



TECH REPAIR MANAGEMENT SYSTEM

BY

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DECLARATION

I, Kelvin Thamu Kania, declare that this project is an original work and has never been presented before in any other institution. I have written it on my own under the guidance of Dr Joram Makasa

Signature..... Date.....

Kelvin Thamu Kania.

Student.

Supervisor Declaration

This research project has been submitted with my approval as University Supervisor

Signature..... Date.....

Joram Makasa.

Lecturer.

ACKNOWLEDGEMENT

I want to thank the Almighty for granting me this opportunity, strength, and health to do this project, my parents for the financial and moral support they have given me during this manuscript writing period. In addition, I would also like to express my special thanks to my supervisor Dr. Joram Makasa for guidance to the completion of this document successively.

DEFINITION OF CENTRAL TERMS

System- a set of rules.

Platform- a place where people can chat and interact together.

Malfunctions- period where computers fail to function normally

Link – connection created

Interface-The connection and interaction between hardware, software, and the user

ABSTRACT

Tech repair Management system is a web-based system that has two user interfaces: the admin (Technician) and the customer side. Both users have different functions i.e., the admin (Technician) can add users (customers), Technicians, assets (products in the shop) and can be able to update them accordingly. The customer can be able to register and login into the system and can be able to track his or her repair through the site.

Table of Contents

DECLARATION	I
ACKNOWLEDGEMENT	II
DEFINITION OF CENTRAL TERMS	III
ABSTRACT	IV
LIST OF FIGURES	VII
LIST OF ABBREVIATIONS	IX
CHAPTER 1	1
INTRODUCTION	1
1.1 Background	1
1.4 Objectives	2
1.5 Assumptions and Limitations	2
CHAPTER 2: LITERATURE REVIEW	3
2.1 Introduction.	3
2.2 Global literature review	3
2.3 Regional literature review.	4
2.4 Local literature review.	5
CHAPTER 3: METHODOLOGY	7
Locality of the project/ Beneficiary to the project.	7
Sample (Target group).	7
Sampling method.	8
Data collection method(s).	8
System analysis and design method(s).	10
System development	11
Testing plan for the system.	11
CHAPTER 4: SYSTEMS ANALYSIS AND SYSTEM DESIGN	12
Introduction	12
Functional requirements	12
Non-functional requirements	12
Conclusion and recommendations	18
REFERENCES	19

BUDGET.	20
GANTT CHART	21

LIST OF FIGURES

<u>Figure 1: Use Case Diagram</u>	13
<u>Figure 2Context diagram</u>	14
<u>Figure 3DFD LEVEL 0</u>	15
<u>Figure 4DFD LEVEL 1</u>	16
<u>Figure 5 CLASS DIAGRAM</u>	17
<u>Figure 6 ERD DIAGRAM</u>	18

LIST OF TABLES

[Table 1 Appendix 1](#)

21

LIST OF ABBREVIATIONS

HTML-Hypertext Markup

SQL-Structured Query Language

CSS-Cascading Style Sheet

PHP-Hypertext Preprocessor

ER-Entity Relationship

DFD-DATA FLOW DIAGRAM

CHAPTER 1

INTRODUCTION

1.1 Background

Tech is expounding at greater lengths; the world is adopting to information technology (IT). Based on special reports 60% of the world's population is now online. Though the world is adopting well to information technology there are challenges being faced i.e., the gadgets being used (computers) requires repair and maintenance as from time to time they malfunction, or they are damaged.

This chapter will expand on problem statement, further explain on the problem experienced and suggest on solution. Justification on the problem, objectives, research questions and assumptions and limitations.

1.2 Problem statement

Gadgets like computers most of the time malfunctions or breaks down and requires fixing. Challenges appears when taking the gadgets (computers) to be fixed or for maintenance. When taking this product to the repair shop, A lot of people face some challenges: They cannot be able to know when the repair shop is opened or closed, they cannot be able to know the progress of the repair. Technicians not doing their work accordingly / sharing their work inappropriately. Theft in the shop as there are no reports.

1.3 Justification of the Problem (Significance)

With proper interaction between the admins (Technicians) and the computer owners the computer owners and users can make their decisions regarding their pcs, they are also able to build trust with the technicians and the technicians are able to get a brief history of the client's pc's problems and able to diagnose their pcs based on their problems

1.4 Objectives

- 1.The system will enable customer to update his or her profile (register, login and change password).
- 2.The system will enable customer to submit requests. (i.e., repair requests)
- 3.The system will enable customer to see service status (track repair).
- 4.The admin(technician) will be able to assign work order requests to different technicians.
- 5.The admin (technician) will be able to add, update and delete new customers, repairs and the stocks existing in the shop
6. The System will generate reports (sell and work reports) through the side of the admin.

