

An Optimization of a Ghost Worker Detection System using Hybrid Technology

Idoko Nnamdi .A

Department Of Computer Science, Renaissance University, Nigeria

Onyedeké Obinna Cyril

Department Of Computer Science, University Of Kairouan, Tunisia

Kingsley Chukwuemeka Ubani

Department Of Computer Science, Federal Polytechnic, Oko, Nigeria

Dr. Njideka Mbeledogu . N

Department Of Computer Science, Nnamdi Azikiwe University, Awka, Nigeria

ABSTRACT

Ghost worker syndrome has been a menace across all tiers of government. It has led government into spending billions of money resulting from funds siphoned through payments of non-existing employees. This paper develop a system that uses biometric and National Identification in detecting ghost workers and also detecting double employment. The problem emanating from ghost working syndrome has actually helped in creating a geometric annual increase in wage bill thereby depleting the nation's economy. Object Oriented Analysis and Design Methodology (OOADM) was adopted for its analysis and design. A National Identity Number based randomizer for generating identity numbers for each staff in company or organization was developed. A biometric system for capturing daily staff fingerprint was included. PHP, HTML and VB 6.0 were used for coding the system. MYSQL was found efficient for the database. The system developed was able to detect ghost workers.

Keywords:- Ghost worker, detection system, hybrid, biometric system

I. INTRODUCTION

Everywhere throughout the world, work and wages have been determinants for acceptable administration since they are the significant root for modern activities that are seen occasionally. Government spends significant piece of the yearly financial plan on intermittent uses. The phantom laborer condition has been a threat over all levels of government and has prompted government burning through billions of naira coming about because of the cash being directed through installments to non-existing representatives. Thus, this geometric yearly

increment in wage bill has gotten troubling and along these lines placing the country's economy in peril.

In many nations, the production of phantom names is a typical finance misrepresentation that happens in the open administrations [1]. Ghost workers are characterized as people who get compensation from an association without appearing for work or who may not exist yet their pay rates are being appropriated by another person, despite the fact that the cause of the term phantom specialist isn't appropriately recorded, numerous individuals accepted that apparition laborers appear for brief periods at work and vanish for a significant part of

the time and sometimes don't exist yet their names are kept on the finance [2]. Poor record keeping in the open administrations of creating nations adds to the formation of apparition names on the administration payrolls (International Records Management Trust, 2008). [3] Claimed that numerous nations have phantom laborers on their payrolls who get compensations without working for it. Phantom specialists in this way, channel open assets and deny nations of assets for improvement [4]. With the end goal of accomplishing this, [5] recommended overseeing ingenious work force through sufficient record framework. This goal was caught by apparition laborers disorder henceforth, a framework that incorporates staff finance and biometric recognizable proof with interpretive proof is proposed to fill in as a remedy to tending to this negative pattern.

II. WORKFORCE MANAGEMENT SYSTEM

Workforce Management framework is a framework that help associations plan, oversee, and track representative work, including work prerequisites, worker plans, and took care of time (PTO). Workforce the board stages offer an assortment of highlights that empower clients to streamline workforce endeavors. Organizations use workforce the board frameworks to gauge work request, make and allot worker plans, track participation, and report on workforce effectiveness. Workforce the board arrangements are ordinarily executed in Human Resource offices, however some independent items might be utilized by organizations without a customary Human Resource office. Workforce the executives programming can be actualized either as a major aspect of an incorporated Human Resource the board suite or as an independent arrangement. Workforce the board programming oftentimes

incorporates with outsider Human Resource applications, with center Human Resource frameworks specifically going about as a focal store for workforce information. To check this issue of apparition working condition, a few frameworks has been set up and they are:

1. ExakTime

ExakTime is an easy to understand and incredible time following assistance for field administration organizations. It helps organizations in effectively logging representatives' working occasions and following laborers too simultaneously. The application empowers them to know where representatives are on the field and how much time they spend taking a shot at a specific site. Thusly, they can screen working hours and guarantee that no client is left unserved for the afternoon.

