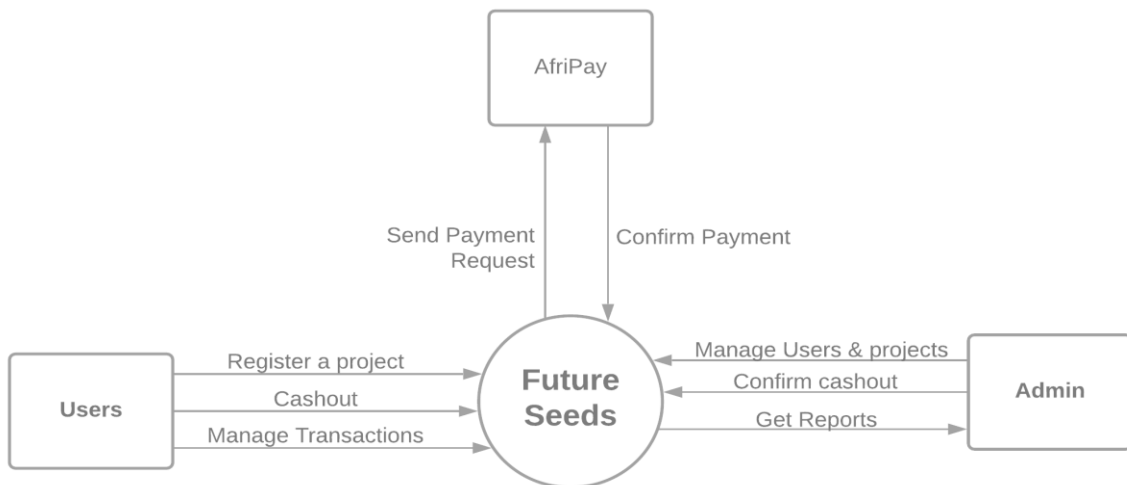## 3.5 Illustration of DFD and Use Case Diagram

