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BY

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PROJECT TITLE
COUNTY BURSARY AWARDING AND DISBURSEMENT SYSTEM

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Declaration

I, Abednego Ng'ang'a, Registration Number C025-01-1157/2016 declare that everything presented in this document is my own original work and the contents of this document is original and has never been presented in any other institution for the award of degree in Information Technology.

STUDENT CONFIRMATION

SIGNATURE..... DATE 17th APRIL 2020

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SUPERVISOR CONFIRMATION

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Abstract

The Bursary kitty is one of the greatest achievements of both the National and County governments as far as aiding the general public within the education sector is concerned. This project is going to concentrate entirely on County Government Bursary Funds which are issued by county governors.

The basic process involves residents within the county applying for bursaries through their chiefs' offices, then all the applications being gathered to the County headquarters where the credibility of the applicants is asserted. There then follows a process of disbursement where the total funds allocated are equally disbursed within all the wards in that county. Eligible applicants are then awarded with cheques which they present to their schools.

I happened to interact with the "***Elimu Fund***" division of the Nyeri County Government which has been entrusted to oversee this process. One problem however caught my attention; and that is the way in which the applicants' data and the disbursement processes were handled. There is no centralized system to handle all this data, perform all the necessary calculations or keep track of the application trends as time progresses.

The intent of this project is to come up with a centralized web based system which will not only handle the applicants' data and perform the necessary calculations but also use some machine learning techniques to automatically award or disqualify the eligibility status of an applicant.

This will involve coming up with a knowledge base for an eligible applicant and then using that information to determine whether an applicant should receive a bursary or not.

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CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Bursary funds have been hailed in Kenya as one of the most innovative creations of the government since the administration of the National Alliance Rainbow Coalition (NARC) – (2003 – 2007). This fund was created by the Constituencies Development Fund Act, 2003 with the main objective of addressing poverty at grassroots level by dedicating a minimum of 2.5% of the Government's ordinary revenue to grassroots development and the reduction of poverty. It has since created local consumer demand through various projects, funding other local needs including education, health and infrastructure (Constituency Development Fund, 2012).

The Government has been working hard to cultivate an image of transparency and inclusiveness for good governance in Kenya by implementing E-Governance services and hence creating better relations between citizens and those in power. ICT has been exploited in this relationship to help transform the accessibility, quality and cost-effectiveness of public services. Introduction of web-based Internet applications and other information technologies combined with processes that implement these technologies to enhance access to and delivery of Government information and services to the public, other agencies and other Government entities have been put in place in the recent past. For example; electronic filing systems, documents exchange systems, procurement (IFMIS), declaration and application systems, and other tools have now been introduced in various Government departments towards E-Governance. For instance, Ministry of Information, Finance, Tourism, Devolution among others have put up websites that contain information about the economy, culture, rules of business, tenders, draft bills, CDF projects and so much more which have had a direct impact on the citizens (Amollo, 2007). The current Government has put up e-service portals such as E-Citizen where citizens can easily apply for legal documents (Nyamboga, 2017)

Indicators show that the bursary kitty is helping provide services to communities that for many years did not benefit substantially from Government services. In particular, the poor in society have experienced serious problems accessing basic services in the past that are now made available through this kitty. Nevertheless, there are increasing concerns about the utilization of the bursary fund which suggest that the funds are not being optimized Given the importance of this program, an in-depth analysis of both constitutional, institutional, design and implementation factors that impact on the efficiency of the use of funds is necessary (Kimenyi, 2012).

Since devolution took its toll in Kenya (2010), County Governments were given the independency to control their own funds disbursed from the national government, thus making much more room for those needy students who could not benefit from the funds issued by the National Government, otherwise or popularly known as Constituency Development Funds (CDF). Even though the disbursement procedures followed in most counties eventually emerge successful, the efficiency of the methods used to achieve the results remains to be questionable. This dissertation is thus going to concentrate entirely on education bursaries within the County Governments, more specifically, the Nyeri County Government which only apply to high schools, both boarding and day schools, polytechnics, colleges and universities.

The bursary allocation process in most if not all cases is broken down into three main stages (Titus, 2011) as follows:

The first stage involves all the interested parties applying for bursaries and all the applications being gathered to the county headquarters. The eligibility of applicants is then determined through a process of public participation where the staff interact with the applicants to ascertain their financial capability of the applicants as well as other factors that are key to being awarded bursaries.

The second stage involves the staff members grouping the applicants according to their respective wards and sub-locations. Applicants are then categorized into: boarding schools, day Schools, polytechnics, colleges and universities where each category gets a different amount of money per applicant. The total funds allocated by the county are first divided equally within the wards present in the county, then equally within the sub-locations depending on the number of sub-locations present in a given ward. The money is then distributed to eligible applicants within that particular sub-location.

At this point it is inevitable to note some of the errors which come up. Wrong amounts emerge as a result of manual computation, a factor that contributes to the long delay between applications closure and disbursement of the funds. Time wastage tends to frustrate many as there is an exponential need for faster, accurate and timely information dissemination mechanisms (I-Hub Research, 2012) in delivering Government services to the people. Other errors generated from the overall process include but not limited to wrong entry of school names, which leads to lots of cheques being cancelled, and wrong capturing of student admission and registration numbers.

The third and final stage involves the disbursement of these funds to the schools of the awarded applicants.

1.2 Problem Statement

I found the approach used to oversee this process very faulty due to a couple of factors as listed below:

- There was no centralized system to store and manage the applicant's data, given that applicants submit their details through hard copy forms, and as such might be susceptible to loss. This is with keeping in mind the hierarchy through which this data is collected. That is; from sub-counties to the wards then to the sub-locations.
- Computations were done manually and this not only takes a lot of time to reconcile the allocation records but also generates lots of errors during generation of cheques and cover letters.

A lot of money was lost through channels such as multiple applications by one person and ghost applicants which were not captured during the computation process.

1.3 Purpose of the Study

The purpose of this study was to come up with an expert system which allowed willing applicants to apply for bursaries then award them automatically based on some machine learning techniques.

1.4 Objectives

1.4.1 Main objective

To develop a centralized web based system to allow bursary application, awarding of eligible applicants, processing and calculations of disbursements.

1.4.2 Specific objectives

1. To develop a system which would allow applicants submit their applications online.
2. To develop a system that would automatically award bursaries through matching applicants' data with required qualifications.
3. To generate total allocations per school, sub-location and ward for audit purposes.
4. To generate a report and graph analysis on the disbursements per every financial period.

1.5 Research Questions

1. Could a system be developed to allow users apply for bursaries online?
2. Could a system be developed to allow automatic awarding of bursaries?
3. Could a system be developed to show the allocations distribution?
4. Could a system be developed to generate reports on issued disbursements?

1.6 Scope

This system would be viable for use within the bounds of this country, specifically the county governments.

The system would be able to do the following

- Allow online application of bursaries
- Allow system administrators to set the amount allocated
- Allow staff members to views applicants who have been awarded and those who've not been awarded
- Allow administrators to set the application period
- Allow administrators to see the disbursements per every school, sub-location and ward

Future works included

- Integrating a messaging module to notify awarded applicants
- Extending the system to the national government

1.7 Assumptions

The only assumption made in the system is that applicants would provide data that is true, valid and authentic.

1.8 Limitations

The system would have two limitations:

1. It could only be used with county governments, and not the national governments.
2. Internet access would be very key for the system

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction to the Review

A local authority may, subject to such conditions as the government may prescribe, provide bursaries to assist persons and children of persons, ordinarily resident in its area, in their education and maintenance at any school or educational institution within or without its area (*LAWS OF KENYA The Local Government Act*, 2010).

This chapter will dive deep into the whole process of disbursing bursary funds, the current existing systems, and their limitations in comparison with the proposed system in this project.

