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Design and Implementation of a Personal Data Management Software (Personal Cloner) in Visual Basics/Android Studio.

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Abstract:
Households in Zambia just like any other place in the world do make budgets and take note of all the incomes, expenses, assets acquired and running projects. It is mandatory for the breadwinners to write a will giving directions on how they wish surviving family members subdivide their property after their demise. The breadwinner takes note of all their acquired resources timely. This is important to help in proper record keeping for future use and better determine their economic growth. Early assets or records precision underwriting the potential benefit especially in remediating the perceived difficulties in framing the will because all the necessary data will be at the fingertips of the breadwinner and use it ably in times of need. The core objective of this project was to design and implement a computer standalone software dabbed Personal Cloner to assist the Zambian users/families in personal data capturing, storage and retrieval of information and provide a reliable and transparent software devoid of personal inclinations and interest and maintain integrity. Additionally, help assuage the problems, frustrations, and stress faced by breadwinners in generating budgets, wills etcetera. The software was designed using Visual basic/Android studio. We hope that this software will mitigate and subsequently eliminate the challenges usually incurred in the manual personal data capturing processes thereby increasing the overall software throughput, performance and enhanced family decision-making processes. Among the essential modules are the Income, Expenses, Budgets, Projects, Assets and Reports modules.

Keywords*: Breadwinner, Personal data, Household, Will, and Resources.*

1.0 INTRODUCTION

For many years now, families have been experiencing terrible ordeals especially after the demise of their loved ones. The most affected are the children and/or wives. Widows, after the deaths of their husbands, face the loss of property and children at the hands of their in-laws. Those whose husbands have died of pandemic diseases like the acquired immunodeficiency syndrome (AIDS), who are themselves infected with human immunodeficiency virus (HIV), are treated the worst. Traditionally in Africa, a widow remains in her husband's village and the by in-law's car for them. With urbanization and difficult economic times, the modern case is different.

In such occurrences, and although the widow and her children are legally entitled to all household property, the family home, and other 70% of outside assets (in-laws receive the other 30%.). In fear of being beaten or bewitched if they claim their property, the women surrender such property. More so if the husband dies without a will. Oft times, the family appoints one of the brothers to be a legal representative to handle the estate.

The widow does have legal control over the appointment even if things go wrong, and she fears reprisals. Meanwhile the courts do not oversee the administrator but the widow must take legal action when robbed. This requires withdrawing the original appointment, appointing the widow as the new administrator, and attempting to acquire the stolen property. (Gamuchirai Masiyiwa and Linda Mujuru, 2017). This is quite difficult to do for a woman confined to her bed with an epidemic. It is therefore against this background that the researcher saw the need of developing a computer software called Personal Cloner *(PerC)* to help alleviate the upheaval long before its occurrence.

The *Personal Cloner* software is a complete system for tracking down the assets acquired by the user before their demise, income and expenditures, assets, budgeting and other related personal information capturing. One big benefit of the system is that it saves time and money for the user. The system keeps real-time household assets, incomes and expenditures. This helps eliminate the user's possible impulse buying, and help them easily generate a will when need so arises using the would-be embedded feature of asset assigning. Every individual needs records of their personal data, assets acquired, income and expenditures, number of family members, and so on. To (Kokil Jain et al, 2016), these good records can then help users:

- Make decisions based on fact rather than guesswork,
- Plan effectively for the future, and
- More accurately assess rates of their financial growth.

1.1 STATEMENT OF THE PROBLEM

The researcher observed with regret that most Zambians particularly women, make no records of their day-to-day transactions in terms of funds. Having taken time to observe shoppers in these leading super markets, most of them do what the researcher calls impulse buying. Meaning no shopping list, which turns out to be no budgeting has been done later own no vision of what is to be spent.

This behavioural irresponsibility has serious economic upheavals especially when it grows to an extent where we can no longer control it. Consumer behaviour need to be planned and informed at all times. In their intriguing article (Sina Aminosharieh and Soran Mowlaie , 2017), highlighted that impulse buying is a highly important aspect of customer behaviour. It emerges as a dominant phenomenon in customer behaviour and is a vital concept in the market. Many factors have supported this unfortunate endeavour such as access to internet as observed by (Aragoncillo, 2017). It is this form of approach to buying which leaves many African families undergo serious challenges especially after the demise of their loved ones

especially the demise of a mother and children are left behind, demise of a husband, or demise of children and leave a single parent. (Gamuchirai Masiyiwa et al, 2017).