3.5.1 Context diagram
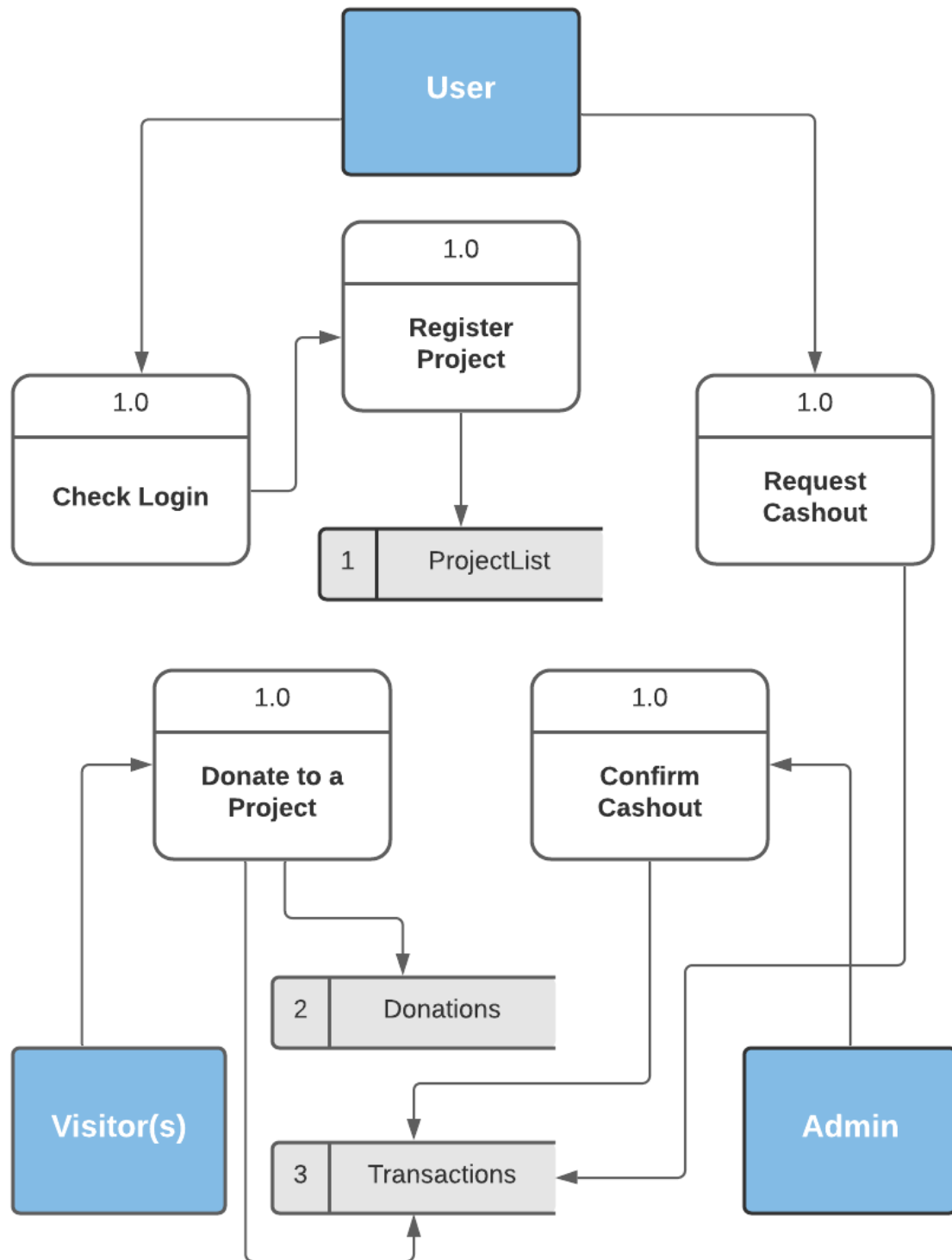

Figure 1: Context Diagram

3.5.2 Level 1 DFD

Figure 2: Data Flow Diagram Level 1

3.5.3 Level 2 DFD
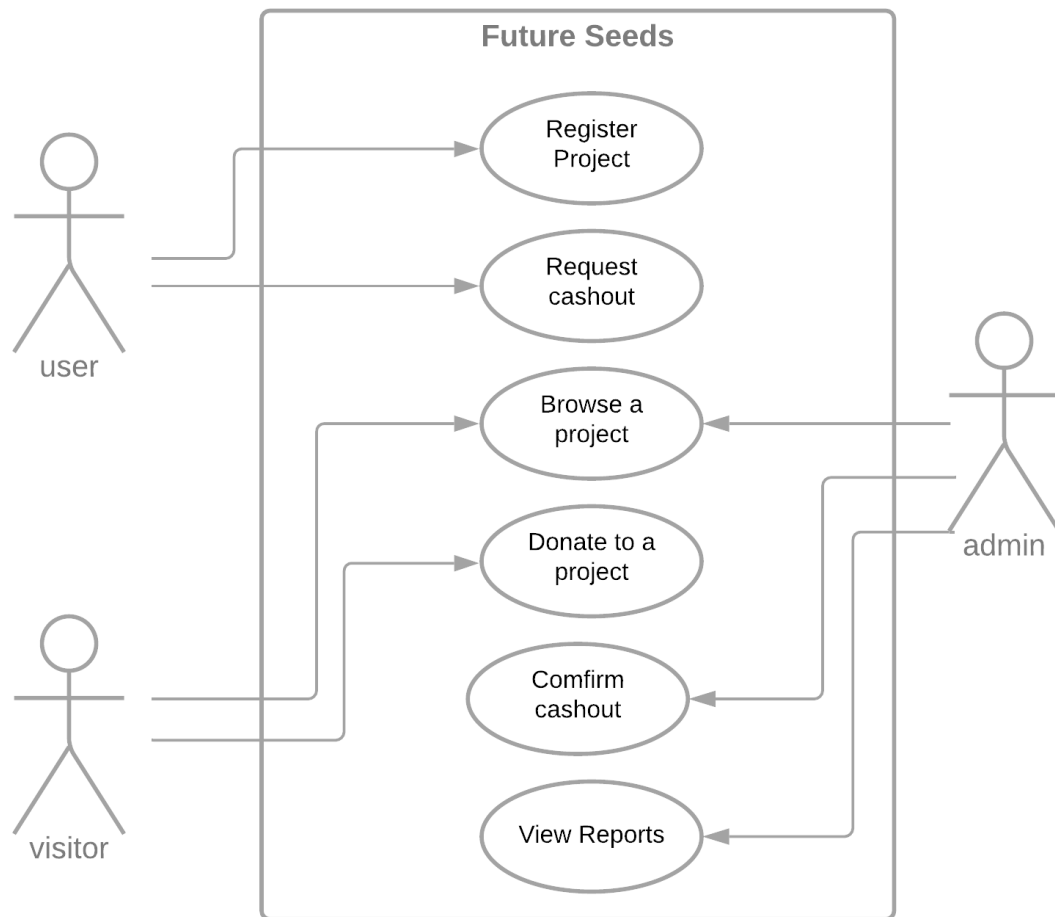## 3.6 Use case Diagram

Figure 3: Use-case Diagram

3.7 Description of Proposed System

- Web-Based Application
- High Availability
- High level of accessibility
- Data Security
- Cross-platform Payments

4.1 Introduction

In this chapter, we will be defining elements of a **system** like Entity-relationship Diagram, Database Schema, Data Dictionary and their interfaces and data for FutureSeeds **system**.

4.2 ERD (Entity Relationship Diagram)

4.2.1 Description of ERD