2.1.1 Challenges encountered in current approaches

Challenges however arise from the way these bursaries are distributed. For instance; the funds assessed lack clear criteria for identifying beneficiaries, which would also ensure equity. For example, bursary beneficiaries are supposed to be from poor backgrounds, but the laws do not provide any criteria to identify what qualifies as a poor household (Kinuthia, 2018) .

Challenges are also encountered in the way information about bursaries is disseminated to the general public. For instance due to the exponential need for faster, accurate and timely information dissemination mechanisms (IHub Research, 2012), people and even governmental institutions tend to turn to the internet; mainly social media platforms such as Twitter, Facebook and personal blogs as a means of disseminating information and obtaining faster feedback (Chaux & Okune, 2016).

Internet/Data Subscriptions	***Sep-16***	***Jun-16***	***Quarterly Variation (%)***	***Sep-15***
Total Internet Subscriptions	**25,672,474**	**26,880,471**	**-4.5**	**21,628,271**
Mobile Data Subscriptions	25,536,400	26,758,789	-4.6	21,511,638
Terrestrial Wireless Data Subscriptions	15,835	13,449	17.7	13,221
Satellite Data Subscriptions	598	280	113.6	720
Fixed DSL Data Subscriptions	2,583	3,063	-15.7	2,500
Fixed Fibre Optic Data Subscriptions	33,269	27,571	20.7	100,192
Fixed Cable Modem Subscriptions	83,789	77,319	8.4	25
Estimated Internet Users[5]	**37,718,650**	**37,716,579**	**0.0**	**31,985,048**

Figure 2.1: Internet subscribers in Kenya

Most people with the need to apply for bursaries however, may not necessarily be on social media. This means that issues such as timely information dissemination on the applications, application deadline alerts and application status alerts may arise. This clearly outlines the dire need for a platform which will be entirely dedicated to inform and allow needy applicants to apply for bursaries, then vet and determine worthy applicants and then distribute these funds to the applicants.

2.1.2 Components of the bursary kitty

Studies on bursaries funds have indicated that although they comprise of an annual budgetary allocation equivalent to at least 2.5% of the Government ordinary revenue, which is a small share of the total budget in Kenya, this fund has been able to bring longer lasting impact on citizens (Oino, 2013). A maximum of 5% is allocated Bursary Funds Board for Administrative services; a minimum of 95% is allocated to constituencies based on the following formula; (a) 5% of the 95% is allocated to Emergency Reserve; (b) 75% of the balance is allocated equally amongst all the constituencies; (c) balance of 25% is allocated based on the Ward Poverty Index modeled by the Ministry of Devolution and Planning. Sectors funded by County Ward Development Funds include Education (around 55% of Bursary allocations), Health (6%) and Water (11%). These are the sectors that have felt a great impact since the initiation of the project (Issue, 2018). This statistics give room for this research to flourish.

2.1.3 Awarding Criteria

In his study Challenges in the disbursement of Constituency Bursary Fund to Public Secondary School students in Bobasi Constituency Kenya(Titus, 2011) notes that the Constituency Bursary Fund Committee (CBFC) in the various constituencies determines the beneficiaries of the fund by using the following criteria:

a) Family status of the recipient. A student with both parents deceased is ranked as an orphan, one parent deceased as partial orphan, unmarried mother /father as single parent and needy parents using social economic background.
b) Student academic performance with ranks of excellent, very good, good, fair and poor is used.

A.	**Family Status**		**Score**
1	Total orphans		20
2	Single parent without a source of income		18
3	Partial orphan (mother/father alive) without a source of income		16
4	Both parents alive – without a source of income		14
		Maximum	**20**
B.	**Affirmative action/ Special circumstances**		
1	Girls child		5
2	Boy child		4
3	Slums/pockets of poverty/marginalised		5
4	Special needs (Handicapped)		5
		Maximum	**15**
C.	**Discipline**		5
1	Excellent		4
2	V. Good		3
3	Good		2
4	Fair		1
5	Poor	**Maximum**	**5**

Figure 2.2: Award criteria for CDF bursary funds

However, the bursary given according to performance remains a challenge since the fee problem contributes to poor performance and indiscipline on absenteeism grounds. I concur with his study, noting that indicators such as poor performance should not be used as metrics in awarding funds to student; these constituencies neither ask for student records from schools nor maintain a database with of the students' history to be able to consistently make judgment of the students' academic capabilities.

As per the county government of Nyeri, the process involves applicants submitting their applications where these applicants have to be in high schools (boarding or day), polytechnics, colleges or universities. The county decides the amount to give for each of these categories. Applicants are then categorized according to their sub-counties, then wards and finally sub-locations. An applicant should only be awarded once. There is then a process of public participation where members of the staff go out to the sub-location headquarters and interact with the participants and assess their eligibility to receive bursary. There then follows a list of applicants who are to be awarded. The process of computations then begins where each applicant should be awarded according to their type of school. At this point some errors - such as some applicants being awarded more than they should receive - are noted and this is majorly due to the fact that these allocations are done manually during the public participation process and are thus heavily biased to factors such as politicians interfering, people having links with the staff members or top county officials, among other factors.

After the computations are completed, there then follows a process of disbursement where cheques are disbursed by the county government to the schools which the applicants belong to, acknowledging payments of fees to those particular applicants.

There are systems which have been made to try easing the process in which bursaries are managed but each has its own shortcomings in comparison to the proposed system.

2.2 Case Studies

2.2.1 Case Study 1: Focweb Bursary System

2.2.1.1 : About the system

Focweb Bursary Management Application is a web-based application developed by Focweb Technologies Ltd software Development Company in Kenya, with the main achievements of this system being:

1. Bursary manager: it manages the applicants' database, manages the applications, and monitors successful/unsuccessful applicants.
2. Sends notification to the successful applicants' schools and reminds guardians of the successful applicants about picking up their cheque.
3. Manages all CDF projects as per their vote heads. At any time, the MP can get a comprehensive report on all projects, their progress and spent funds.

2.2.1.2: Comparison to the proposed system

1. The system **does not** have an automated awarding functionality, which will be a key feature in the proposed system.
2. The system does not have the computation functionality which will also be a key feature in the proposed system.
3. The system does generate a yearly trend analysis which is a feature to be implemented in the proposed system

2.2.2 Case Study 2: E-bursary

2.2.2.1 : About the system

E-bursary is a web-based system that aggregates secondary school, undergraduate and postgraduate bursaries and scholarships into one platform. It allows organizations to post bursaries /scholarships online and allows them to receive applications through the same platform; it also provides them with smart tools that enable them to filter through thousands of applications based on their awarding criteria.

The platform also allows students to view bursaries/scholarships relevant to them based on their profile, save those that interest them and receive email notifications whenever a new bursary/scholarship matching their profile is posted.

2.2.2.2: Comparison to the proposed system

1. The system does not manage or process the applicants' data – one of the main functionalities in the proposed system; it only matches applicants to available bursary opportunities.
2. Beyond matching applicants to available bursary positions, the system does not follow up on awarding or disqualifying applicants, whereas one of the key features in the proposed system is automatic awarding of bursaries.
3. The system is general in that, it incorporates bursaries from all sorts of organizations while the proposed system will only concentrate on county government bursaries hence follow up and tracking of applicants will be easier.

2.2.3 Case Study 3: Kajiado Digital Bursary System

2.2.3.1: About the system

Kajiado digital bursary system is an online system owned by the Kajiado county government whose main achievement is the fact that the money awarded to applicants is electronically wired to their school bank accounts. The system however still has its own shortcomings.

2.2.3.2: Comparison to the existing system

1. The system does not incorporate the automatic awarding functionality which is one of the key features of the proposed system.
2. The system does generate a yearly trend analysis which is a feature to be implemented in the proposed system.

CHAPTER THREE: METHODOLOGY

3.1 Introduction to methodology

This chapter delves deeper into the aspects of research designs and data collection methods, as well as outlining the proposed methods for developing this system. The proposed design approach for this system will be the Spiral model software development lifecycle due to factors as explained hereafter.