Research Questions

1.5 Assumptions and Limitations

Limitations

- 1.hostile despondence during the research
2. lack of enough funds to do the research
- 3.shortage of time to do the research.
- 4.limited data to use.

Assumptions

1. The computer users and the technicians have network and internet access.
- 2.all data provided during the research was correct
- 3.All computer users and owners are computer literates

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction.

This chapter will expand on literature review. It will explain on Global literature review which addresses a convergence of interest between the international field of international education and the academic fields of international studies and international education, regional literature review and local regional review

2.2 Global literature review

<https://pcglobalonlineservices.com/our-services/>

pc global online computer services

Global online computer services is a type of service that helps fix computer issues through remote connections, then the repair is done through online/ remotely. Clients can be able connect with the services by filling a form then later be connected, the clients are able to pay online through entering an access code

advantages

- cost efficient-through the remote support there is save in time travel, cost for visiting and scheduling and appointment.
- Immediate solution-global online services remote support gives you a quick and easy solution to your immediate IT problems.
- Expert support-global online services have a pool of IT expert on the pool.

Disadvantages

- May results to doubts as there is no way to track the repair progress
- May lead to overcrowding of the system-this is because there is no booking of appointment.
- Damaged hardware parts are not fixed-the system fixes only computer software parts as the fixing is done remotely.
- There is no interaction between the technician and the client – this is because the fixing is done remotely.

Quick tech

quick tech is a system that support onsite remote computer support systems

<https://getquicktech.com.au/computer-support/>

Advantages

- The site can be able to book appointments, there is a booking form in the system.
- The system clients on way to fix other problems making people aware of the problems experienced

Disadvantage

- May results to doubts as there is no way to track the repair progress
- There is no registration and login in the site for new or existing members.

2.3 Regional literature review.

<https://wefixtech.co.ke/business/>

we fix tech

We fix tech repairs all brands of phones tablets and laptops, the clients receives services through contacting the admins and the clients are helped with either delivery or remote connection.

Advantages

Online conversation site hence can be connected easily

Disadvantages

- There is no tracking of repair- this does not give efficient time to the clients or the technician to repair or pick it up.
- May lead to overcrowding of the system-this is because there is no booking of appointment.
- There is no payment site-may lead to over excess charging.

2.4 Local literature review.

LogOnfixIt

<https://www.logonfixit.com/>

It's an online computer service

Advantages

There is a call to connect to you 24/7

Define the problem they are fixing

Disadvantages

Cannot be able to book appointment

Cannot be able to rate the work of the technicians

Cannot be able to connect through online

No payment in the site

Summary /conclusions

Comparison of existing systems

Common from all systems

Repair forms, all systems have repair forms for the clients, clients can fill and submit the forms to the admin for verification.

Contacts page, all the systems have contact page where the IT expert's contacts are placed.

All the systems have a mode of connecting with the clients, other system is using contacts and others through remote connection

All the systems have mode of payment.

Lacking from all system

The site lacks repair Tracking site

The sites lack Registration and Login site

Gap based

Repair notifications.

Tracking of repair.

Conclusions

In conclusion we were able to see that the system will be very useful and helpful in curbing the clients' problems and very important as people are going to be made aware of the process and will be able to track the repair process, through this system the world of computer technology will improve at a greater length.

CHAPTER 3: METHODOLOGY

3.1 Introduction.

This chapter will expand on the methodology part, it will explain on locality of the project which describes where the project will be used ,and who the project is designed for , the sample which defines the target group and who you plan to target for the data collection, sampling method which is methods used to sample such as random ,cluster and snowball method , the data collection method which is defined as the procedure of collecting, measuring and analyzing accurate insights for research using standard validated techniques ,data analysis which is the process of systematically applying statistical /logical techniques to describe and illustrate and evaluate data ,system analysis which is the process of collecting and interpreting facts identifying the problems and decomposition of a system into its components, system development which is the process of defining, designing testing and implementing a new software application or program and testing plan which explains how the system will be tested.

Locality of the project/ Beneficiary to the project.

Tech repair management system is a system that is aimed at helping customers and Technicians build trust towards each other, it is also a project that will help the computer owners to be at ease while they take their pcs at a repair shop as they will be an able to track the repair progress. This project can be very useful in every part of the country but specifically our country (Kenya), where trust comes the hard way where there is a lot of corruption and theft. To help us in the computer technology system and build trust toward each other.