2. LaborTrack

Work Track is a completely adjustable and start to finish, cloud-based answer for authoritative workforce the board to precisely recognize representatives. Inside ventures that have high representative turnover rates, associations frequently face troubles in overseeing cross-departmental workers. Also, endeavors that select new representatives have a duty to guarantee they are considered responsible, expand efficiency, and can be rapidly and precisely recognized. Building up exact worker ID likewise assists with lessening finance expansion and blunder rates and guarantee consistence with work following laws.

M2SYS Technology offers Labor Track as an adaptable and exact representative profile the executives and detailing arrangement that can be

effortlessly modified to meet the exceptional work following needs of any business.

3. Paycom

Paycom is a HR innovation supplier with a solitary database, start to finish item giving answers for Talent Acquisition, Time and Labor Management, Talent Management and HR Management, across the board application.

4. Bank Verification Number (BVN)

The Bank Verification Number (BVN) is a biometric ID framework executed by the Central Bank of Nigeria to control or lessen unlawful financial exchanges in Nigeria. It is a cutting edge security measure in accordance with the Central Bank of Nigeria Act 1958 to diminish extortion in the financial framework. The framework works by recording fingerprints and a facial photo of the customer. The BVN is an 11 digit number that goes about as your all-inclusive ID in all banks in Nigeria. Consider it a socio-security number yet for the financial business. It guarantees you can take part in exchanges anytime of banking activities.

2.1 FEATURES OF WORKFORCE MANAGEMENT SYSTEM

1. Forecast labor demands and develop workforce contingency plans
2. Help administrators manage employee schedules, PTO, and leave requests
3. Enable reporting on labor activities with workforce analytics capabilities
4. Track employee attendance and workforce competencies

2.2 RELATED LITERATURE REVIEW

[6] Presented three significant practical parts in Human Resource Information System (HRIS) giving the model: Input Data -----→ Maintenance -----→ Output.

The Input work enters staff data into the Human Resource Information System. Information section in the past had been one way, however today, filtering innovation licenses checking and capacity of genuine picture off a unique report, including marks and manually written notes. The maintenance function updates and adds new information to the database after information have been gone into the data framework. Also, the most obvious capacity of Human Resource Information System is the yield produced.

According to [7] produce significant yield for PC clients, the Human Resource Information System need to process that yield, make the important computations, and afterward group the introduction in a way that could be comprehended. In any case, the note of alert is that, while it is anything but difficult to consider HR data frameworks as far as the equipment and programming bundles used to execute them and to gauge them by the quantity of workstations, applications or clients who sign onto the framework, the most significant components of this System isn't the PCs, rather, the data. The primary concern of any far reaching HRIS must be the data legitimacy, dependability and utility first and the robotization of the procedure second.

[8] Proposed a practical Human Resource Information System that make a data framework which empowers an absorption of approaches and strategies used to deal with the company's human capital just as the strategy important to work the PC equipment and programming applications.

According to [9] human asset data frameworks (HRIS), assumes a significant job on key human asset the board (SHRM), and how this job is influenced by the size of an association have to a great extent been

dismissed in these literary works as far as both hypothesis and proof.

[10] Studies 'the utilization and effect of human asset data frameworks on human asset the board experts'. The point was to survey and think about the particular regions of utilization and to present a scientific classification that gives a structure to academicians. They additionally looked to decide if HRIS use was key, an apparent worth included for the association, and its effect on proficient representing HR experts.

[11] Evaluate the dispersion of eight data advances that are changing HR administration conveyance in North America and Europe. Such data advancements incorporate HR useful applications; coordinated HR suits frameworks, HR intranets, worker and director self-administration applications, HR extranets, and HR gateways.

[12] Studies uncovered that the exact proof bolstered the theory that there was immediate connection between a specific HRM practice framework and information stocks at singular level. Besides, the exact proof upheld just two of the theories connecting information stocks with a supported upper hand; consequently, human capital had an immediate, positive and noteworthy relationship with the production of a continued upper hand. Furthermore, innovation based information stocks at firm level likewise had a positive and huge relationship with formation of a drawn out upper hand for an organization. Nonetheless, exact proof indicated that information stocks at both individual and gathering levels had a positive yet no critical relationship with hierarchical execution.

According to [13] HRM frameworks may prompt a supported upper hand through the creation and improvement of information based assets. This was in accordance with the theoretical system created and the writing on HRM, which proposed a connection

between HRMS, key hierarchical assets and the production of a continued upper hand.