3.2 Research Design

3.2.1 Background to the spiral methodology

The spiral model was initially proposed by Barry Boehm as a software development lifecycle model in 1988 (Boehm, 2000). It was created primarily to offer an alternative to the document- and code- driven development models, such as the waterfall model, which were being found to be far too prescriptive and unable to handle the inherent risk in software development (Boehm, 2000). It is a popular approach for software development, and has been found to be effective in many projects, such as the SLCSE project (Bajwa & Yvonne, 2014). Additionally, it has spawned a number of versions, such as the Win Win model (Boehm, Kwan, & Madachy, 1998), and the New Spiral Model (Pressman, n.d.).

The primary benefit of the spiral model is that its range of options accommodates the good features of existing software process models, while its risk-driven approach avoids many of their difficulties. In appropriate situations, the spiral model becomes equivalent to one of the existing process models. In other situations, it provides guidance on the best mix of existing approaches to a given project; for example, its application to the TRW-SPS provided a risk-driven mix of specifying, prototyping, and evolutionary development (ROGSON, 2013). The main advantage of the spiral model tends to be the fact that its approach enables the project term to address the highest risk at the lowest total cost (Shikha Maheshwari, Dinesh, & Jain, 2012)

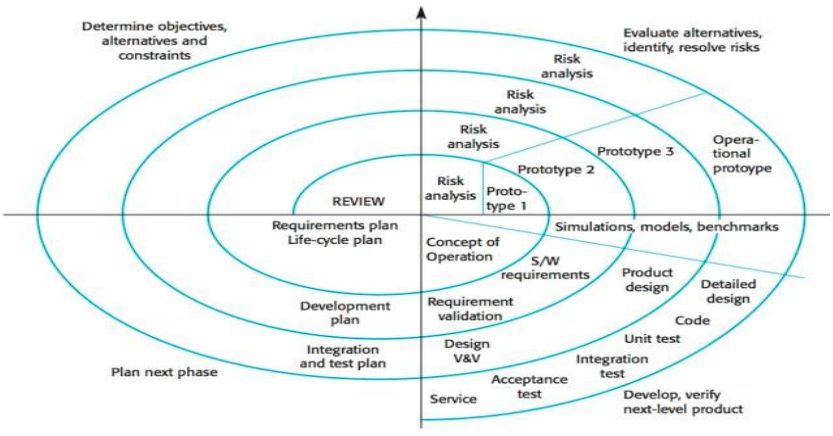


Figure 3.1: The spiral model

3.2.2 Advantages of the model in relation to the system

1. It focuses early attention on options involving the reuse of existing software.
2. It accommodates preparation for life-cycle evolution, growth, and changes of the software product.
3. It provides a mechanism for incorporating software quality objectives into software product development.
4. It focuses on eliminating errors and unattractive alternatives early.

3.2.3 Technicalities within the system

The proposed system incorporates some machine learning techniques to be able to know which applicants should or should not be awarded bursaries. It was built using the Django web framework which is based on the Python programming language version 3. The framework is well suited for future improvements as it gives room for dynamism.

The database proposed for this system was PostgreSQL which is a relational database with large affinity for queries.

3.3 Data collection methods

The proposed data collection methods for this system included interviews and questionnaires where a series of open-ended interviews were conducted with members of staff from the county government as well as closed questionnaires to collect data involving their views on such a system and what suggestions they would raise as far as this system is concerned.

3.4 Software and hardware requirements

3.4.1 Hardware requirements

This included a computer, and an Ethernet cable or Wi-Fi connectivity adapter

3.4.2 Software requirements

This included a python compatible Operating System, a python interpreter, a text editor and a browser.

3.5 Project Schedule

Table 3.1: Project schedule

Duration	Tasks
May - June	Presentation of the Proposal
June - July	Gathering of Requirements and necessary information
August - October	Development of the prototype
October	Presentation of work progress
October - December	Finish on the development
December	Presentation of the final work

CHAPTER FOUR: SYSTEM ANALYSIS AND DESIGN

4.1 Introduction

This chapter expounds on the technicalities of the system, as well as answering questions such as: who will use the system, what the system will do and where it will be used. It will also discuss in detail the system design techniques used to develop the system.

4.2 Requirements Analysis

4.2.1 Functional Requirements

These are similar to the objectives of the system and include:

- To develop a system which will allow applicants submit their applications online.
- To develop a system that will automatically award bursaries through matching applicants' data with required qualifications.
- To develop a system which will generate total disbursements per school, sub-location and ward for audit purposes.
- To generate a report on the disbursements per every financial period

4.2.2 Non -Functional Requirements

These include:

- User friendly interface
- Validation of users
- Accessibility
- Flexibility

4.3 System Analysis

4.3.1 System Input

a) For Applicants:
   - Personal details
   - Details of guardian
   - School Details
   - Locality Details

b) For System Administrators:
   - Allocation Details

c) For Staff Members:
   - Cheque Numbers for Generation of Cover letters

d) For School Entities:
   - Disciplinary ratings for applicants from respective schools

4.3.2 System Output

a) For applicants:
    - Success or failure message after application
b) For system Administrators:
    - List of all applications
    - List of awarded applicants
    - Allocation details for current financial year
    - All system users
c) For staff members:
    - List of all applicants
    - List of awarded applicants
    - Allocation details for current financial year
d) For School Entities:
    - List of all applicants from school
    - List of awarded applicants from school

4.4 Data Collection and Analysis

4.4.1 Data collection Procedures

The two procedures used to collect data for this system were observation and questionnaires.

OBSERVATION

This majorly entailed interacting with the Elimu Fund County officials to establish the routines and procedures used to disburse the money allocated by the county government for the bursary kitty.

Manual forms from needy students were all gathered to the county headquarters where all the data collected was entered in Excel Spreadsheets. There then follows a period of public participation where the officials go to location headquarters to interview and evaluate the needy students. They then come up with a list of applicants who deserve to be awarded the money. There then follows a tedious process of sorting and reconciling all beneficiaries from all the wards to the total amount allocated. The final stage is the processing of the cheques and the cover letters which are sent to all the schools with beneficiaries indicating the cheque number and all the beneficiaries of that particular cheque.

QUESTIONNAIRE

This entailed rolling out a questionnaire to the chairperson of the County Elimu Fund Department, and a separate Google forms survey to the other staff members who were more than happy to respond. A sample of the questionnaire is attached in the appendices.

4.4.2 Data Analysis

There are 8 Sub counties, 30 wards and 251 sub locations within Nyeri County which was the main area of study, all from which bursary applications are received. Statistics from the last financial year show that the county receives around 700 – 800 applications from each ward, of which around 350 – 500 applicants are awarded as illustrated below in terms of sub counties.