Sample (Target group).

A lot of people will benefit from this project, majorly computer repair shop owners as their business will be able to run efficiently. universities, most of university students have laptops especially the IT students and they are faced by these problems (lack of trustworthy technicians) hence the project being useful

Sampling method.

The most appropriate sampling method for this project was Random Sampling method.

Random sampling is a part of sampling technique in which each sample has an equal probability of being chosen. This sampling method was used in this project as it offers a chance to perform data analysis that has less risk of carrying error and there is equal chance of selection. In the project about 20 people were randomly sampled and on this 20 people 97% of this people agreed that this project was going to have a greater impact and be helpful and the other 3% raised issues such as (people like being in there to see the action happen (their pc being fixed) this gave a rough idea of the continuity of the project.

Data collection method(s).

This refers to the collection of information before implementing a new system. This information is vital since we will use the information or facts gathered here for the system development life cycle and system analysis stages.

The following fact-finding techniques are those that we will use in implementing the new system.

- i. Questionnaires
- ii. Interviews

The following were ways used to collect data.

1. Questionnaire

A questionnaire was used to establish the work efficiency of the system. This technique was used because it allowed collection of different opinions from different people.

TECH REPAIR MANAGEMENT SYSTEM QUESTIONNAIRE.

BRIEF INTRODUCTION.....

Date.....

.....

.....

QUESTIONS

1. From 1 to 10 how much can you trust Technician to live them with their pcs?

.....

2.Do you think having a system that would be able to track the repair progress help boost the trust?

YES.....

NO.....

3.What are the challenges you personally face when your pc breaks down?

.....

2. Interview

Some of the interview questions that were used include:

- ❖ Do you trust the current Technicians with your pcs for more than two days?
- ❖ What should include in the system for the betterment of the system?
- ❖ What are challenges faced during fixing of your pcs?

.

Data analysis method(s).

Based on data collection methods qualitative analysis method was suitable for this project where Descriptive analysis was used.

System analysis and design method(s).

Waterfall model was used in this project as waterfall method uses clear structure when compared with other methodologies, Waterfall focuses most on a clear, defined set of steps hence being advantageous in this Tech repair management project

Phases of waterfall

- First phase is Requirement Gathering and analysis -in this phase all possible requirement of computer tech system to be developed are captured and documented in a requirement specification document.
- Second phase is System Design – The requirement specifications from first phase are studied in this phase and the system design is prepared. This system design helps in specifying hardware and system requirements and helps in defining the overall system architecture.
- Third phase is Implementation – With inputs from the system design, the system is first developed in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality, which is referred to as Unit Testing.
- Fourth phase is Integration and Testing – All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.
- Fifth phase Deployment of system – Once the functional and non-functional testing is done; the product is deployed in the customer environment or released into the market.
- The last phase is Maintenance – There are some issues which come up in the client environment. To fix those issues, patches are released. Also, to enhance the product some better versions are released. Maintenance is done to deliver these changes in the customer environment.

System development

Coding language to use.

Tech repair Management system is a web-based system hence the following languages will be used

PHP

HTML

CSS

JAVASCRIPT

Database to be implemented will be My Sql because it supports relational database systems

Other languages to be incorporated

JAVASCRIPT

Other frameworks to be used include:

- Bootstrap.

Testing plan for the system.

The system will undergo through the three level of testing.

- ❖ First the system will undergo unit testing which involves checking if the software components are fulfilling their functionalities.
- ❖ After that, the system will undergo integration testing which will involve checking the data flow from one module to another.
- ❖ The final test which involves evaluating both functional and non-functional needs for testing. When all the tests are concluded, and the system will be available for use by the users.

CHAPTER 4: SYSTEMS ANALYSIS AND SYSTEM DESIGN

Introduction

This chapter will be focusing on the functional requirements which is a description of the service that the software must offer, non-functional requirements which defines the system attributes such as security performances and usability, use case diagrams which describes the high level functions and the scope of the system, context diagrams which is drawn in order to define and clarify the boundaries of the system software, DFD level 0 which is a basic overview of the whole system, DFD level 1 which depicts basic modules in the system and flow of data among various modules, class diagram which is a diagram used to designing and modelling software to describe classes and their relationships and ERD diagrams which is an entity Relationship diagram.

Functional requirements

The site will allow the customers to register into the system and to be able to allow admin to log into the system.

The system only allows admin to update the system.

The system can print reports.

The system can log out from both sides (the admin side and the customer side).