An Entity-Relationship (ER) Diagram is a type of flowchart that illustrates how "entities" such as people, objects, or concepts relate to each other within a system. ER Diagrams are most often used to design or debug relational databases in the fields of software engineering, business information systems, education, and research. Also known as ERDs or ER Models, they use a defined set of symbols such as rectangles, diamonds, ovals, and connecting lines to depict the interconnectedness of entities, relationships, and their attributes. They mirror grammatical structure, with entities as nouns and relationships as verbs.
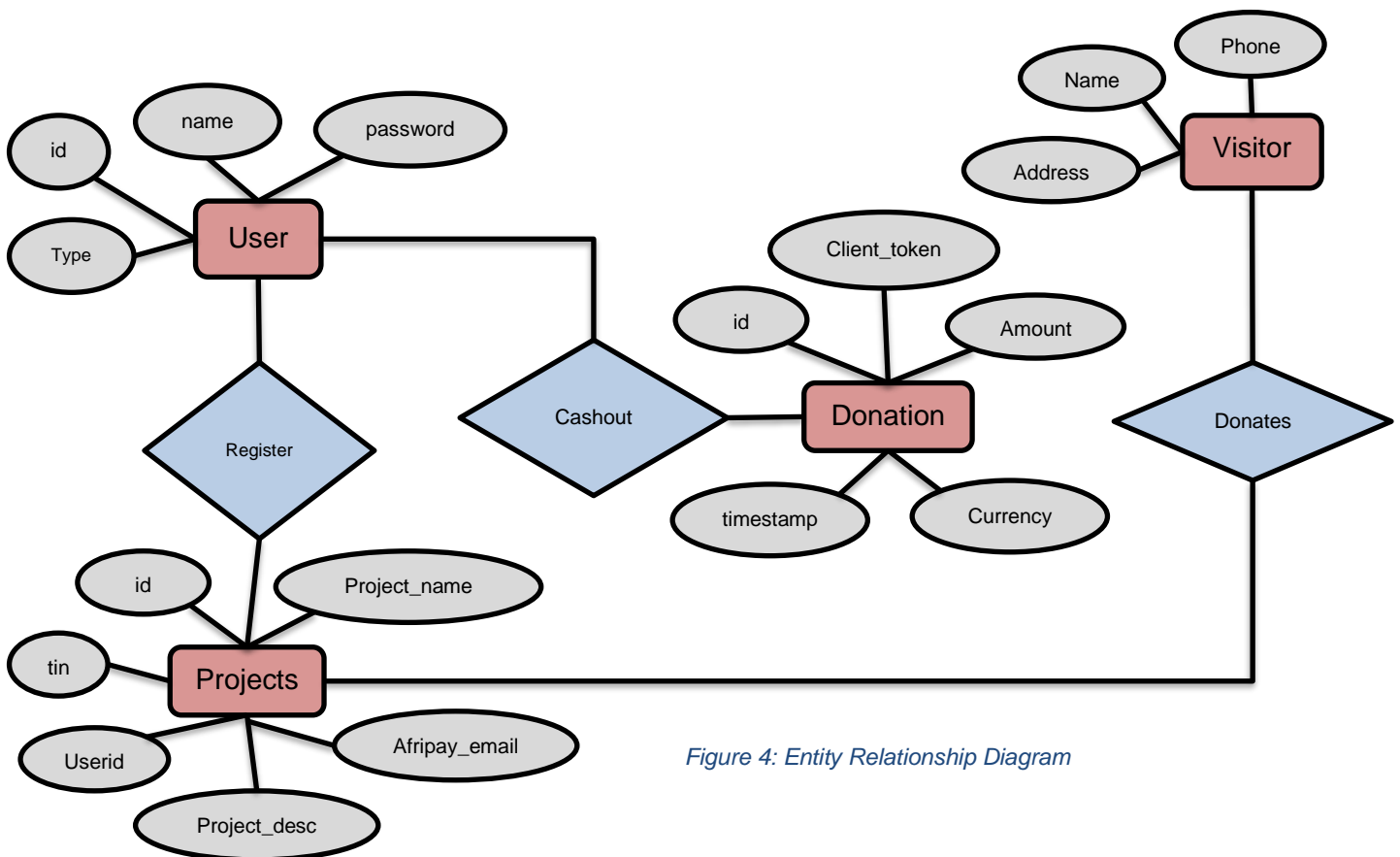
4.3 Entity Relationship Diagram