[14] Proposed a biometric based participation the board framework utilizing unique mark innovation. In their examination, they thought about the achievement rate after some time squandered during the manual participation and the recently evolved framework. It was discovered that their new framework is having 94% achievement rate over the manual sort.

[15] Proposed a framework utilizing Principle Component Analysis (PCA). In the examination, PCA was utilized to decrease enormous dimensionality of the information spaces that are watched variable to littler characteristic dimensionality of highlight spaces that are unmistakable factors, which are expected to depict the information monetarily. The PCA is one of the best procedures that have been utilized in picture acknowledgment and pressure, as it builds up a solid connection between's watched factors.

[16] Studies saw that it is hard to get exact gauge understudy participation in a homeroom with each outcome acquired from a facial acknowledgment framework freely. This is on the grounds that the face recognition rate isn't adequately high. In their examination, they proposed a strategy for evaluating exact participation by utilizing all the consequences of face acknowledgment got by consistent perception. Consistent perception improved the presentation for the estimation of the participation. Their investigation created address participation framework dependent on face acknowledgment, and applied the framework to study hall address.

[17] Proposed a participation the board framework utilizing Radio Frequency Identification (RFID). The framework utilized radio waves to move information from an electronic tag, called RFID tag or mark; it comprised of two sections, the equipment part and the product part which assume crucial job in the

general capacity of keeping the understudy participation and time the executives

[18] Developed a calculation that consequently denotes the participation without human mediation. This participation is recorded by utilizing a camera joined before homeroom that is persistently catching pictures of understudies, identify the countenances in pictures, process the pictures, remove a few highlights and contrast the recognized appearances and the database and imprint the participation.

[19] Proposed a Biometric Access Control System Using Fingerprint for Restricted Area Based on Gabor Filter built up a biometric get to control framework for limited territories dependent on singular unique mark and Gabor channel for upgrade process. He showed the segments, upgrade, details extraction and coordinating strategies. The subsequent details data was utilized as a strategy for recognizing coordinating fingerprints. It was additionally used to enroll unique mark in framework database to assist directors with refreshing the necessary data. At long last, check framework, and recognizable proof framework were executed. His special property contributes fundamentally to improve the picture quality.

[20] Proposed a Cancelable Fingerprint Templates utilizing Minutiae-based Bit-strings. A low multifaceted nature technique that didn't require pre-arrangement was proposed. The technique created bit-strings (drop capable formats) by mapping the details into a predefined three dimensional cluster utilizing the directions of every minutia (the position and direction of each reference minutia). Their strategy produced cancelable piece strings by changing the reference minutia into another dimensional cluster minutia. The technique was assessed utilizing the FVC2004 database and show that the presentation was superior to that of a past strategy.

III. ANALYSIS OF THE PROPOSED SYSTEM

This paper depends on the model of staff biometric participation framework utilizing national ID number and fingerprint validation for the purpose of detecting ghost workers. The proposed framework can be utilized to monitor, identify and check the IN and OUT timings of staff in an organization. The framework necessitates that all staff select his/her unique mark for the gadget to recognize and check in the event that he is a substantial staff and furthermore to record day by day resumption and conclusion timings for the staff for an entire month, before installment of pay rates are influenced. The essential thought behind this is to keep away from a circumstance where apparition laborers get compensation from the association or staff records counterfeit timings in the manual register but then getting full installment for the month. The proposed plan upgrades arrangement of each staff's participation by remote workstations, which are then sent to the focal database server toward the finish of every month for simple preparing of pay rates and remittances. The aftereffect of each staff checking in and out planning is caught by means of a unique mark gadget at every terminal and put away in the focal database server. Every Department remote terminal is interconnected to the focal database server through a mutual system. The accompanying suspicions were mulled over for powerful execution of the plan. These presumptions include:

1. There should be a stipulated time for resumption and closure of work
2. Both entry and exit points should have a computer system and fingerprint machine
3. There shall be a grace period of twenty minutes due to traffic

4. There should be a minimum number of total days for monthly attendance summary for all staffs of the organization
5. Accept there is a medical report, hours missed by workers should not be calculated and deducted from salary during payroll
6. The administrator should be able to view daily attendance, as well as monthly summary report for all staff of the organization

3.1 DESIGN OF THE PROPOSED SYHSTEM

The model below describes the behavior of the proposed system in terms of activities. Activities are modelling elements that represent the execution of a set of operations. The execution of an activity can be triggered by the completion of other activities, by the availability of objects, or by external events. The model for ghost workers detection system with biometric attendance authentication depicts activities related to management of staff attendance and this is shown in computation of staff payroll.