You will agree with the researcher that this mode of spending has not spared a good number of our retirees. We have come to believe that no or inefficient data records can lead to costly consequences for any business. We must track everything must in a business because of taxes and budget concerns. (Vasudev, 2015). The same is true about our livelihoods because there are in a way business. Hence the need for a dedicated computer software to help arrest the situation.

1.2 OBJECTIVES OF THE STUDY

This project aimed at designing and implementing a computer standalone software dabbed *Personal Cloner* to assist the Zambian users/families in personal data capturing, storage and retrieval of information; and the objectives were to:

- ✓ Design a user-friendly interface for attributes such as income, budget, expenditure, projects, assets, family tree, reports, and will-writing,
- ✓ Create a database to hold data for all attributes, and
- ✓ Building a user-friendly security and monitoring control to ensure only authorized persons have access to the software-stored data.

1.3 SCOPE OF THE STUDY

The goal of this project work was to develop a computer software for the Zambian families in the quest of relieving them from the stress and frustrations faced in issues related to family expenditures, planning etcetera. We developed the software using Visual Basic and C+. The Personal Cloner software eliminates the delays associated with the manual process and creates a central repository for items and assets needing management.

In a real-time scenario, the software reduces the dependency on other external factors to determine your budget lines as it artificially generates the budget based on data inherent in the database, and promises data and software confidentiality and integrity. The main modules of the Personal Cloner software are the income module, budgets module, expenses module, projects module, family details module, assets and reports module. All these implemented modules are key to managing personal data needs.

2.0 LITERATURE SURVEY

This section focuses on many related literatures that covers the broad framework from which the research was done. The essence of this review therefore is to make known of some other research made in relevance to the project topic. Many researchers have made some findings on how this problem can be solved and achieve the objective of the subject.

Budgeting is the process of creating **a plan to spend your money**. We call this spending plan **a budget**. (André de Waal et al, 2011). You notice here that makimg this spending plan allows you to determine in advance whether you will have enough money to do the things you need to do or would like to do. If you do not have enough money to do everything you would like to do, then you can use this planning process to prioritize your spending and focus your money on the things that are most important to you.

Since budgeting allows you to create a spending plan for your money, **it ensures that you will always have enough money for the things you need** and the things that are important to you. Following a budget or spending plan will also keep you out of debt or help you work your way out of debt if you are currently in debt. Once you create your first budget, begin to use it and get a good feel for how it can **keep your finances on track**, you may want to map out your spending plan or budget for 6 months to a year down the road. By doing this you can easily forecast

which months your finances may be tight and which ones you will have extra money. You can then look for ways to even out the highs and lows in your finances so that things can be more manageable and pleasant.

Extending your budget out into the future also allows you to forecast how much money you will be able to save for important things like your vacation, a new vehicle, your first home or home renovations, an emergency savings account or your retirement. Using a realistic budget to forecast your spending for the year can really help you with your long-term financial planning. You can then make realistic assumptions about your annual income and expense and plan for long-term financial goals like starting your own business, buying an investment or recreation property or retiring. Budgeting is optional, but it is an important component of financial success.

It is not difficult to implement, and it is not just for people with limited funds. Budgeting makes it easier for people with incomes and expenses of all sizes to make conscious decisions about how they would prefer to allocate their money. It can also help people save for retirement, emergencies, a new car, college tuition or just about anything. (Fontinelle, 2017). For many people, having a solid budget in place, knowing how much money, they have and knowing exactly where that money is going makes it easier to sleep at night. Forgoing a budget, on the other hand, can mean going into debt and failing to save for important goals. Moreover, when you are not in control of your money, you are not in control of your life.

Developing a budget for a big institution is a challenging task, since revenues for the coming year are mostly unknown at budget planning time due to uncertainty at the state level. We then need software to help do these extensive budgets at once. A budget has to be capable of a lot more than just dealing with final revenues and spending amounts. (Kostival, 2015). Although traditional budgeting has met with intense criticism, it is still universally used by many worlds over, and it seems that most companies do not have plans of abandoning it. Therefore, organizations can embrace technology to ease the pain and increase productivity.