Figure 4: Entity Relationship Diagram

4.4 Normalization of Tables

Normalization is a database design technique that reduces data redundancy and eliminates undesirable characteristics like Insertion, Update, and Deletion Anomalies.

4.4.1 Un-normalized Tables

Table Name	Attributes
UsersInformation	UserId Username Usertype Password Status Names registrationNumber Institution Email ProjectName ProjectCategory projectTIN projectDescription pPhoto cashOut RegDate
Donations	Id UserID Status Amount Currency Client_Token Fname Lname Address City State Phone Email Transaction_Ref Payment_Method

Table 1: Un-normalized Tables

4.4.2 Normalized Tables

Table Name	Attributes
User	UserId Username Usertype Password Status
Identif	Userif Names registrationNumber Institution Email
ProjectInfo	Pname Pcategory Ptin Pdescription Pphoto Plink cashout details regdate payment_Method p_desc details
Donations	Id Userid Status Amount Currency Client_token Flame Lname Address City Phone Email
transaction	Userid Pnames Pcategory Ptin Pdesc Plink Photo Pwhy Cash_out Details Regdate

Table 2: Normalized Tables

4.5 Data Dictionary

Table Name	Attributes	Data type	lenght	Extra
Users	userid	int	30	PRIMARY
	auth	varchar	30	UNIQUE
	usertype	varchar	50	
	password	varchar	50	
	status	varchar	50	
Identif	userid	int	30	FOREIGN
	names	varchar	30	
	regno	varchar	50	UNIQUE
	Institution	varchar	50	
	status	varchar	50	
donations	id	int	30	PRIMARY
	userid	varchar	30	UNIQUE
	status	varchar	50	
	amount	varchar	50	
	currency	varchar	50	
	Client_token	varchar	80	UNIQUE
	fname	varchar	50	
	lname	varchar	50	
	address	varchar	50	
	city	varchar	50	
	sate	varchar	50	
	phone	varchar	50	UNIQUE
	email	varchar	50	
projectinfo	id	int	30	PRIMARY
	userid	varchar	30	UNIQUE
	status	varchar	50	
	amount	varchar	50	
	currency	varchar	50	
	Client_token	varchar	80	UNIQUE
	fname	varchar	50	
	lname	varchar	50	

	address	varchar	50	
	city	varchar	50	
	sate	varchar	50	
	phone	varchar	50	UNIQUE
	email	varchar	50	
Transactions	id	int	30	PRIMARY
	Transaction_ref	varchar	30	UNIQUE
	amount	varchar	50	
	currency	varchar	50	
	Payment_method	varchar	50	
	Client_token	varchar	80	UNIQUE

able 3: Data Dictionary

4.6 Architectural Design of the Proposed System

Computer Browser   Web/Server   Payment Gateway
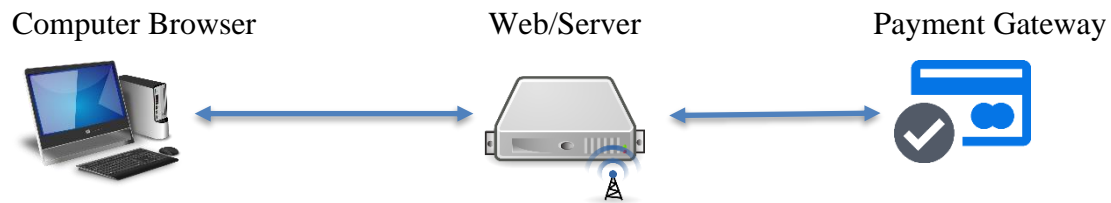
Figure 5: Architectural Design of the proposed system