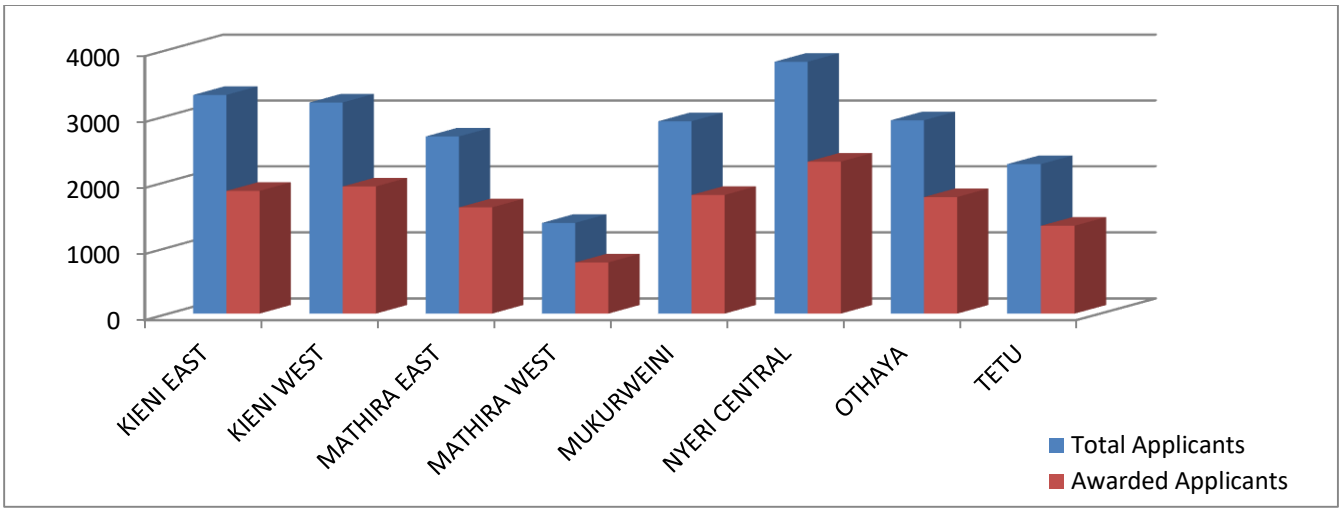


Figure 3.2: Distribution of applicants within the sub counties

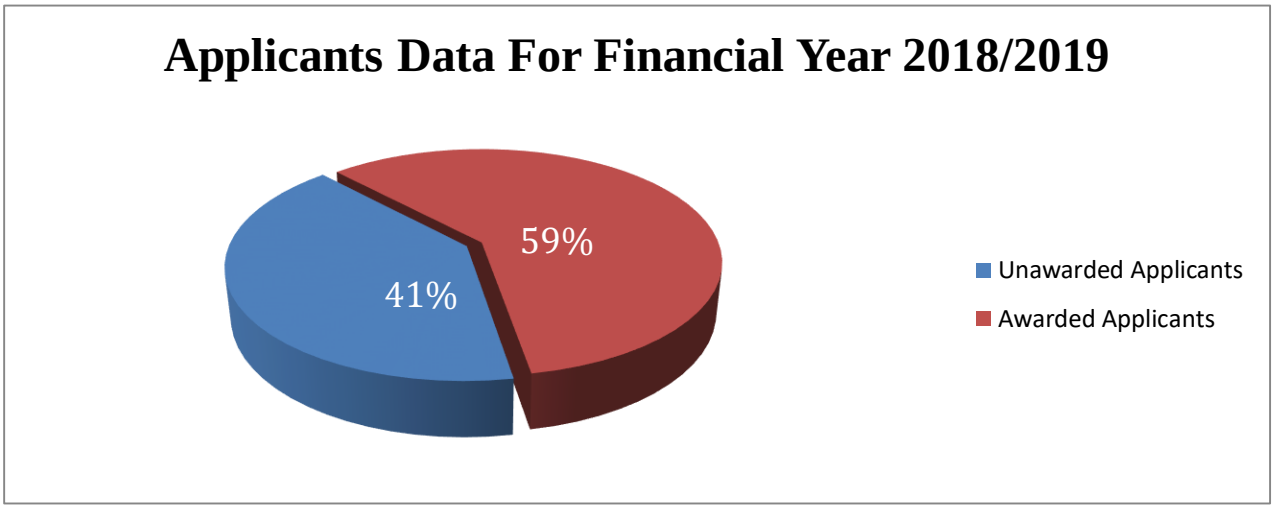
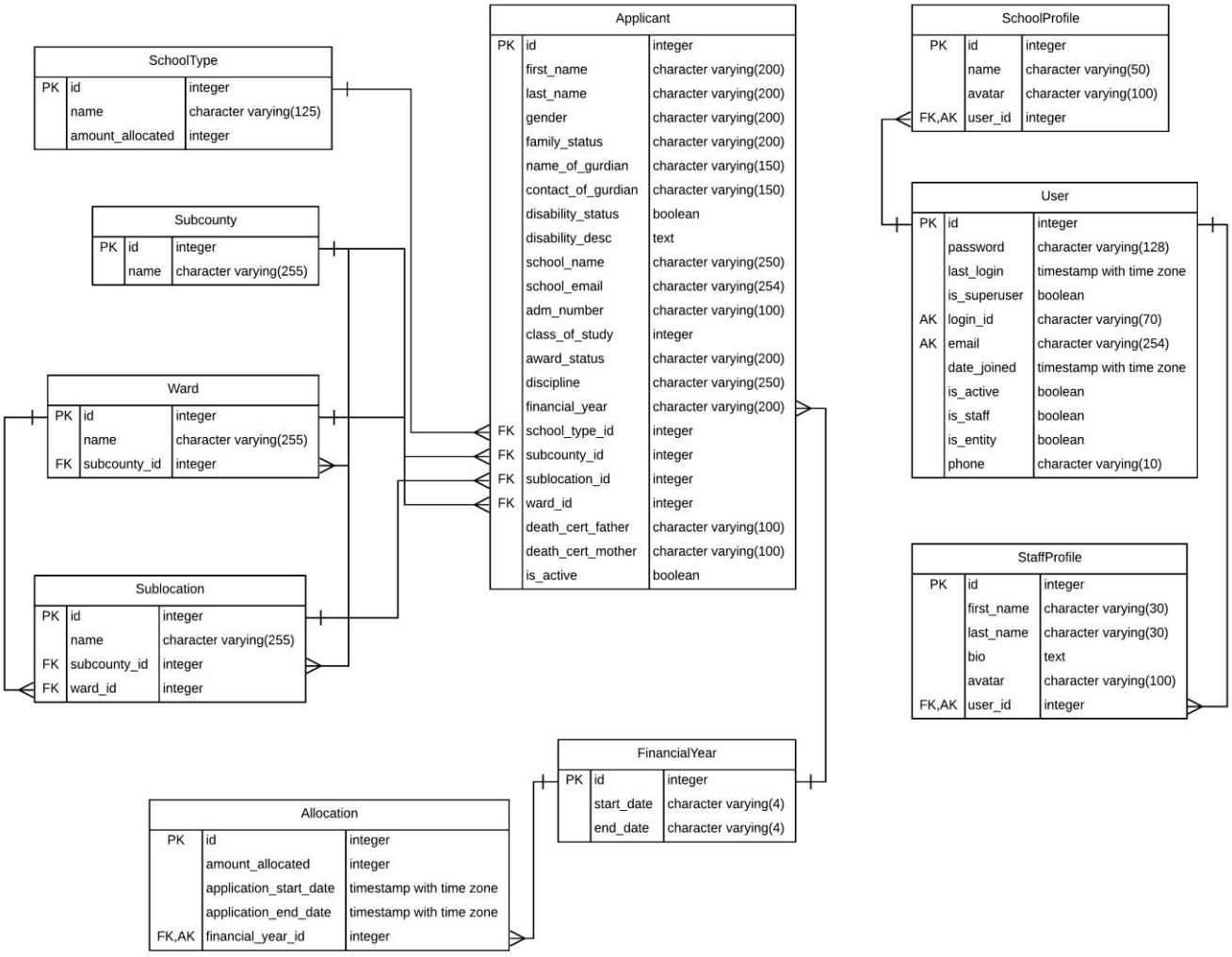


Figure 3.3: Awarded vs. unawarded applicants within the last financial year

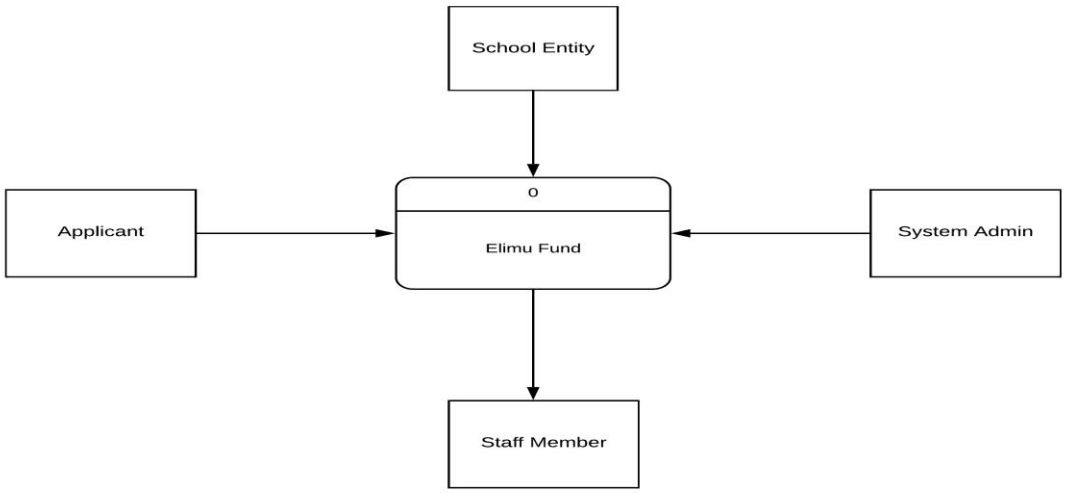
This is a clear indication that a period of at least 1 - 3 months are needed – which was confirmed by the chairperson – to process and reconcile the amounts allocated by the county government to those received by applicants. This shows a dire need for a system which would not only reduce the duration taken to oversee this process, but also eliminate the errors generated by handling the reconciliations manually.