Non-functional requirements

The website is fast.

The system has context that is be easily read and understood

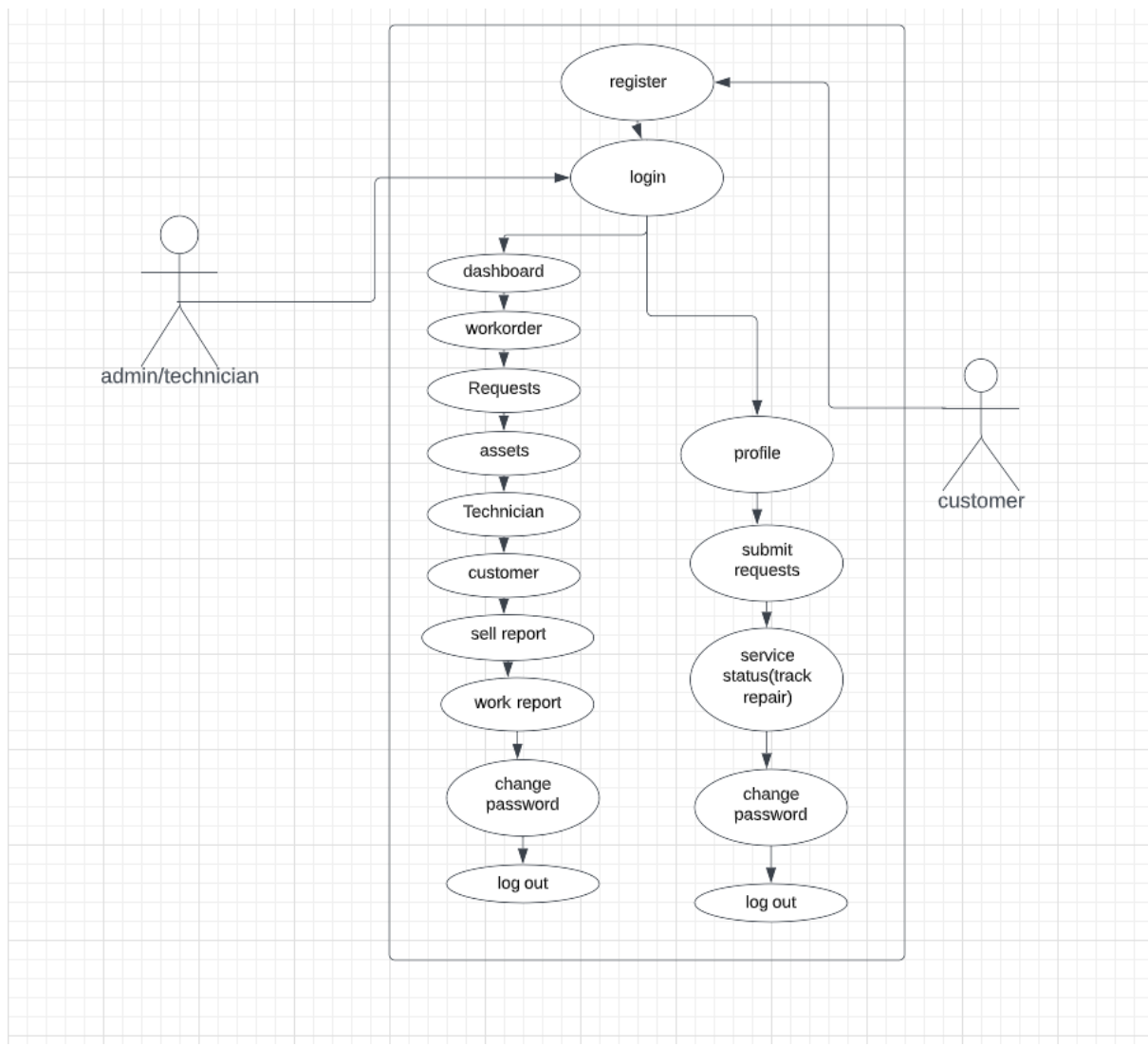
The system is easy to use

The system is to be secure.