For example, with automation, organizations can leverage access to new data to help project and predict how the business will perform. Inaccuracy can kill most budgets before the ink is dry on the paper, and relying on the wrong data will lead to poor decision-making. It is as simple as this: Bad data leads to bad insights, which lead to bad knowledge, which leads to bad business decisions. Organizations currently spend too much time on data accumulation, verification, and reconciliation. This is simply lost time, money, and resources. Organizations should be focusing their efforts on improving business processes, spotting opportunities, and contributing to strategy, not bean counting.

For (Chatterjee, 2017), by leveraging the right technology, organisations and individuals can free up more of their time to do what they really should be spending their time on: supporting their business partners to run their businesses better. Using tools that cannot only pull data (including real-time actuals from a multitude of sources), but can also apply business logic and rules, will take budgeting to a higher, more useful level. With so much data, available, immediate, and unlimited individuals should have the tools to be able to reforecast and run what-if scenarios in real time. This will allow organizations to become more agile and react to changes (both positive and negative) more quickly.

Organizations increasingly understand the importance of operating in a much more integrated and collaborative manner. By leveraging the sophisticated technology, we have today, organizations can cut across silos in business units and data sources to make accessible what was once inaccessible. Now we can generate reports in real time and share them

across departments all over the world, moving us closer to our ultimate goal. Technology can provide decision-makers with real-time insights in more direct forms of communication to help remove more of the guesswork and highlight more of the information that really matters.

For most companies, budgets are not going away. However, we can utilize the technological tools and processes available today to automate a great deal of the mundane, low-value activities and free up our teams to provide the insights and foresight to enable our business partners and organizations to thrive. Essentially, budgeting software is designed to simplify and streamline the budgeting process, a process that is typically a tedious and time-consuming in its manual way.

Today, many businesses look to harness technology to help them make better decisions. Organizations are determined to be more agile. Any financial officer knows that market demands can change quickly, and the organizations that are poised to see opportunities can capitalize on them. The old business budgeting and forecasting process makes that very difficult. That is why technology, and especially automation, has become so important in aiding the budgeting and forecasting process. The key with this technology is it allows for budget managers and financial officers to improve two important features as identified by (Orlando, 2013).

First is the process around the creation of the budget. Technology can build in systems that automatically synchronize with the general ledger. This helps to keep data accurate not just to the week, but to the minute, dramatically reducing potential errors. Second, automation allows organizations to improve the monitoring and reporting of the business budget and forecast in real time. This is key for the future health of the organization. Improved technology and data automation can create reports that can compare historical data, improve dashboards and generate what-if scenarios. For the organization that wants their key decision makers to be agile and move quickly, technology and automation are an important part of the way forward. And that's where financial officers can be quite effective.

3.1 SYSTEM ANALYSIS

A. SYSTEM ANALYSIS

The systems analysis methodology for developing and implementing the PerC is presented below. It is adopted from the software engineering project models adopted from the traditional System Development Life Cycle (SDLC). It is broken down into the following stages: Requirement Gathering, Design, Programming, Implementation and testing, and Maintenance.

i. General analysis of the existing system

A personal or household budget is an itemized summary of expected income and expenses for a defined period, most frequently one month. Many people make their desired budgets as soon as they are paid. They gather every financial statement they can**.** This includes bank statements, investment accounts, recent utility bills, and any information regarding a source of income or expense. One of the keys in the budget-making process is to create a monthly average, so the more information you can dig up the better. Record all of your sources of income. If you are self-employed or have any outside sources of income, be sure to record these as well. If your income is in the form of a regular pay check where taxes are automatically deducted, then using the net income (or take-home pay) amount is fine. Record this total income as a monthly amount.

Households create a list of monthly expenses where they write down a list of all the expected expenses they plan on incurring over the course of a month. This includes a mortgage payment, car payments, auto insurance, groceries, utilities, entertainment, dry cleaning, student loans, retirement or college savings. Essentially everything you spend money on. They break

expenses into two categories: fixed and variable. Fixed expenses are those that stay relatively the same each month and are required parts of your way of living. They included expenses such as your mortgage or rent, car payments, cable and/or internet service, trash pickup, credit card payments and so on. These expenses, for the most part, are essential yet not likely to change in the budget. Variable expenses are the type that will change from month to month and include items such as groceries, gasoline, entertainment, eating out, and gifts, to name a few. This category will be important when making adjustments.

If your result shows more income than expenses, you are off to a good start. This means you can prioritize this excess to areas of your budget such as retirement savings or paying more on credit card balances to eliminate that debt faster. If you are showing a higher expense column than income, it means some changes will have to be made.