4.5 System Design

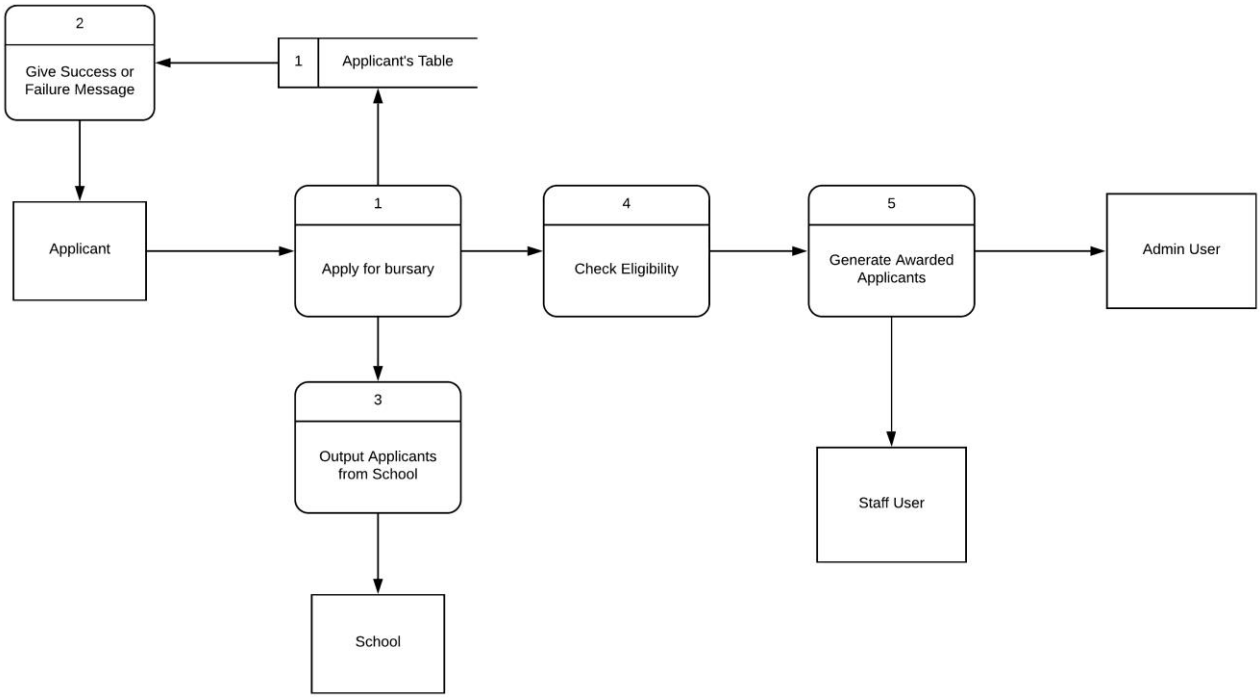
4.5.1 Entity Relation Diagram



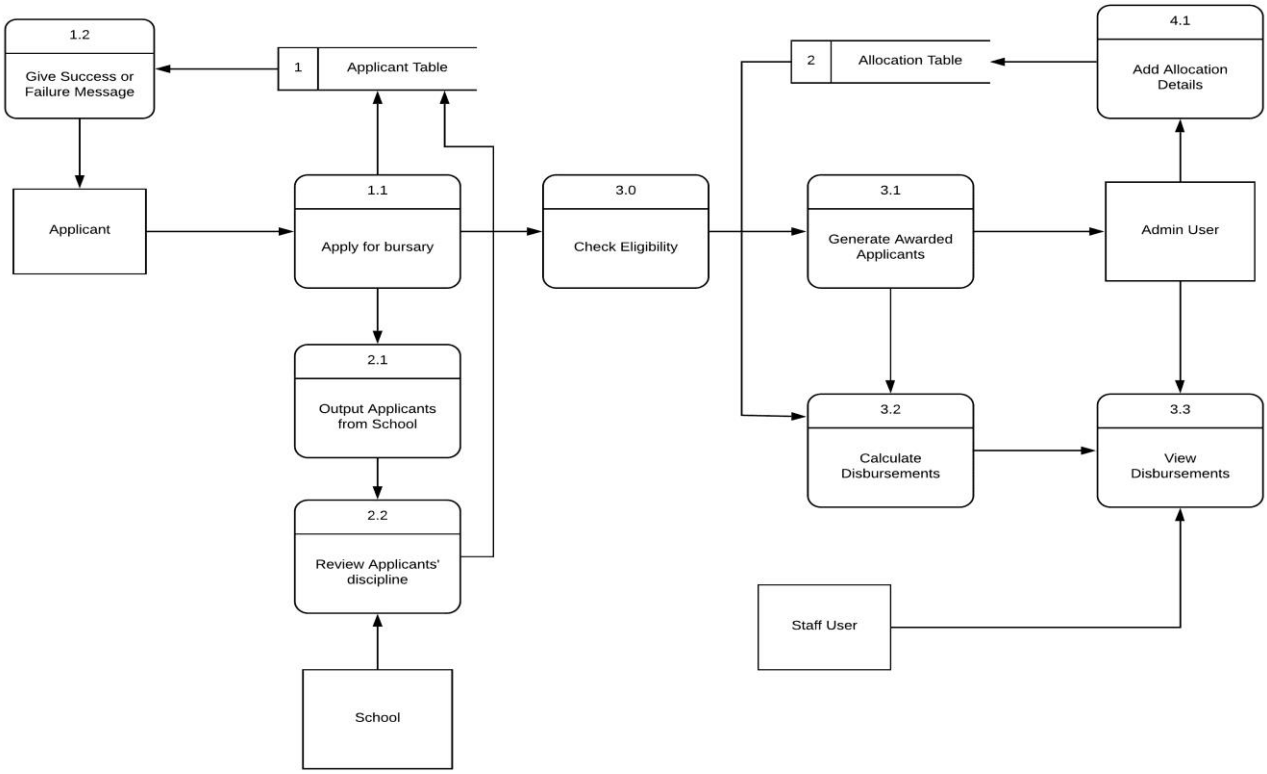
4.5.2 DFD Level 0 (Context Diagram)