Figure 3: Data Flow Diagram of the proposed system

3.3 PROPOSED WORK

The system designed is aimed at developing software that can manage employee information in an establishment aiming at detecting ghost workers. Security of the database used in the design was highly taken care of by the software developed. The objective of the design includes:

1. Capture records of employees and store the information on a database
2. Capturing of employees registration forms

3. Validating the employee identity using the National Identity card Database
4. Fingerprint capturing
5. Fingerprint Verification in attendance signing
6. Audit trail for staff performance
7. Compute payroll deductions using the attendance register
8. Print the monthly pay slip
9. Monitor staff leave allowance payment
10. Manage staff payroll
11. Restriction of unauthorized users
12. Maintain a Database for employees, National ID and Registered Companies

IV. RESULTS AND DISCUSSION

The ghost worker detection system using hybrid technology (Biometrics and National Identity Number) has been accomplished in this exploration work. It involves the structure of a framework to help the HR director to adequately oversee representative data initially started by IPPIS. The model created can play out the accompanying capacities:

1. Store worker data
2. Capture biometric staff participation
3. Automatically extra charge tenderfoots
4. Keep track of staff execution and preparing
5. Calculate gross, net compensation, and decide sub-charge conclusions from late coming and truancy.
6. Create and keep up a record containing every single essential record of worker installments
7. Prevent apparition laborers name from entering the finance calculation sheet.

The framework has helped the HR to maintain a strategic distance from a portion of the downsides of the level records framework like consistency and security of representative data. The staff

compensation module enables the representative to monitor their profit by printing their compensation slip for every month. It enables the businesses to track the amount they pay out as pay rates by making a record that can be utilized to sift through outcomes by worker, month, and year. The various assignments and capacities are laid out in an extremely straightforward and clear way for the clients. The interface is straightforward and not confounded to take into consideration simple use. The product was

completely tried to guarantee it is moderately blunder free and that it registers results accurately, including reasoning's, for example, sub-charges emerging from delay to work and truancy. The product gives a superior efficient and effective method for monitoring representative's exhibition assessment, track records, review trail, validations and participation checking, and lessening administrative work by keeping proficient electronic records.

Below are screen shots of the system:



Figure 1: Screenshot of Home Page

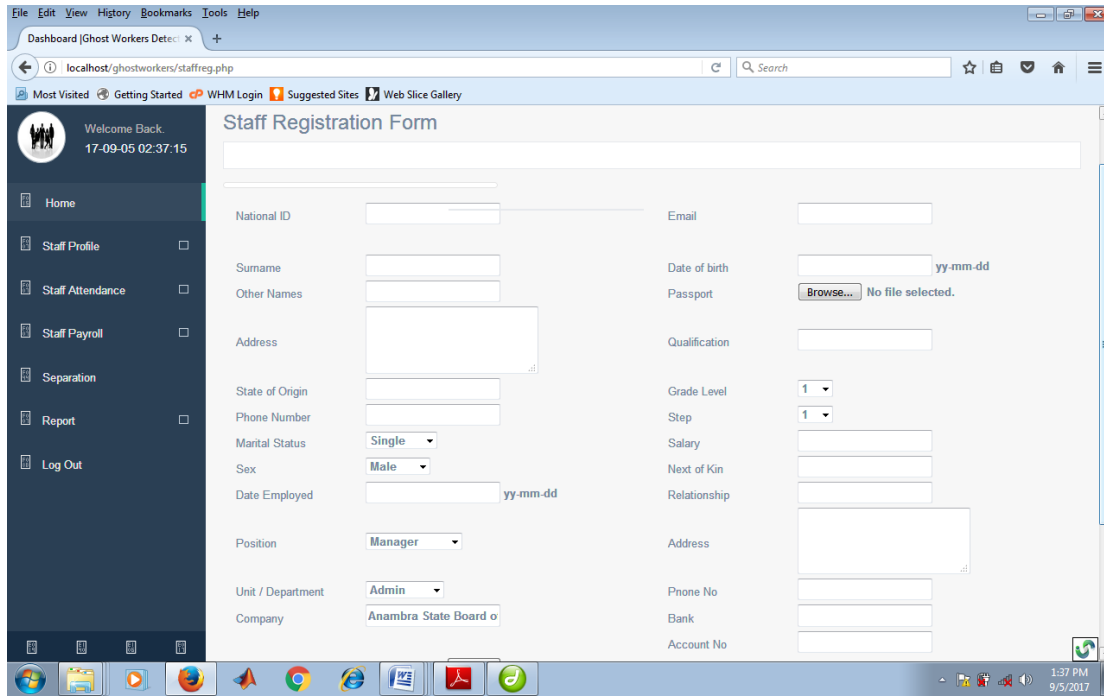


Figure 4: Screenshot of Employee Registration Form

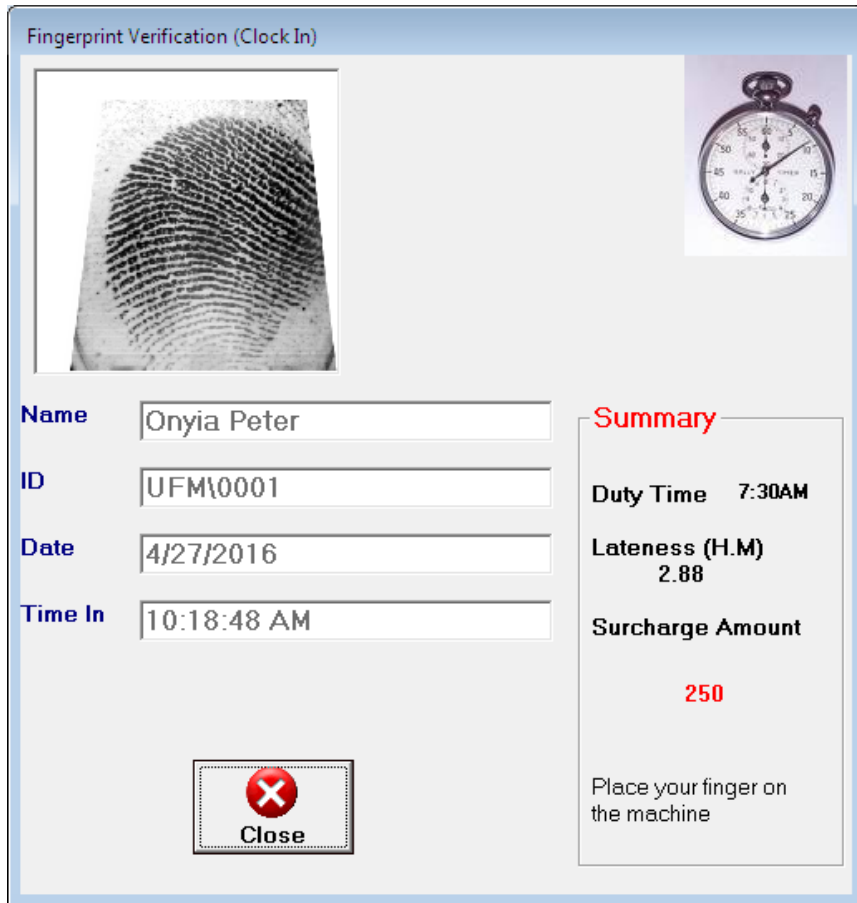


Figure 5: Screenshot of Staff biometric attendance (Clock In)



Figure 6: Screenshot of Staff biometric attendance (Clock Out)