4.4 Diagram Representation

- Use-Case Diagram
- Context Diagram
- Data Flow Diagram Level 0
- Data Flow Diagram Level 1
- Class Diagram
- Entity-Relationship Diagram

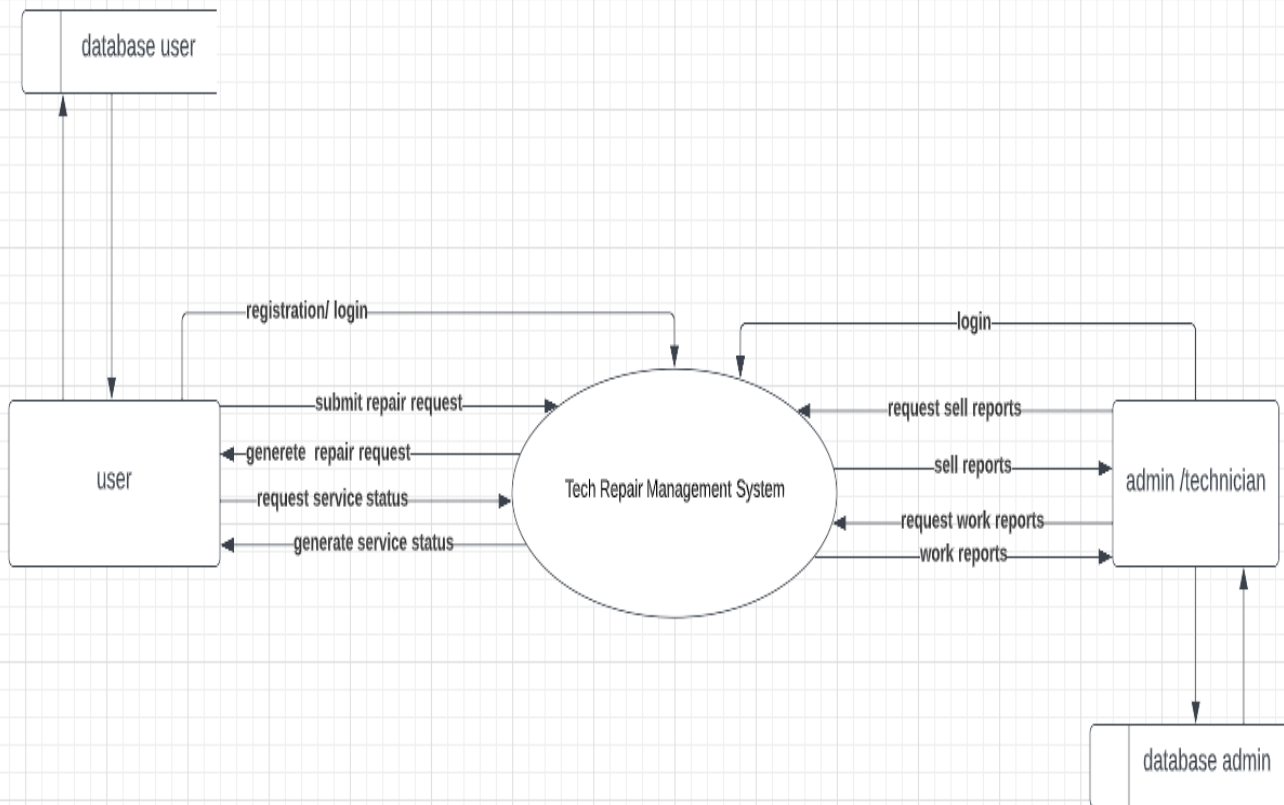
Figure 1: USE CASE DIAGRAM



The system has two characters: the admin/ technicians and the customers. The admin can be able to login into the system and perform different operations. The admin can be able to view the dashboard (contain request received, assign work and number of technicians), can be able to view work order ,requests (can be able to assign work to technician) ,assets (can be able to view product and generate bills),Technicians (can be able to add and delete technician) ,the admin can be able to add and delete customers , sell reports (cam be able to view sell reports) , work reports (can be able to view work reports) change password (can be able to change password)and finally the admin / the technician can be able to log out.

The customer also can be able to register and login to the system. The customer can be able to view his / or her profile, submit requests (can be able to submit request explain the problem of his or her pc), service status (view the repair status), change password (can be able to view repair status) and finally the customer can be able to log out to the system.