If you have accurately identified and listed all of your expenses, the ultimate goal would be to have your income and expense columns to be equal. This means all of your income is accounted for and budgeted for a specific expense or savings goal.

If you are in a situation where expenses are higher than income, you should look at your variable expenses to find areas to cut. Since these expenses are typically non-essential, it should be easy to shave a few dollars in a few areas to bring you closer to your income. Review your budget monthly. It is important to review your budget on a regular basis to make sure you are staying on track. After the first month, take a minute to sit down and compare the actual expenses versus what you had created in the budget. This will show you where you did well and where you may need to improve. All these processes are done manually. This makes the system tedious and time consuming.

B. PROPOSED SYSTEM

The proposed system in this write-up is expected to be better than the succeeding ones in terms of speed, features etc. All the criticized points (limitations) in the existing systems will be handled. The need for the new system is to work and solve the limitations discovered in the previous systems. The new proposed PerC software will be implemented in order to solve the challenges faced in the manual way of personal data recording processes in varied households in Zambia and beyond. We design the new system to solve the problems affecting the manual system in use. It is designed to be used a desktop standalone software thereby relieving users from much stress as experienced from the manual system. The software also has some other features like:

- Accuracy in handling of data,
- Fast rate of operation and excellent response time,
- Flexibility (i.e.) it can be accessed at any time,
- Easy way of back up or duplicating data in varied storage media in case of data loss,
- Better storage and faster retrieval system, and

C. SYSTEM REQUIREMENTS

i. **Functional Requirement:** The functional requirements for the PerC are:

- *Administration of Entities:* The software shall record a database of recoded entities. Users will access and process inputted data.
- *User Authorization:* The PerC shall allow the authorized user to view reports, as they are actually confidential in nature.

ii. Non-functional requirements: These kinds of requirements are sometimes called constraints of the system. Non-functional requirements denote limits of the system and its expected behavior. They do not impact the system directly in terms of functionality:

- *Usability:* The software must be errorless in the most common operating system environments. The operating systems such as windows 7, 8 or 10. The software shall inform the user about its current state (loading, item created, item updated, etc.)
- *Reliability:* The software must not contain errors making some software functionalities unavailable or errors disturbing the user while working with the software.

iii. Design Requirements: The system must work in a form of desktop standalone application. Records deleted in the system shall be kept in the database.

iv. Implementation Requirements: The system must be implemented in Visual Basic v. 6.0/Android Studio v. 3.1.4.