CHAPTER FIVE: IMPLEMENTATION AND CODING

5.1 Implementation

5.1.1 Introduction

Systems implementation is the process of defining how the information system should be built ensuring that the information system is operational and used, ensuring that the information system meets the quality standard

5.2 Description of tools used

5.2.1 Front-end Builders

To built the front end, I have used the HyperText Mark-up Language, and Cascading Style Sheet, in cases I have imported the CSS Library from TailWind CSS, and Added JavaScript to validate some inputs and the tools that I used to develop include, Visual Studio Code.
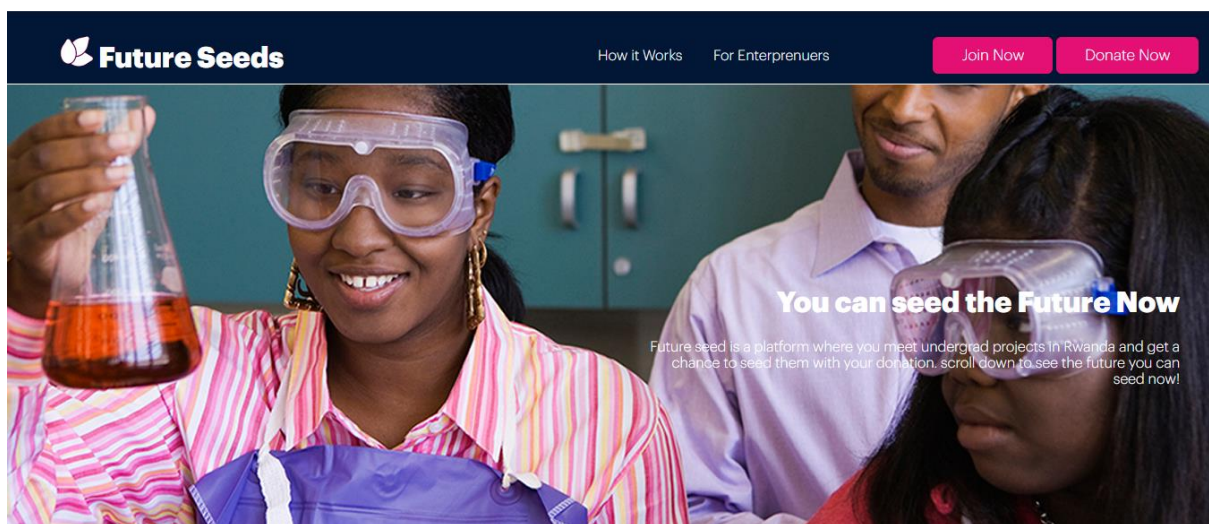
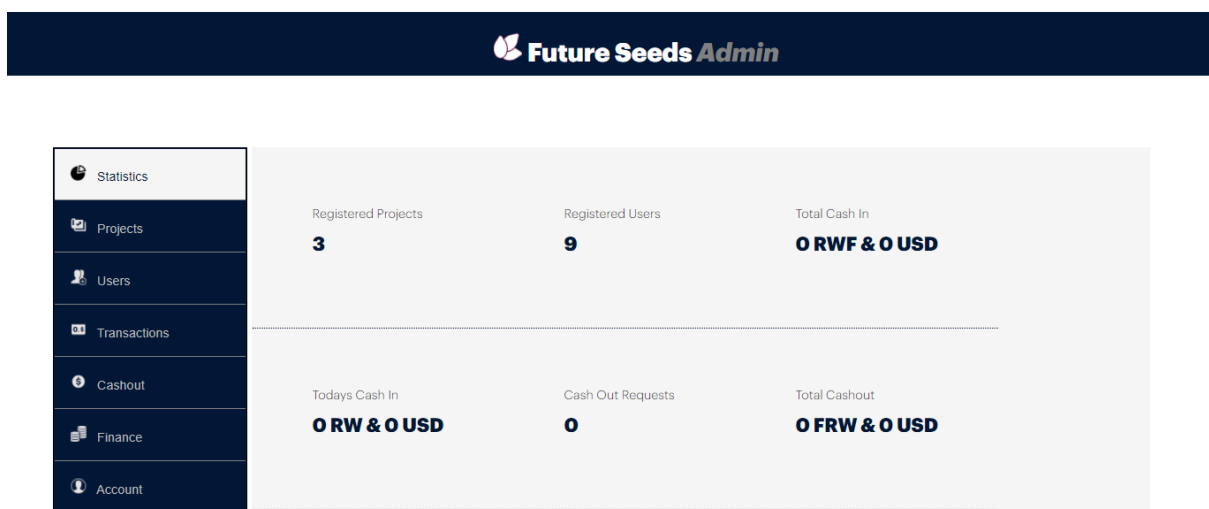## 5.3 Screenshots of the Proposed System