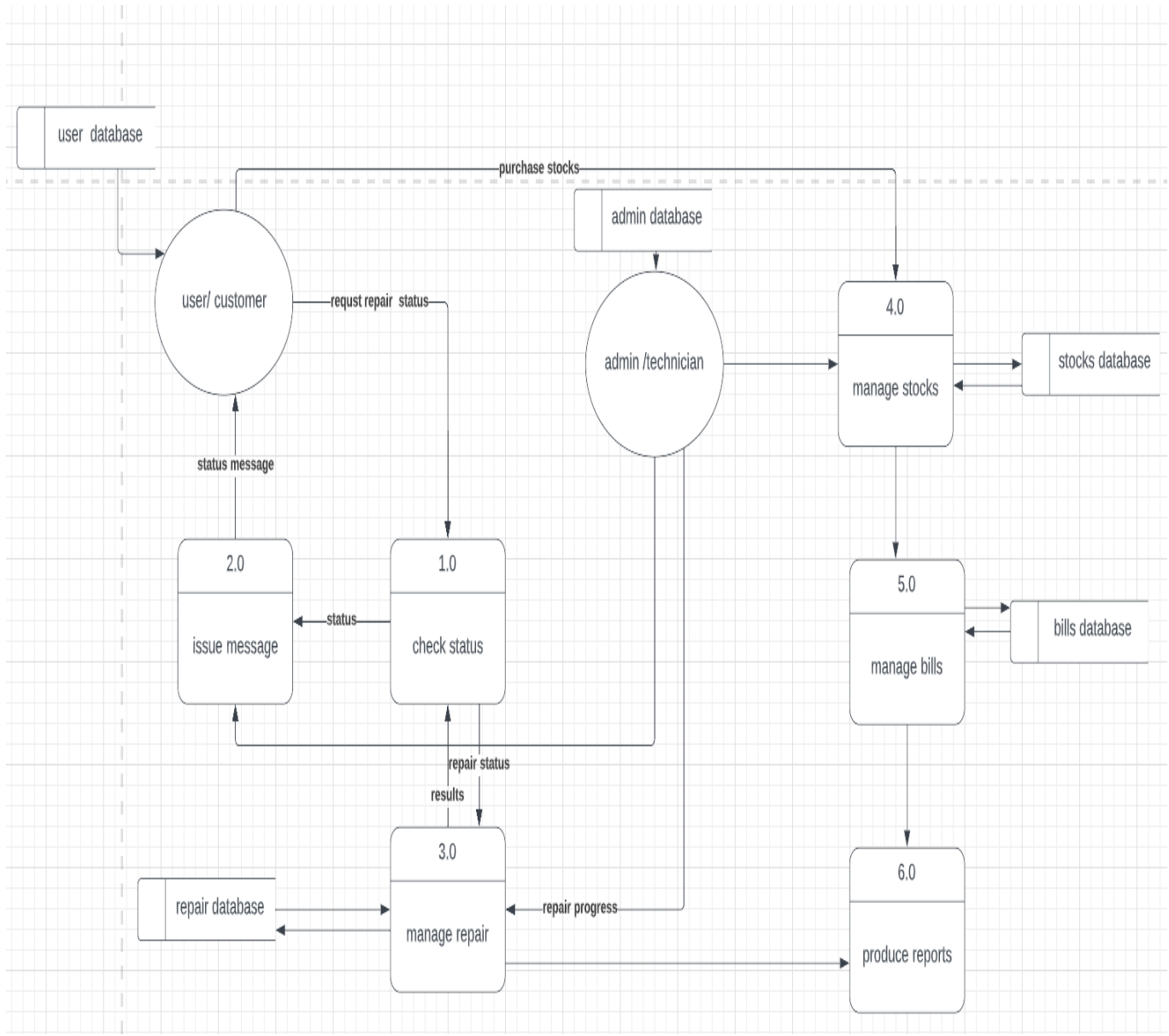
Figure 2 context diagram



Has two entities the user/ the customer and the admin / the Technician. User can be able to register and login into the system. The user can be able to submit repair request and be provided with a form to fill and submit. The user can also be able to request the service status into the system and be provided by the system.