D. SYSTEM ARCHITECTURE

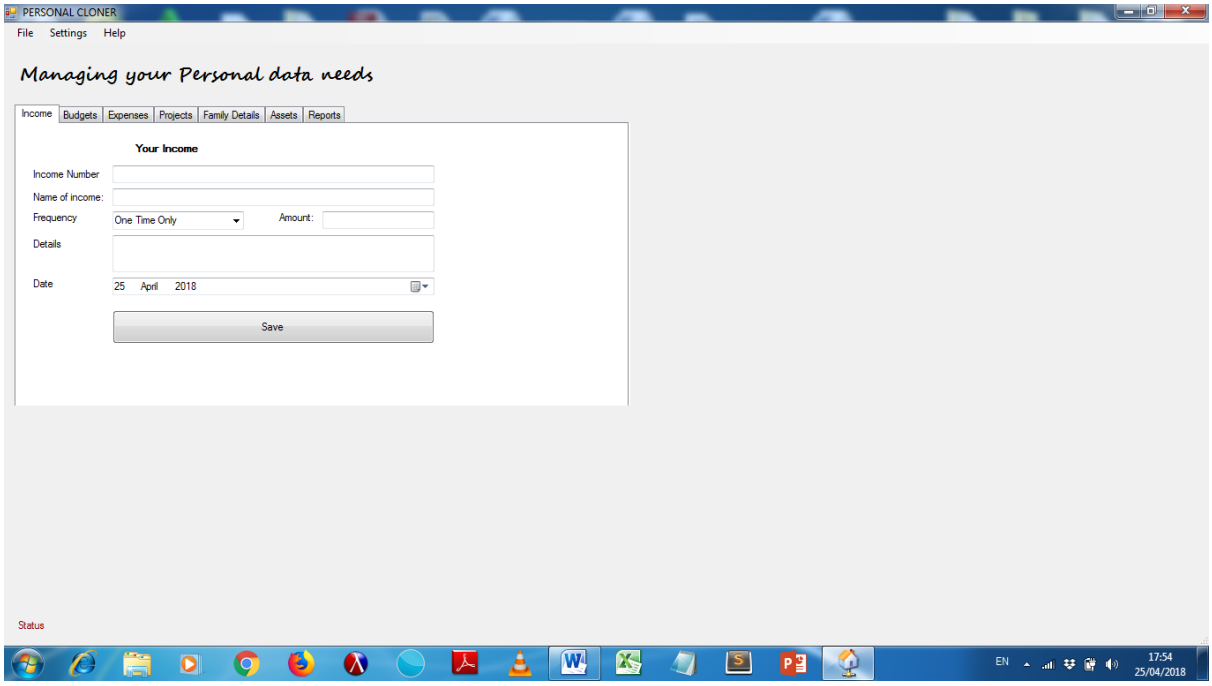

Figure 1: Personal Cloner Income Module (as screenshot from actual system).

Figure 1 is a representation of an intuitive and interface of the PerC income module. The system prompts the user to supply their income number, name of income, the frequency, details of a given income, and the date of the income. The system then prompts the user to save the outlined income details.

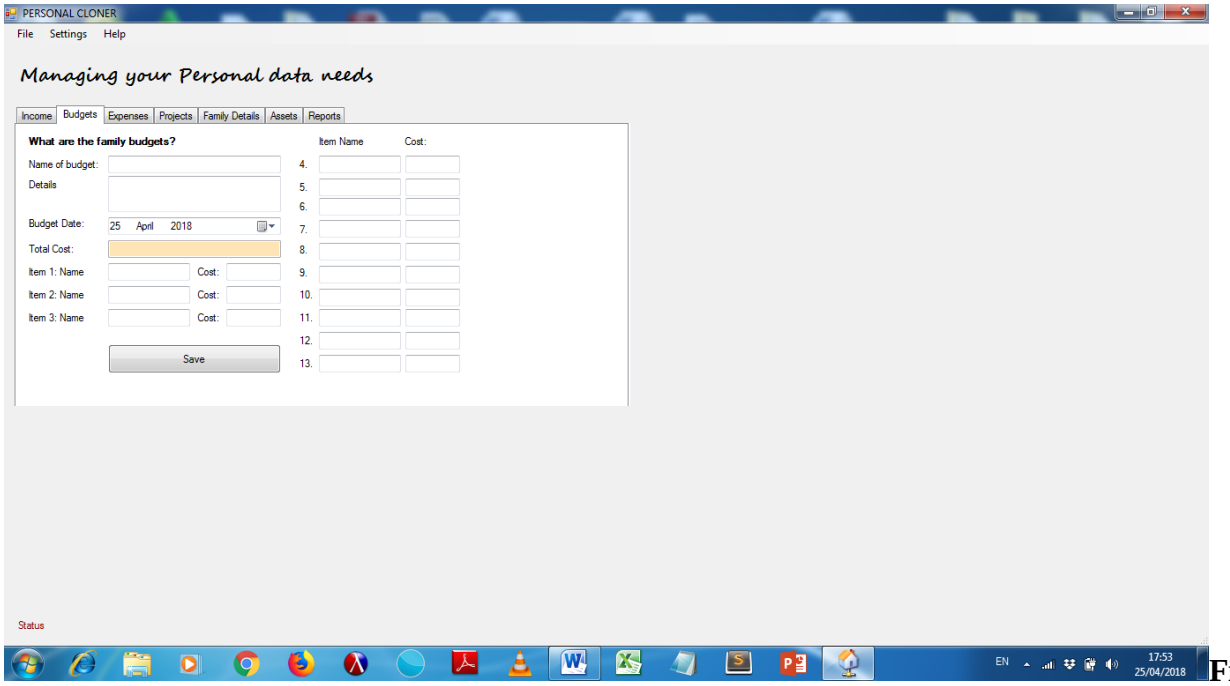

Figure 2: PerC Budget Module (as screenshot from actual system).

In *figure 2*, the software asks the user to input the budget details starting with the budget title and its details. Other things captured are the date of budget, the total budget cost and finally the item names and their prospective costs. The software saves all such details are in the database for storage and retrieved at time of need.