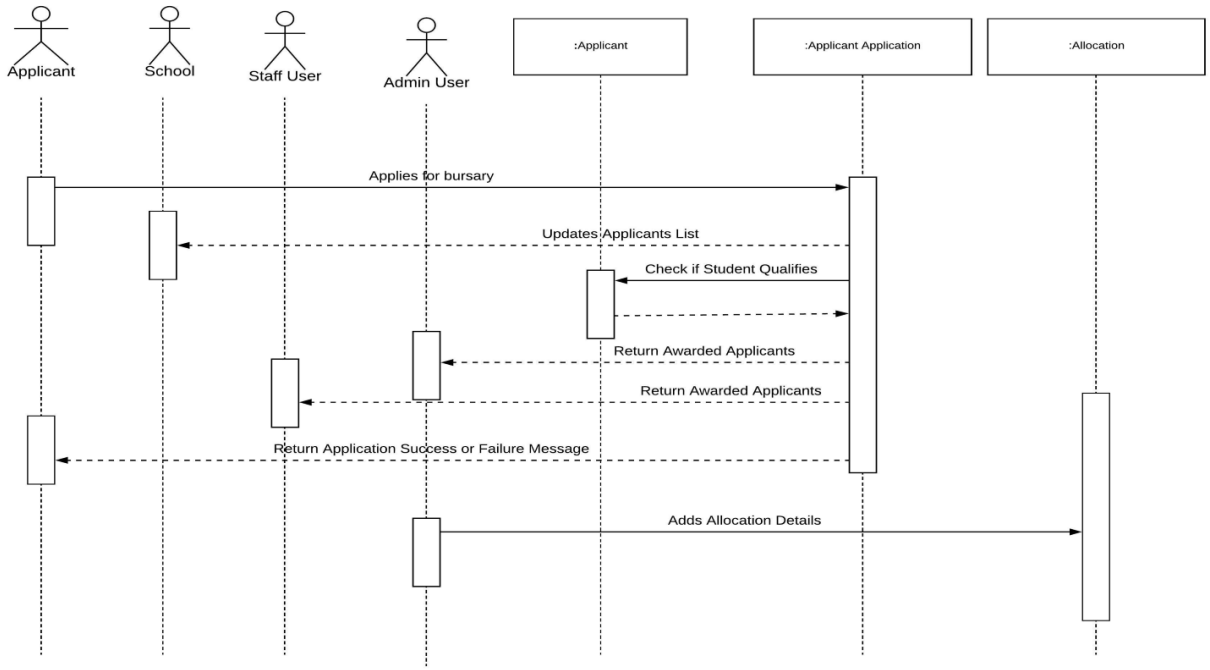
4.5.3 Level 1 DFD



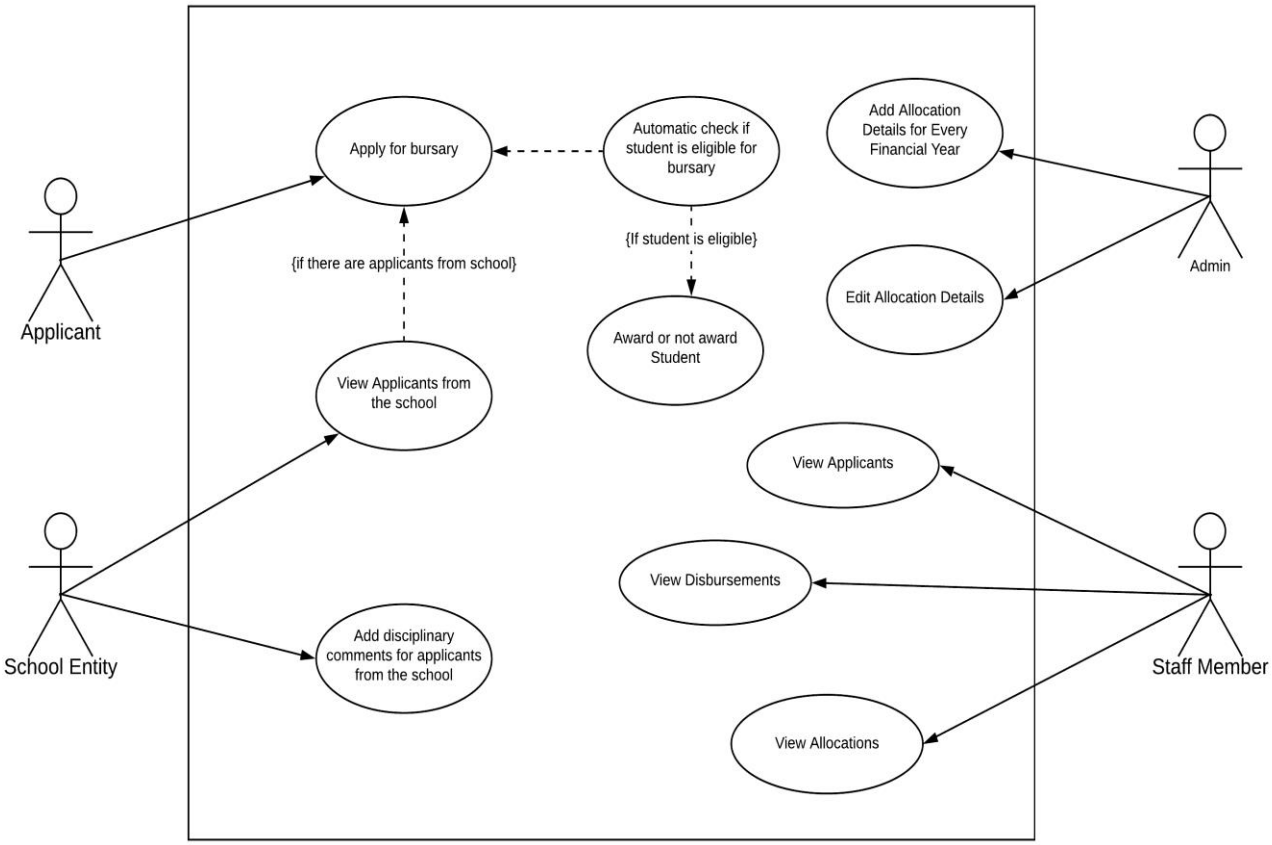
4.5.4 Level 2 DFD



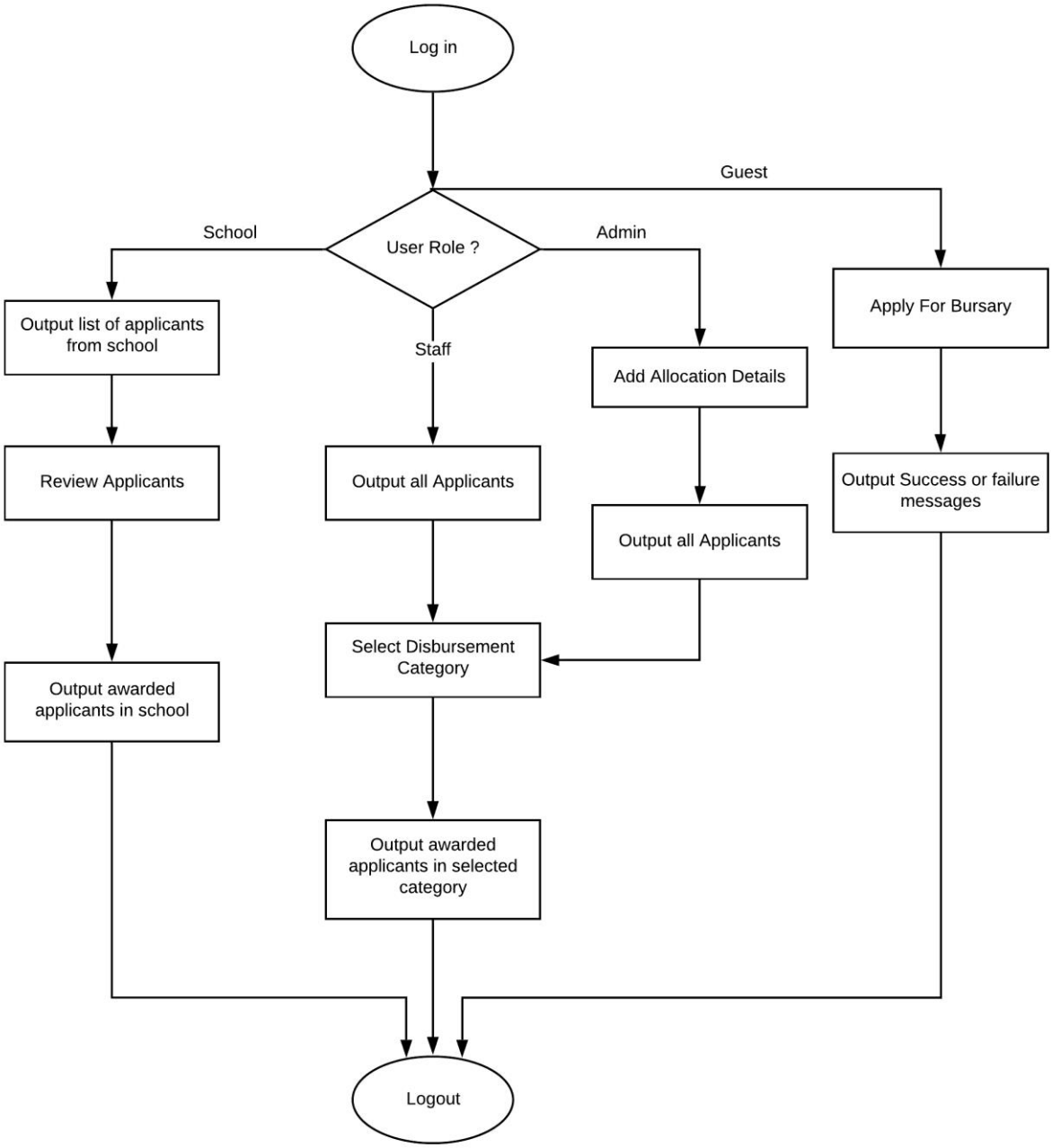
4.5.5 Sequence Diagram



4.5.5 Use case Diagram



4.5.6 Flowchart Diagram



CHAPTER FIVE: TESTING AND IMPLEMENTATION

5.1 Introduction

This chapter will expound on the modules within the system, how they have been implemented and the techniques used to test the modules.

5.2 System Testing

To test the system, both white box and black box techniques were used. I as the developer tested the individual parts of the system, the integrated system and checked whether the system met its objectives. The county officials were also presented with a prototype of the system to feel and see the capabilities of such a system.

5.2.1 Unit Testing

The system has four modules; that is: the application module, the allocations module, the disbursement modules and the reports module. Each of these modules is developed separately and necessary changes have been made to ensure that they are working simultaneously.

5.2.2 Integration Testing

After the development of the individual modules, they were then merged together to come up with the current system.

5.2.3 Usability Testing

A working prototype of the system was rolled out to the county officials to interact with it and see the capabilities of the system. They found the system to be quite user friendly and easy to interact with.

5.3 Implementation

The system has been implemented using the Django Web Framework – an MVC Framework – which uses the Python programming language to program the logic, HTML, CSS, and JS to design the user interfaces. The database used with this system is PostgreSQL.

5.3.1 Authentication Logic

views.py

```python
class ApplicantSignUpView(SuccessMessageMixin, CreateView):
    form_class = UserRegistrationForm
    success_message = 'Registration Successful: Please Login to Continue'
    success_url = reverse_lazy('login')
    template_name = 'users/auth/user_form.html'

    def form_valid(self, form):
        form.instance.is_applicant = True
        return super(ApplicantSignUpView, self).form_valid(form)

class StaffSignUpView(UserPassesTestMixin, BSModalCreateView):
    form_class = StaffRegistrationForm
    success_message = 'Registration Successful'
    success_url = reverse_lazy('users-list')
    template_name = 'users/auth/staff_form.html'

    def test_func(self):
        if self.request.user.is_superuser:
            return True
        return False

    def form_valid(self, form):
        # form.instance.password1 = form.instance.email
        # form.instance.password2 = form.instance.email
        form.instance.is_staff_member = True
        return super(StaffSignUpView, self).form_valid(form)
```