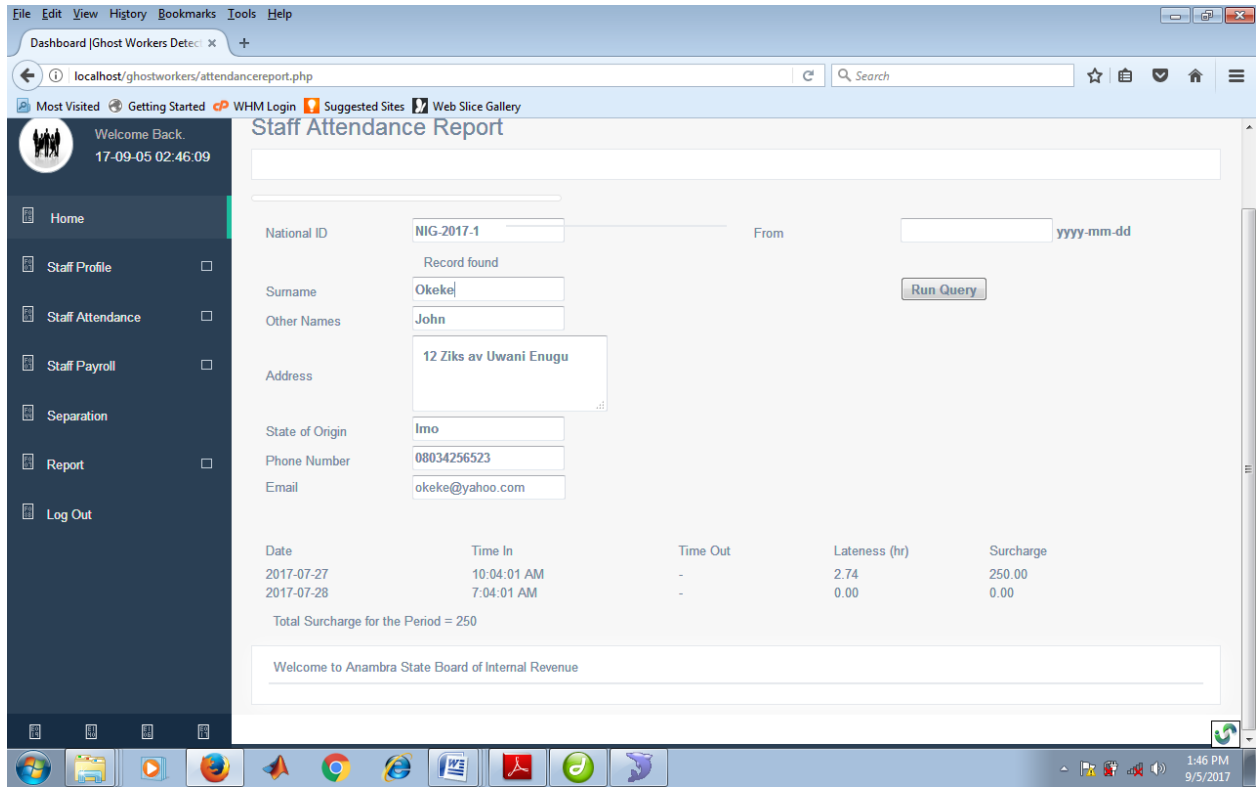


Figure 12: Screenshot of Staff attendance report

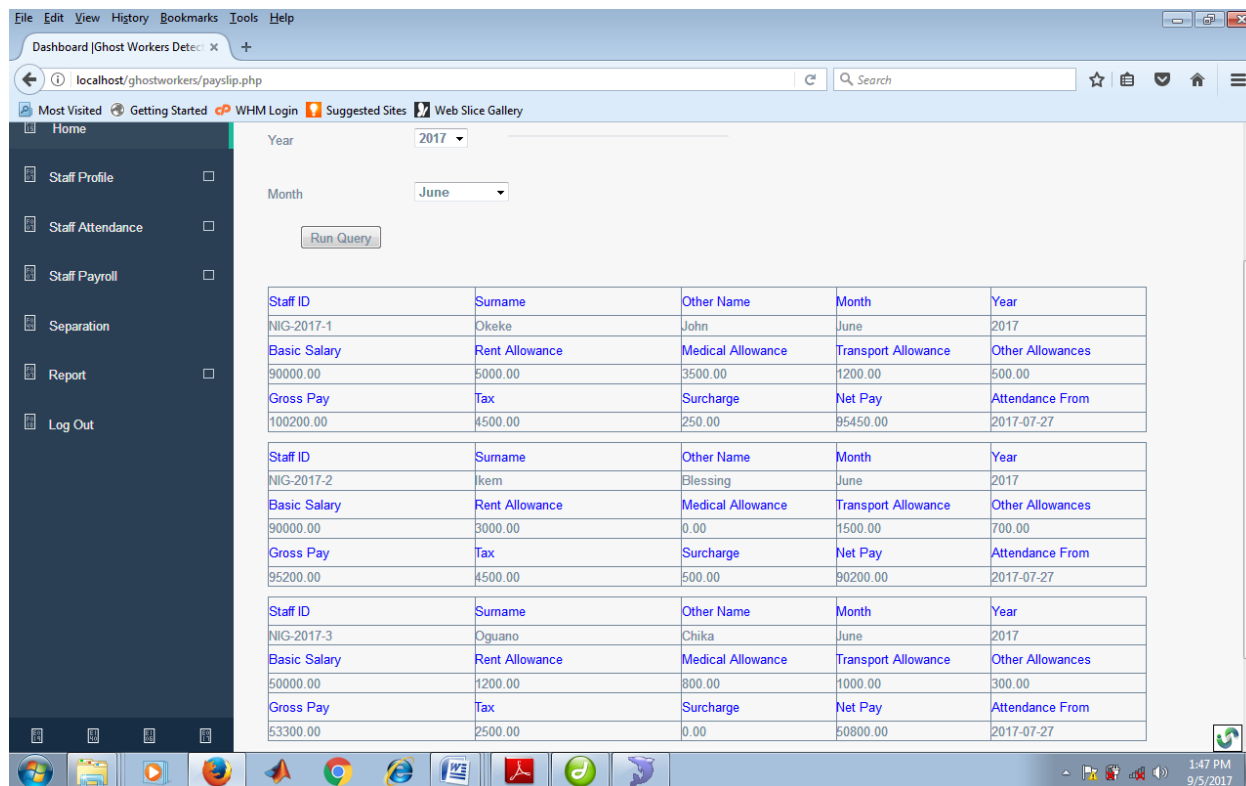


Figure 13: Screenshot of Staff pay slip report

V. CONCLUSION

This paper proposed a Biometric ghost worker detection system that confirms and verifies the legitimacy of staffs in any foundation or association utilizing National Identity Number produced by a randomizer. The framework has the capacity of catching everyday participation of staff that enlisted as a bonafide staff of a given foundation/association. Any participation outside the resumption and shutting hour of a specific association/foundation, the staff is been overcharged a given sum as reverred in the framework. Faculty offices in association or foundation were the framework has been sent are currently discovering simpler to angle out apparition laborers in their database and staff evaluation has demonstrated simpler as the work involves each

enrolment forms from the purpose of enlistment to the point of division from administration.

Reports, for example, staff ostensible moves, finance reports, evaluation reports to specify yet a couple can be gotten through the framework. Additionally, the advancement of biometric information catch included numerous stages. The methodology utilized is a top-down one focusing on what first, how and moving to progressive degrees of subtleties. The examination uncovered that, fingerprinting has served all legislatures overall during the previous 100 years or so to give precise recognizable proof of people. No two fingerprints have ever been discovered indistinguishable in a large number of human and robotized PC correlations. Fingerprints are the crucial instrument for the distinguishing proof of individuals

with a criminal history in each police organization. It remains the most usually accumulated measurable proof worldwide and in many wards unique finger impression assessment out numbers all other scientific assessment casework consolidated. Also, it keeps on extending as the head strategy for distinguishing people, with countless individuals added to unique mark vaults day by day undeniably more than other scientific databases. It is trusted that powerful usage of this product item would dispose of numerous issues found during frameworks examination. This will no uncertainty bring about common help rational soundness and with the guide of this biometric confirmation and national character number created from a randomizer, government stores will be bragged.

Deadliness on issues identifying with the worker the board (for example enrollment, execution appraisal, installment of wages, pay rates, recompenses, size of staff and so on.) and other administration issues (for example surcharge deductions) become officially and operationally compelling because of advantages inferred in computerization.

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