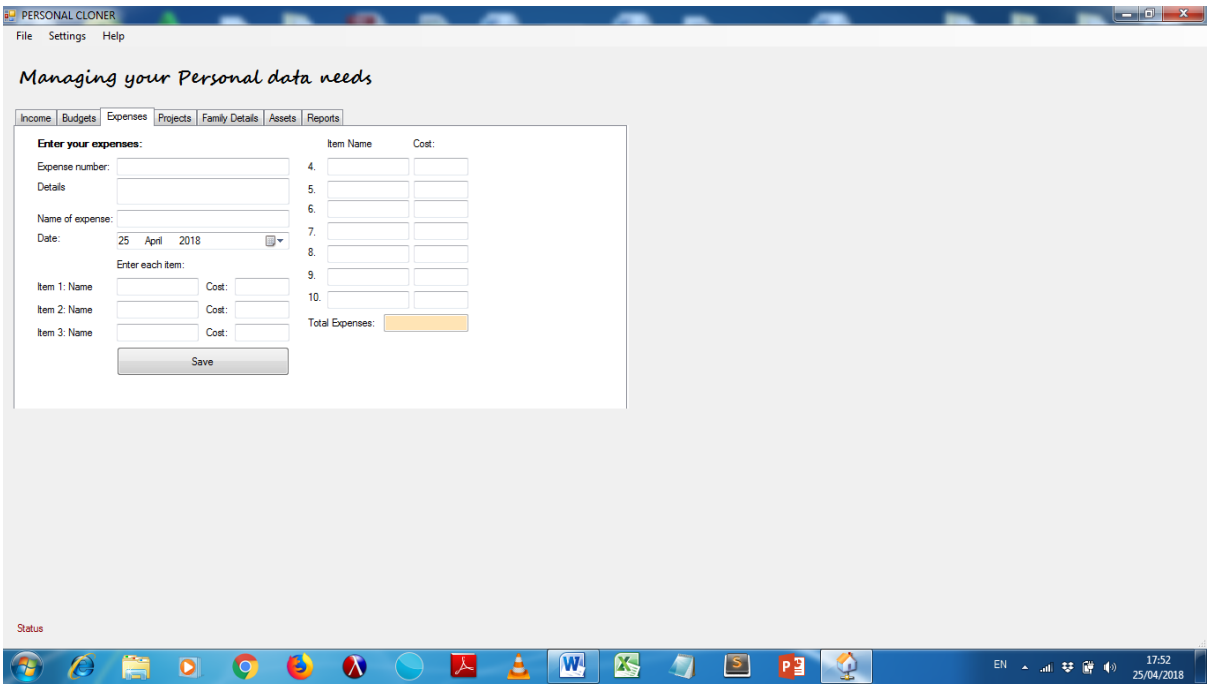

Figure 3: PerC Expense Module (as screenshot from actual system).

Expenses module shown in *figure 3* allows users to capture all the expenses incurred with great precision starting with the expense number, its details, and name of expense etcetera.