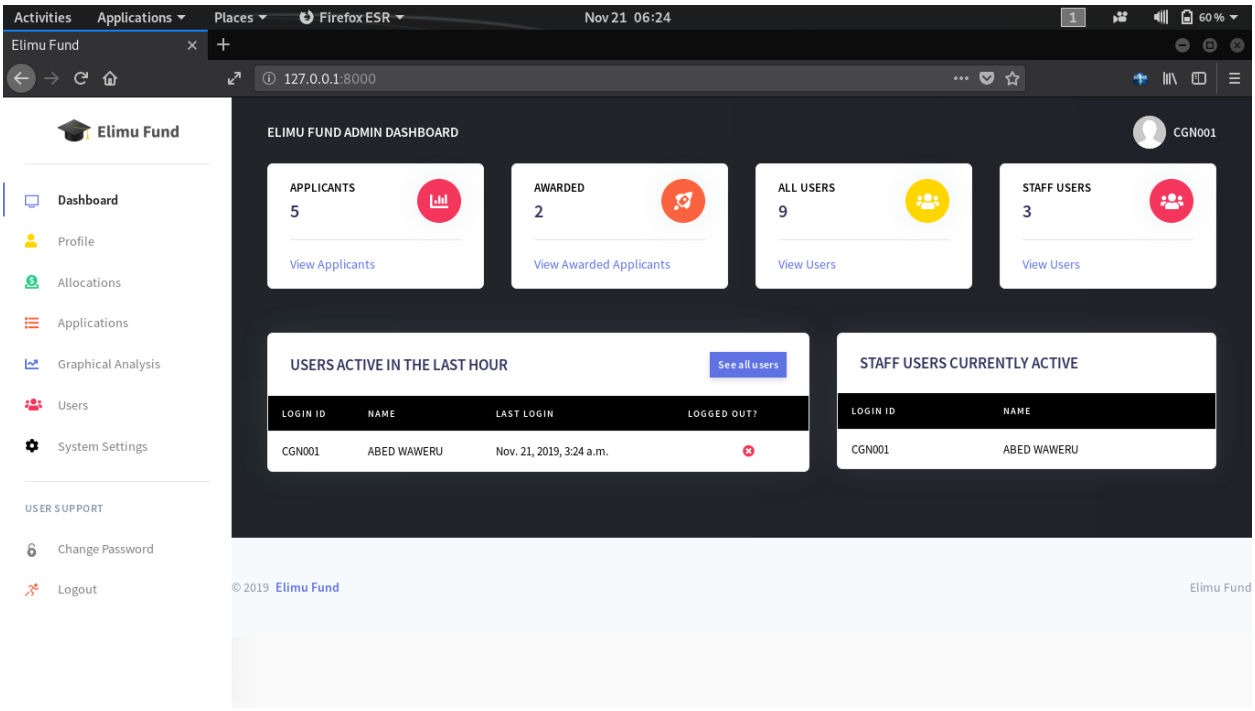
5.3.2 Dashboard manipulation logic

views.py

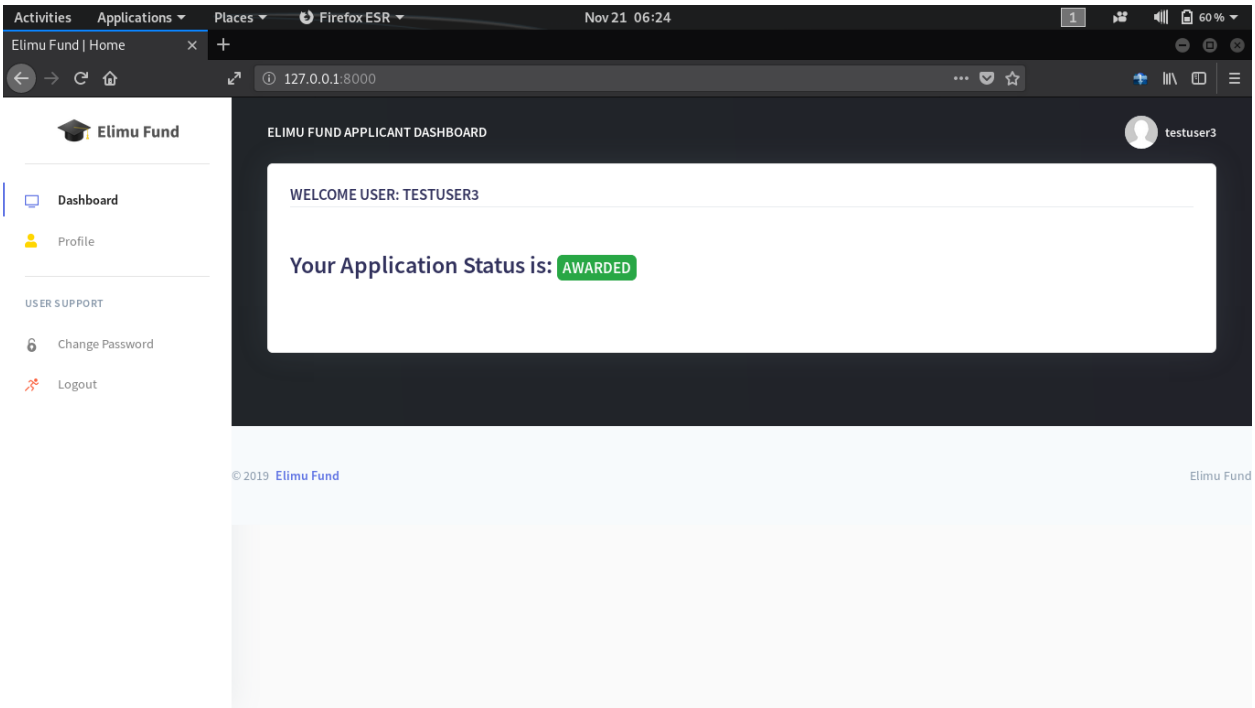
```python
def home(request):
    context = {
        'title': 'Home'
    }

    current_allocation = Allocation.objects.get(
        financial_year__start_year=datetime.datetime.now().year
        )

    if request.user.is_anonymous:
        # messages.error(request, "You are not logged in. Please <a href='/login'>Login</a>")
        return render(request, 'users/dashboard/unauth.html', context)
    else:

        if request.user.is_superuser:
            if not request.user.staffprofile.first_name:
                messages.warning(request, f'Please Update your Profile to Continue')
                return redirect('profile')
            context = {
            'total_users' : User.objects.all().count(),
            'total_staff' : User.objects.all().filter(
                Q(is_staff_member=True)| Q(is_superuser=True)
                ).count(),
            'total_applicants' : Applicant.objects.all().count(),
            'awarded_applicants' : Applicant.objects.all().filter(award_status='awarded').count()
            'current_users': get_current_users(),
            }
```

5.3.3 Dashboard Screens

5.3.3.1 Admin Dashboard



5.3.3.2 Applicant Dashboard



CHAPTER SIX: SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1 Summary of the findings

The findings of the research show that indeed there are many disadvantages with the current approach used to process bursary applications, which would be solved with the functionalities of this system. For instance;

- The lengthy procedure required in ascertaining the credibility of one receiving a bursary is quite tedious. It is not necessary to subject these people to such processes not withstanding the fact that time is a very delicate factor in this process. The proposed system only requires you to provide your details and then your application starts being processed immediately.
- The amount of time used to sort these bursaries in terms of each subcounty and ward is quite long and unnecessary and the system counters by processing and automatically providing sorting functionality for all the applications received.

6.2 Conclusion

Time is a very important resource as well as a very delicate factor especially when it comes to delivery of public services. Disbursement of bursary funds is not exempted from this factor. The traditional method of bursary processing is fraught with difficulties and uncertainties due to the manual approach used to oversee the process. As a result of this, not only is money is lost through ghost channels but also a lot of time is wasted.

There arises a need therefore for a system that will address these challenges while emphasizing on efficiency and accountability. Such a system is the one that has been discussed in this document with the hope that all the current loopholes in this matter of bursary disbursement will be fixed.

6.3 Recommendations

A lot of improvements can be done on the current version of the system. These include but no limited to:

- The system can be adapted to suit all kinds of platforms; including android versions for staff workers involved in generating reports instead of having to open the browsers every time.
- The solutions expressed in this system only concentrate on the Nyeri County Government which was my main case study. It would be of great benefit if such a system was adapted by all county governments for more efficiency in the delivery of this service.

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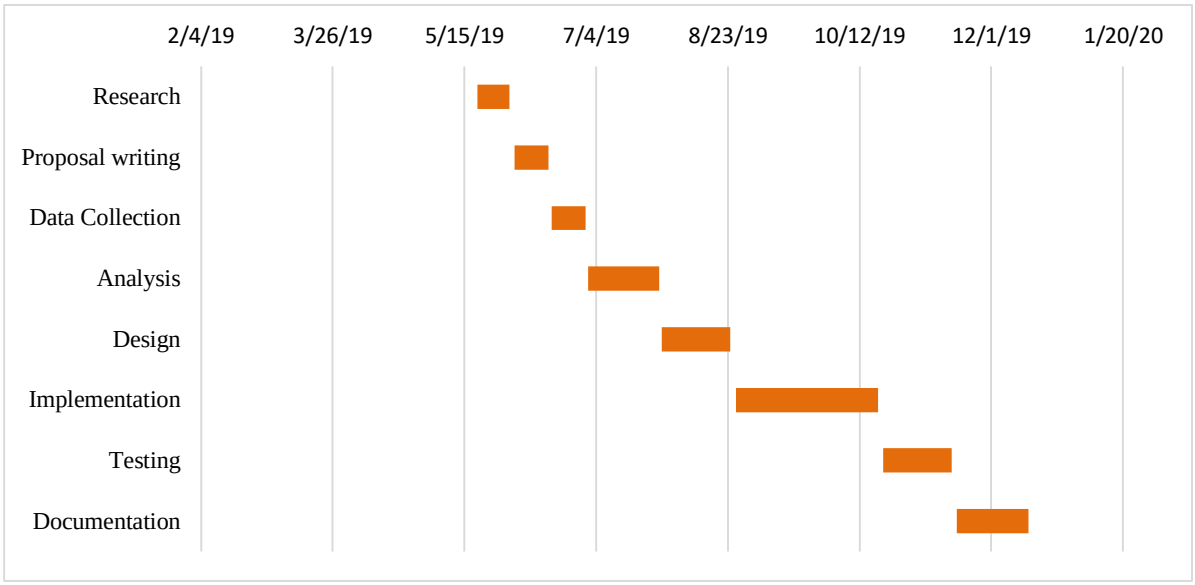
APPENDICES

APPENDIX A: GANTT CHART



APPENDIX B: QUESTIONNAIRE SAMPLE

1. How do needy students apply for bursary funds from the county?

☐ Online Platform ☐ Manual Form Filling

2. What criteria do you use to award bursaries?

☐ First come first serve policy ☐ Using student specific details ☐ Other means

If other means, please specify in brief

3. How long does it take to process the applications and award successful applicants?

☐ 1 – 3 months ☐ 3 – 6 months ☐ More than 6 months

4. Do you keep bursary records for past financial years for future reference?

☐ Yes ☐ No

5. **Do you in any way analyze the data after awarding of bursary? (Finding correlation or relativity within the bursary records)**

   ☐ Yes ☐ No

6. **What are your current methods of auditing and generating reports after disbursements?**

☐ Board /Panel members ☐ An automated system

7. **In a scale of 1 – 10, with 1 being very poor and 10 very good, how would you rate the current bursary processing approach?**

   ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

8. **Have you ever interacted with an automated system as far as bursary processing is concerned?**

   ☐ Yes ☐ No

9. **Would you want to have a system that automatically awards applicants as opposed to the current approach?**

   ☐ Yes ☐ No

APPENDIX C: BUDGET

HARDWARE	**COST**
Laptop	45,000
Ethernet cable	200
Wi-Fi adapter	3,000
SOFTWARE	**COST**
Linux / Windows OS	Free
Python interpreter	Free
Text editor	Free
Browser	Free
TOTAL	48,200