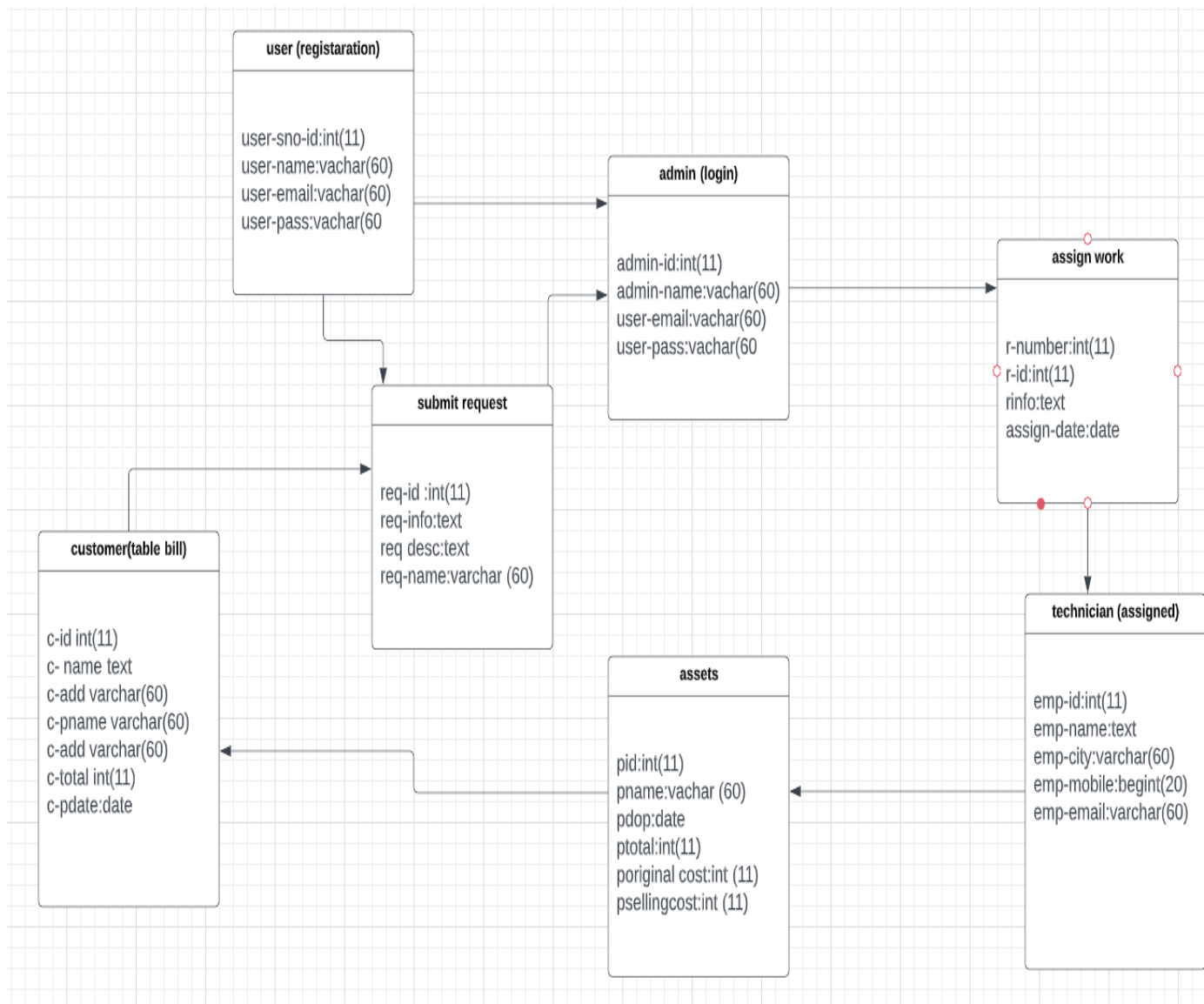
The admin/technician can be able to login in into the system: request for different reports from the system be provided with a form to fill the dates of the reports and be provide.

Figure 3 DFD LEVEL 0



The User/the customer can request for his or her repair status, The status is checked, and a message is returned regarding the repair. The admin/the technician sends or updates the repair status. The admin/technician manages the stocks, bills and can be able to view the reports.

Figure 4 class diagram



There are seven databases: The admin login databases(contain the admin login credentials).The user registration database(contains the users/customer registration credentials).The technicians database(contains the technicians credentials).The assets database (contains the shops products).The customer bill database (contains the customers' bills details and their purchases) submit request database (contains the requests done on the site).Assign work database(contains work assigned by the technician.)

```
graph TD
    Admin[admin/technician] --> M1{manages}
    Admin --> V1{views}
    V1 --> R[reports]
    R --> M1
    M1 --> Bills[bills]
    M1 --> Reps[repairs]
    M1 --> Stocks[stocks]
    M1 --> CU[customer/user]
    CU --> M2{manages}
    M2 --> Profile[profile]
    M2 --> RR[repair request]
    CU --> V2{views}
    V2 --> Reps
    V2 --> RP[repairs progress]
    V2 --> Stocks
    V2 --> G{generates}
    G --> Stocks
    G --> R
```

The diagram illustrates the interactions between an admin/technician and a customer/user in a repair shop system. The admin/technician manages bills, repairs, stocks, and customer/user profiles, and views reports. The customer/user manages their profile and repair requests, views repairs and progress, and generates reports. The system also includes entities like bills, repairs, stocks, reports, profile, and repair request.

The customer can be able to view the repair progress, can also be able to view his or her profile and can be able to update on it.