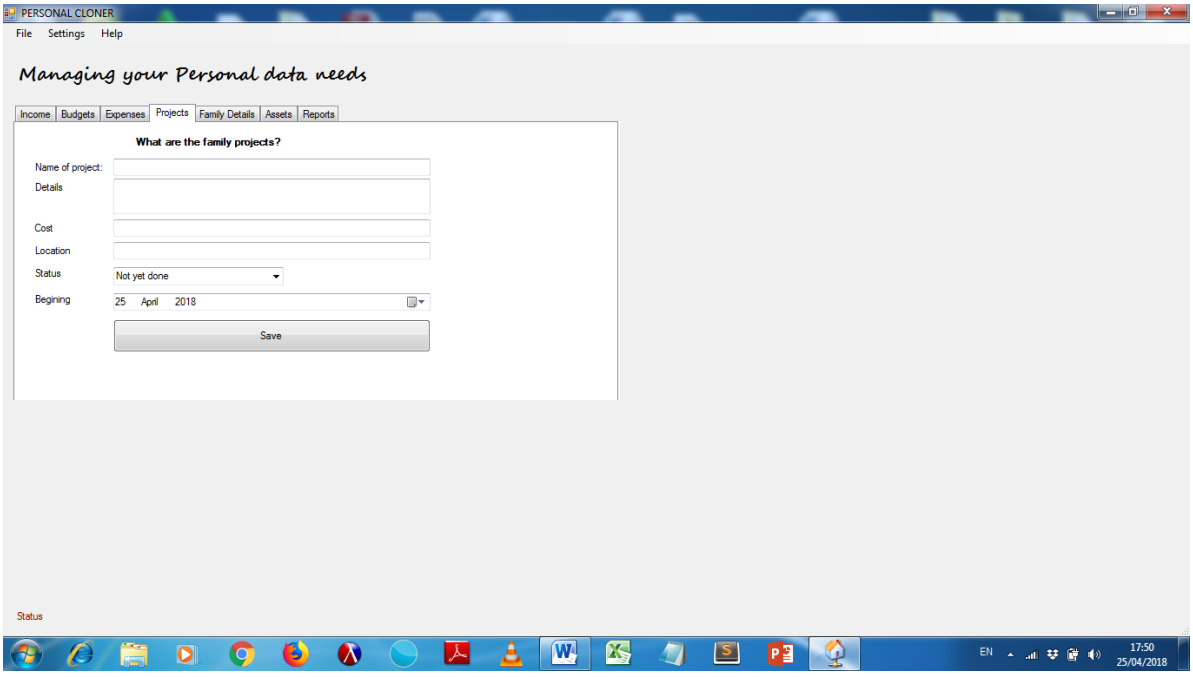

Figure 4: PerC Project Module (as screenshot from actual system).

As households receive monetary incomes repeatedly, a need arises for them to initiate various projects in the order of their choice. *Figure 4* is an illustration of how we can use the personal cloner software to record all project details with ease. The software allows the user to define the project name and its associated details, the project cost, location, status and the start dates.

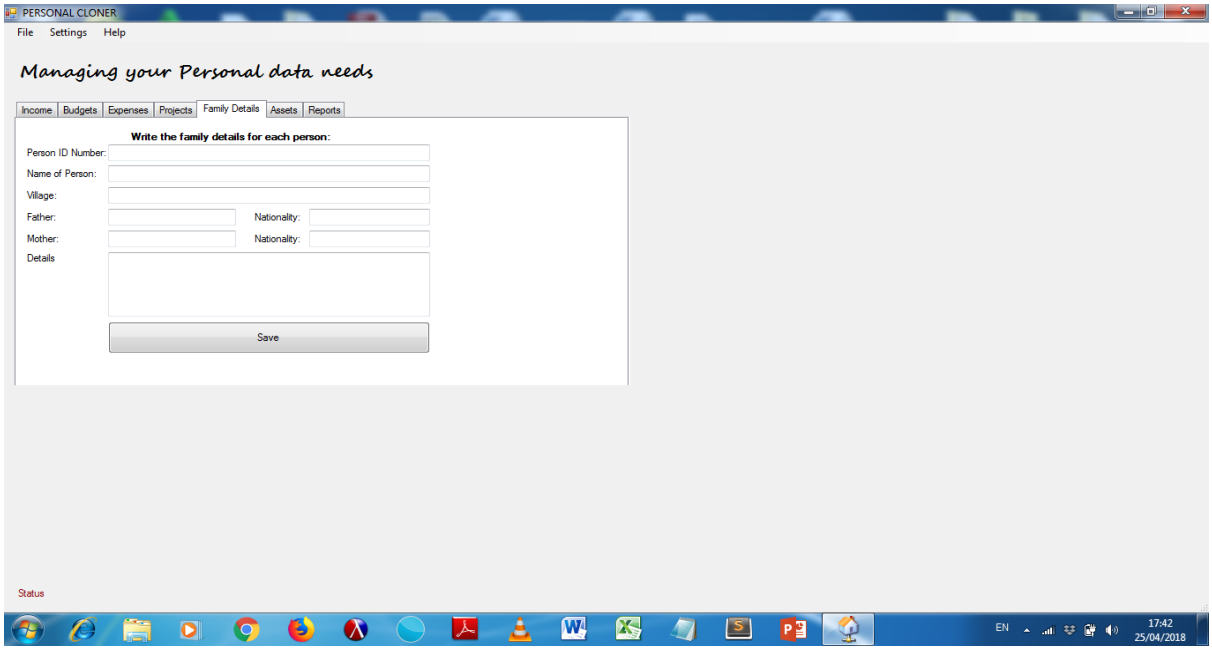

Figure 4: PerC Family Details Module (as screenshot from actual system).

It is of paramount importance that households record all the necessary family details to avoid problems of identity misconfigurations later in life. *Figure 3* indicates the possibility of all this.