Figure 6: Landing Page

Figure 7: Admin Dashboard

Figure 8: User Dashboard

Figure 9: Donation Page

5.4 System Testing

5.4.1 Introduction

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test Software testing also provides an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation.

Software testing can also be stated as the process of validating and verifying that a software program/application/product: Meets the business and technical requirements that guided its design and development, works as expected, and can be implemented with the same characteristics.

5.4.2 Objectives of the testing

- The testing phase involves the testing of the developed system using various kinds of data. Elaborated testing of the data is prepared and a system is tested using the test data. While testing, errors are noted and corrections remade, the corrections are also noted for future use.
- A primary objective of testing is to detect software failures so that defects may be discovered and corrected. Testing cannot establish that a product functions properly under all conditions but can only establish that it does not function properly under specific conditions.

- Testing often includes an examination of code as well as execution of that code in various environments and conditions as well as examining the aspects of code: does it do what it is supposed to do and do what it needs to do.

- Testing is vital to the success of any system. Testing is done at different stages within the phase. System testing makes a logical assumption that all phases are correct; the goals will be achieved successfully.

- The testing method helps to provide an objective, independent view of the software to allow the organization to appreciate and understand the risks of software implementation.

5.4.3 Testing plan

5.4.4 Unit Testing

Is the process of testing some units of the system according to the user's specifications. Unit testing, also known as component testing refers to tests that verify the functionality of a specific section of code, usually at the function level. In an object-oriented environment, this is usually at the class level, and the minimal unit tests include the constructors and destructors. This type of test is usually written by developers as they work on code.

5.5.5 Validation Testing

Validation testing is the process of testing how fields or attributes in some of the tables are valid. And this guides users to specify and they are in the right way to interact with the system. Validation tests are done after a set of functional sub-systems have been tested and integrated. With this test, the following are particularly checked: general functions, hardware/software interfaces, real-time functioning, performance, use, and distribution of resources. A validation test aims to make sure that the software implemented in the hardware meets the functional specifications.

Validation test was made in different modules including registration where the tester inserts the wrong information intentionally in the field and sees what happens. The system is validated to the extent that unauthorized like system admin has the access to the system hence able to login to the system.

If the real person login into the system he/she will have received different privileges. An example of a validated interface is as follows.

