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Design and Implementation of an Enhanced Pension Scheme Management System for Nigerian Pensioners

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ABSTRACT

The 2004 Pension scheme was introduced when there was complaint coming from the masses in respect to the old pension scheme which was introduced early 1970, and fully implemented in the year 1979. Some of the complaints from the old pension scheme were fraudulent activities of top officials of Pension Board. The increasing burden of Pension payment in the public sector which weighed heavenly on government making it difficult for government to meet up with payment. The 2004 pension scheme was introduced, it was contributory and funded. The introduction of the 2004 Pension Scheme was aimed at improving the standard of living of pensioners in order to avoid old-age poverty. Despite the fact that different bodies were created to carry out different activities, still monies of retirees have not been able to get to its rightful destination as at when due. Some of the problems encountered during the study of the existing system are incomplete data capturing, loss of vital information, double registration, inconveniences, traveling from one place to the other for verification without achieving ones aim. Our aim in this work is to design and implement an enhanced pension scheme management system that will be able to carry out registration and verification exercise online, thereby reducing stress and monies getting to its destination as at when due, provision of security in the database to prevent an insider and outsider from manipulating data in the system, The creation of a common database where the user, the Admin and Super Admin share common information to some extent. The methodology adopted is Object Oriented Analysis and Design Methodology (OOADM). The language used for coding this work is a combination of ASP.NET, which uses C Sharp at the back end and HTML, Java Script and Cascading Style Sheet (CSS) at the front end.

1.1 Background of Study

There had been traditional ways of protecting and caring for those who have given meritorious service to the country. This was as a result of the extended family system, whereby the younger ones whom they have assisted, in return takes care of them in respect to food, clothing and health. However, as a result of modernization and so-called Western civilization, the system broke down. The government introduced a pension scheme in the early 1970s, which was fully implemented in the year 1979. This decree provided for a pension scheme that was funded and non-contributory. Its benefits were largely related to earnings and relied on the replacement ratio. This meant that the pension benefits and gratuities were functions of the number of pensionable years and the income earned while in service. The government paid pension benefits from the consolidated revenue fund. The 1979 Pension Decree increased the retirement age to 60 years or 35 years in service, subject to 3 months' notice in writing or payment of 3 months' salary in lieu of notice. Here, consideration is given to those in the higher institutions of learning, as their retirement age was increased to 65 years or 35 years of service.

The structure of this pension scheme is pay as you go (PAYG) with defined benefit, indicating that it is mainly funded, given the fact that the benefits that were paid during a certain period were financed by the government from the consolidated fund and not the employees.

The 1979 pension scheme covers professions and bodies such as the police, Federal and State Ministries and Departments, National University Commission, University Teaching Hospitals, Public Teaching Service, Local Governments and other Parastatals of the government. However, despite the laudable objectives for which the pension scheme was put in place, it has not had a significantly positive impact on the welfare of pensioners. This was as a result of problems such as the inflation rate, which has depleted the real value of the benefits; the high dependency ratio in the country; fraudulent activities of the Pension Board, inadequate Pension coverage, erratic budgetary allocation and so on. Owing to these problems, pensioners continuously protested to the authorities against their poor conditions and welfare, and thus called for a reform in the pension scheme. As a result of the continuous pressure on the government to review the current pension scheme, the Federal Government of Nigeria introduced a reform to the pension scheme called the '2004 Pension Scheme', backed by an Act of the parliament called 'The New Pension Reform Act 2004' of the Federal Republic of Nigeria which established a funded system based upon personal accounts.

The general objective of the 2004 Pension scheme is to ensure that every person who worked in either the public service of the federation, federal capital territory or private sector receives his/her retirement benefits as at when due. It seeks to introduce a pension system that is 'financially sustainable, simple and transparent, less cumbersome and cost effective' (Demaki & Dedekuma, 2006).

Ahmed, Abayomi & Nureni (2016). See's the new Pension scheme as a fully funded Pension scheme that generates adequate funds through certain percentage of contributions from monthly earnings by both employee and employer through a form of savings. Another purpose of the new Pension scheme is to de-emphasize the lump-sum payment of gratuities, removes pension administration from the public sector and places it squarely in the hands of financial institutions. Efficient pension administration now depends on the efficiency of the Nigerian financial institutions, which calls for well-managed banks, insurance companies, pension fund administrators and custodians and an effective regulatory framework in the money and capital markets. (Moses and Okoroafor, 2014).

Alicia, Jean-Pierre & Caroline (2015) in their study finds out that participants are responsible for their own investment strategy. The supposition is that individuals are not very good at investing their own money and face high fees. The question is whether this supposition is borne out by facts. After research, they concluded that base on investment returns, defined benefits versus contribution plans, defined benefit out-performed contribution plans. The fundamental question that still needs to be addressed is whether the provisions of the 2004 pension reform Act has integrated adequate safety nets against the observed inadequacies of previous pension schemes and what are the challenges that are negatively affecting the scheme?