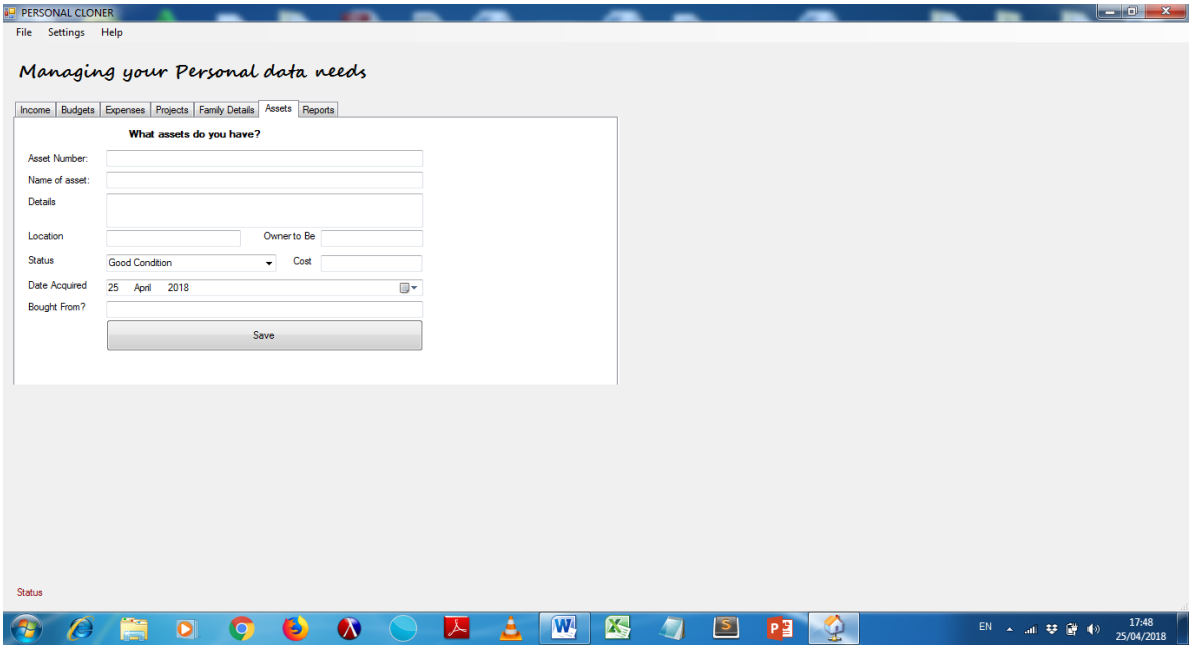

Figure 5: PerC Assets Module (as screenshot from actual system).

The software helps households take note of all their assets chronologically as illustrated in *figure 5*. This is important as it helps the households account for all their assets with great precision especially after the demise of one family member such as the husband or wife or the breadwinner. We record the asset number, its name and other details, location, owner to be, status, date acquired, where it was bought from. All these details are key as they would easily help when generating a will.

E. SYSTEM IMPLEMENTATION

The requirement needed to implement this system is as follows:

a. *Hardware Requirement*

For the effective operation of the newly designed system, we recommend the following minimum hardware specifications:

- The computer system in use should be IBM compatible (clone systems),
- The Random-Access Memory (RAM) should be at least 2 GB,
- The system should have a hard disk of at least 120GB and at least a CD-ROM drive of high density,
- The system should be equipped with an E.G.A/V.G. A, a colored monitor,
- An uninterruptible power supply (UPS) units, and
- It should be internet ready.

Notice here that these listed configurations are the minimum requirement. The higher the report derived the better and the program will run much faster.

b. *Software Requirement*

The software specification required on the computer system is:

- A window 7 or higher version for faster processing,
- .NET framework 4.0

c. *Operational Requirement*

Windows computer system is primary prerequisite for the new system to be operational.

d. *User Requirement*

A live computer system with computer literate user.

4.0 CONCLUSION AND FUTURE WORK

Research and development are continuous processes; this is same in computer and software development. However, the effectiveness and efficiency of this new software provides room for further improvement. We did not manage to actualize all the original project objectives due to some limitations as earlier on mentioned. So, this objective could be improved upon, the Personal Cloner developed will offer greater opportunity in house resource management. We can now carry out all the household transactions using a computer software easily.

The research work carried out was limited to desktop standalone personal data management only. We move that we develop a cross-platform software for effective and wholesome information management technology in our homes. That software must include the following components:

i. Will generation, and
ii. Mobility (extended to mobile platforms).
iii.

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