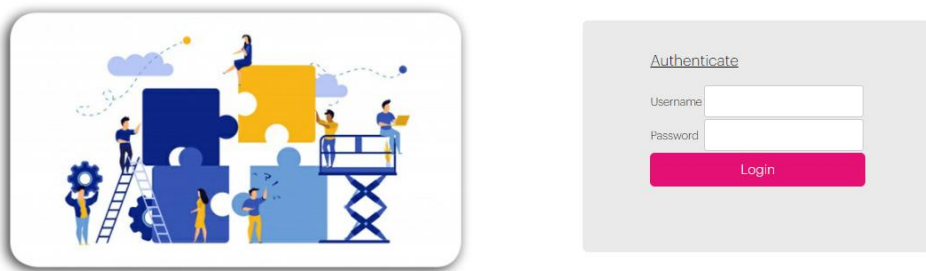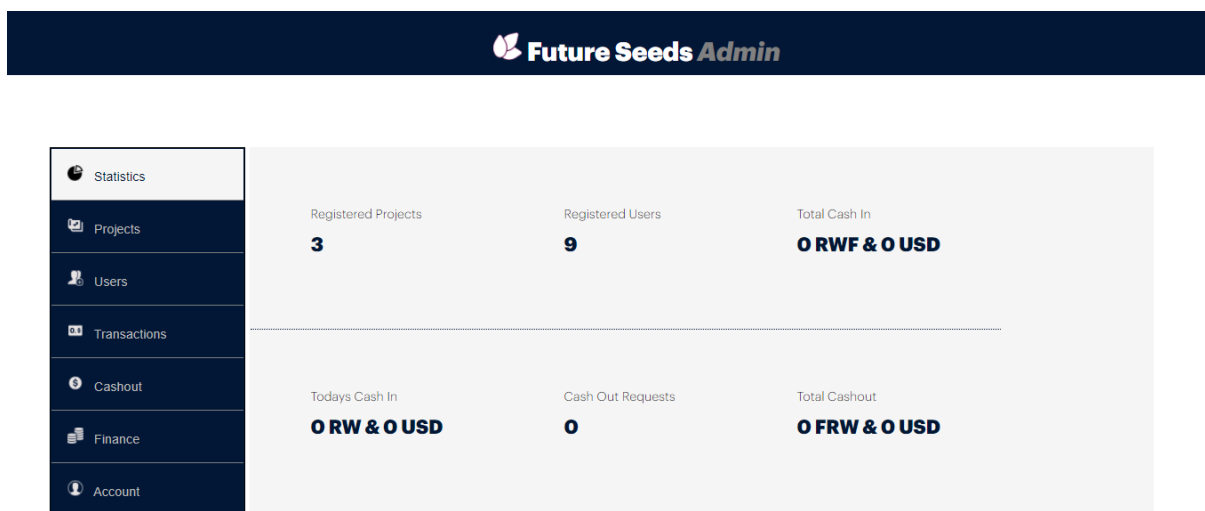**Validation Testing for Login**

Login for Admin

Figure 10: Login Page for Admin

After a successful Login, the Admin sees the following dashboard which allows him/her to view information related to the system like statistics, projects, users, transactions, cashout requests, and account information.
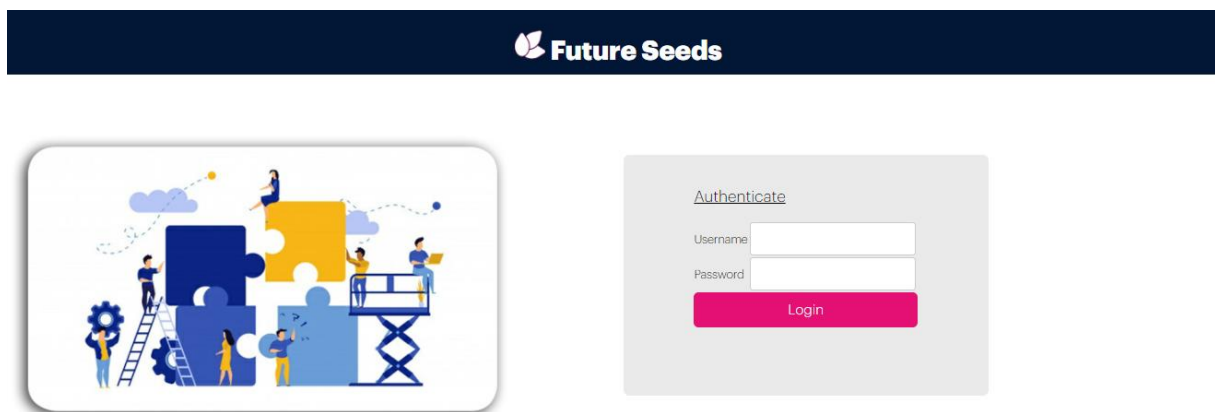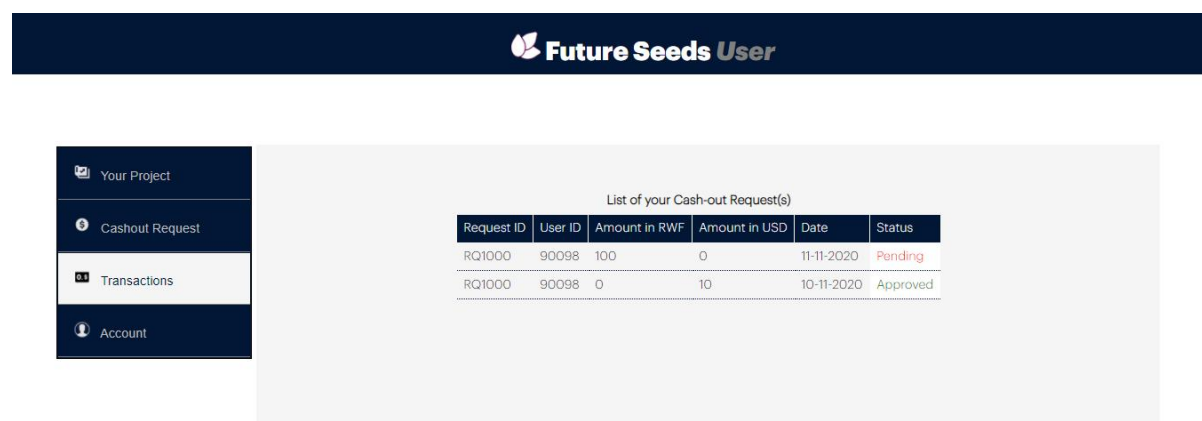