Conclusion and recommendations

The world of Information and technology (IT) is growing, and computer gadgets are increasing as everybody is buying or purchasing in order to be "DIGITAL". The proposed system will be of high importance in repairing this gadget (pcs). It will build trust and be able to put people at ease knowing the situation of their repair progress as this gadget are expensive and sometimes unfordable to most people hence must be maintained for them to last longer

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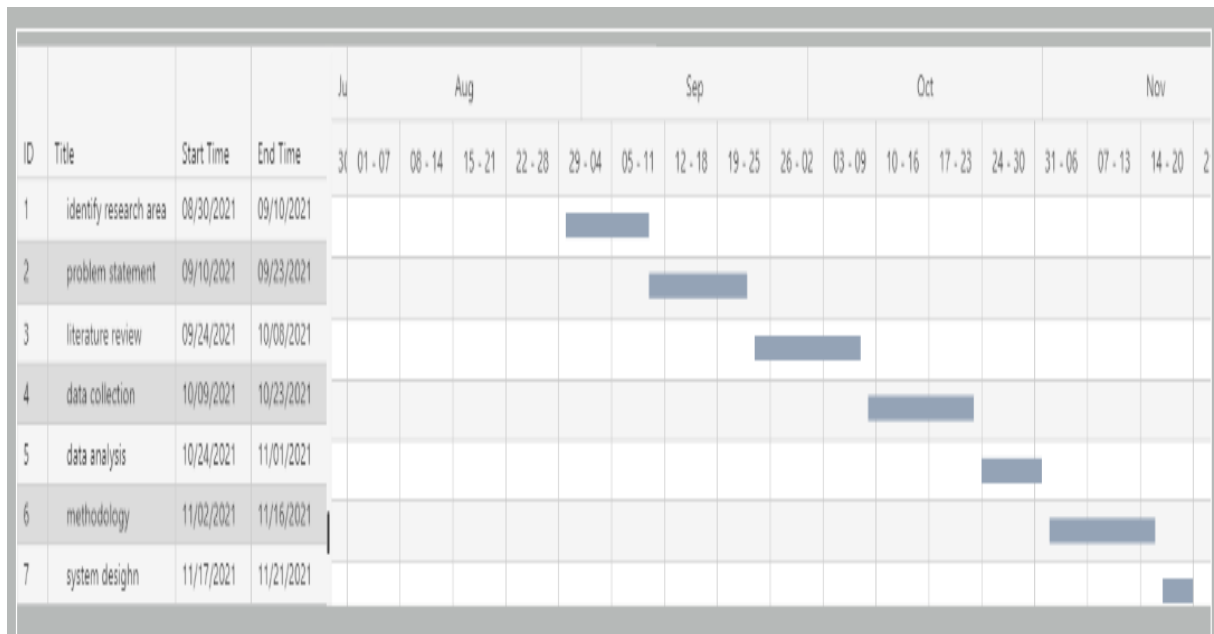
Table 1 Appendix 1

BUDGET.
COMPUTER TECH BUDGET

ITEMS	DESCRIPTION	PRICES
COMPUTER (PC)	RAM 4GB ROM 500GB INTEL CORE i5 Used to code the project	Ksh 40000
Power (electricity)	200 w/hour Helps Pcs to run	Ksh_5000
Research	Means of transportation during research period while collecting data	Ksh 4000
Hard drive	500GB back up my projects and codes	Ksh 6000
TOTAL		Ksh 55000

APPENDIX 2

GANTT CHART



WORK PLAN

	<u>TASKS</u>	<u>START DATE</u>	<u>DURATION DAYS</u>	<u>END DATE</u>
	<u>Phase 1</u>			
1.	Project proposal	7/9/2021	3	9/9/2021
2.	Documentation chapter 1: introduction	10/9/2021	15	21/2/2022
3.	Documentation Chapter2:	10/10/2021	5	10/10/2021
4.	Documentation chapter3:	12/10/2021	6	17/10/2021
5.	Documentation chapter4:	20/10/2021	7	27/3/2021
6..	Editing of the Documentation	29/10/2021	1	29/10/2021
7.	presentation	29/11/1021	1	29/11/1021
	<u>Phase 2: Prototyping</u>		10	
9.	Developing prototypes	27/1/2022	10	12/2/2022
	Phase 3: implementation			
10.	Coding the webpages	13/2/2022	22	2/3/2022
11.	Developing database for the project	3/2/2022	10	12/3/2022
	Phase 4: integrating and testing			
11.	Unit testing	13/3/2022	5	18/3/2022