Login for user

Figure 11: Login Page for the User

After a successful login from the user, he/she also gets to the user dashboard where he/she can see his project information, cashout requests, and donated money, transactions, and account information.

5.2.6 Integration Testing

Integration testing is any type of software testing that seeks to verify the interfaces between components against a software design. Software components may be integrated in an iterative way or all together. Normally the former is considered a better practice since it allows interface issues to be localized more quickly and fixed.

Integration testing works to expose defects in the interfaces and interaction between integrated components (modules). Progressively larger groups of tested software components corresponding to elements of the architectural design are integrated and tested until the software works as a system.

5.2.7 Functional and system testing

Functional testing refers to activities that verify a specific action or function of the code. These are usually found in the code requirements documentation, although some development methodologies work from use cases or user stories. Functional tests tend to answer the question of "can the user do this" or "does this particular feature work." System testing tests a completely integrated system to verify that it meets its requirements.

Software testing can be stated as the process of validating and verifying that a software program/ application/ product: Meets the requirements that guided its design and development, Works as expected, Can be implemented with the same characteristics, Satisfies the needs of customers. Traditionally most of the test effort occurs after the requirements have been defined and the coding process has been completed.

Figure 12: User Registration Form

5.2.8 Acceptance testing

Done by User; Acceptance testing performed by the customer, often in their lab environment on their hardware, is known as user acceptance testing (UAT). Acceptance testing may be performed as part of the hand-off process between any two phases of development. The researcher is confident that the proposed system will be accepted depending on the information gathered during the whole process.

Samples of Report the system has

Figure 13: Statistical Report

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

The main objective of this project was to create a system where different social startups will crowd will be able to donate to startups that have been able to appear on our platform, The main objective was completed and implemented.

6.2 Recommendations

To the Institution

I recommend my Institution revise well the academic curriculum of information technology students and tailor it to match with the latest technology available to the market, this will make the student's skill set match with the market needs and promote problem-solving discipline with the use and exploration of available latest technologies.

To future researchers

I recommend futures researchers in the information technology sector to keep exploring the gaps left by researchers from other continents and country that affects our country development, I also urge them to focus on the solutions that are tailored to empower and harness the power of people especially young generations and create solutions that stand out in response.

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Appendix

APPENDIX 1: WORKPLAN

TASKS TO BE PERFORMED	DATES TO BE COMPLETED
1. Preparation of Project Proposal and Submission.	1Week December
2. Proposal Approval	One day December 2019
5. Interviewing peoples	4 Weeks Jan- Feb 2020
6. Data coding, and entry into computer	5 Months 1Feb-July
7. Data analysis	1 month
8. Report Writing (First Draft)	1 month
10. Report Writing (Final draft)	2 Month from may up to Dec
11. Submission of Final Report	1 week from March 1-5, 2021

Table 4: Appendix 1

APPENDIX 2. PROJECT BUDGET

Nº	ITEMS	AMOUNT IN RWANDAN FRANCS
1	Communication	15,000Frws
2	Internet	286,000 Frw
3	Transportation	75,000 Frw
4	Equipment	25,000 Frw
	TOTAL	**401,000 Frw**

Table 5: Appendix 2