After much research, some of the challenges in the 2004 pension scheme are: incomplete data capturing, fraudulent activities of Pension Board, non-enrolment of eligible pensioners into the payroll, irregular payment of pension, non-payment of pensions and omissions and short payment of monthly pension. Inorder to facilitate the payment of retirees and making sure these monies gets to its rightful destination as at when due, an enhanced Pension scheme management system will be designed that should be capable of enrolling and verifying Pensioners online, storing of adequate and correct data in the database, creation of a common database where the user (employee/retiree)admin (PFA) and super admin (Pencom) share common information, alongside is the user trail which stores all activities in database making it transparent and can only be seen by the super admin (Pencom) but cannot be modified by anyone. This will go a long way to streamline fraudulent activities in the inner house or from an outsider.

The system will be capable to forward the site for verification to retirees who with their user ID and password log in and be verified with fingerprint authentication irrespective of wherever they are. The success of the new scheme will to a large extent depend on the regulatory and supervisory capacity of the Commission as part of the major reasons for the failure of previous schemes in both public and private sectors which was as a result of lack of comprehensive regulatory framework for the pension industry.

1.2 Statement of the problem

In Nigeria, the delay in payment of pension and gratuities has brought untold hardship and death to many retirees, thereby making retirement something that is dreaded by workers. This problem is further compounded by lack of planning and management of post-retirement epoch and conditions. Non enrolment of eligible pensioners into the payroll, irregular payment of pension, non- payment of pensions and omissions and short payment of monthly pension. There is therefore the need to develop an enhanced pension scheme management system to take care of the problems and improve on the available scheme.

1.3 Aim and objectives of the Study

The aim of this study is to design and implement an enhanced Pension scheme Management System that will:

a. Enrol employees and capture data of retirees online using data from personnel department of each institution
b. Store the passport photo/fingerprints of each employee
c. Verify employee/retiree using their unique USER ID and PASSWORD
d. Allow retirees to be verified online at their base location
e. Provide a common database for employee, employer and pension regulators which will ease information sharing
f. Provide improved/enhanced security features that will block out manipulation and corruption.

1.4 Challenges of the old pension scheme

One of the challenges of the defined benefit was its dependence on budgetary provisions from government for funding. The scheme became largely unsustainable due to lack of adequate and timely budgetary provisions. Secondly pension administration was largely weak, inefficient and cumbersome due to poor staffing and equipping that led to poor record keeping as a result, pensionsers had to spend years before their retirements benefits were paid (Smart, 2012). Furthermore, the Private sector schemes were characterized by very low compliance ratio due to lack of effective regulations and supervision of the system. Thus, many private sector employees were not covered by any form of pension scheme (Omoni, 2013).

Due to lack of reliable records of pensioners, huge amount of resources on what became yearly verification exercises were expended which did not result into the timely and efficient payment of pension. In the private sector, on the other hand, many employees were not covered by the pension schemes put in place by their employers and many of these schemes were not funded. Besides, where the schemes were funded, the management of the pension funds was full of malpractices between the fund managers and the trustees of the

pension funds. In view of the fact that the past pension schemes in the country were bedeviled by multifarious problems, this sad scenario necessitated a re-think of pension administration in Nigeria by the administration of former President Olusegun Obasanjo. Nigeria joined the reformist countries in 2004 to adopt the Direct Contributory scheme. Prior to this, the country had practiced the Direct Benefit Scheme in the public sector in which the government at all levels shouldered the full cost of pension and gratuity payment of workers.

2.0 Methodology Adopted

The methodology adopted for the design of the new system is Object Oriented Analysis and Design Methodology (OOADM). Object Oriented Analysis is a technique used to study existing objects to see if they can be reused or adopted for new use and define new or modified objects that will be combined with existing objects into useful computing application. Object Modeling (OM) is used to identify objects within the system environment and the relationship between those objects.

2.1 Analysis of the existing system

In the existing system, employee are expected to fill their data into the Retirement savings account form (RSA),which is classified into Personal Information, Employment History , Employment Details , Monthly Contribution , and Primary Next of Kin. Passport is affix to the form together with the capturing of finger prints.

- Personal Information : Retiree is expected to fill in his/her Names , State of Origin , Local Government Area, Date of birth , Residential Address, Permanent Home address Phone Number, email.
- Employment History: This comprises of Entry grade level, Current grade level, Date of first appointment.
- Employment Details: Name of Current employer, Employer Phone, employer email address, employer Head office address, Town , Department,
- Monthly contribution: Salary Structure, Annual basis salary, employer Contribution, Other pensionable allowance , Total contribution
- Primary Next of kin: Names, Date of Birth, Residential Address, Town, State, Phone number, email.

After filling the form, Pension fund Administrators collect the data and forward it to Pension Commission (PENCOM) who processes the data and forward PIN number to employees after six weeks.

During verification exercise, retirees are expected to go to their various zones for verification which last for weeks and days depending on the population of the retirees. Most retirees spend money going to their various zones for verification without achieving their aim.

2.2 Data flow Diagram of the Existing System

Data flow diagram (DFD) is a graphical representation of the flow of data through an information system. It shows where the data will come from and go to, and where the data will be stored.

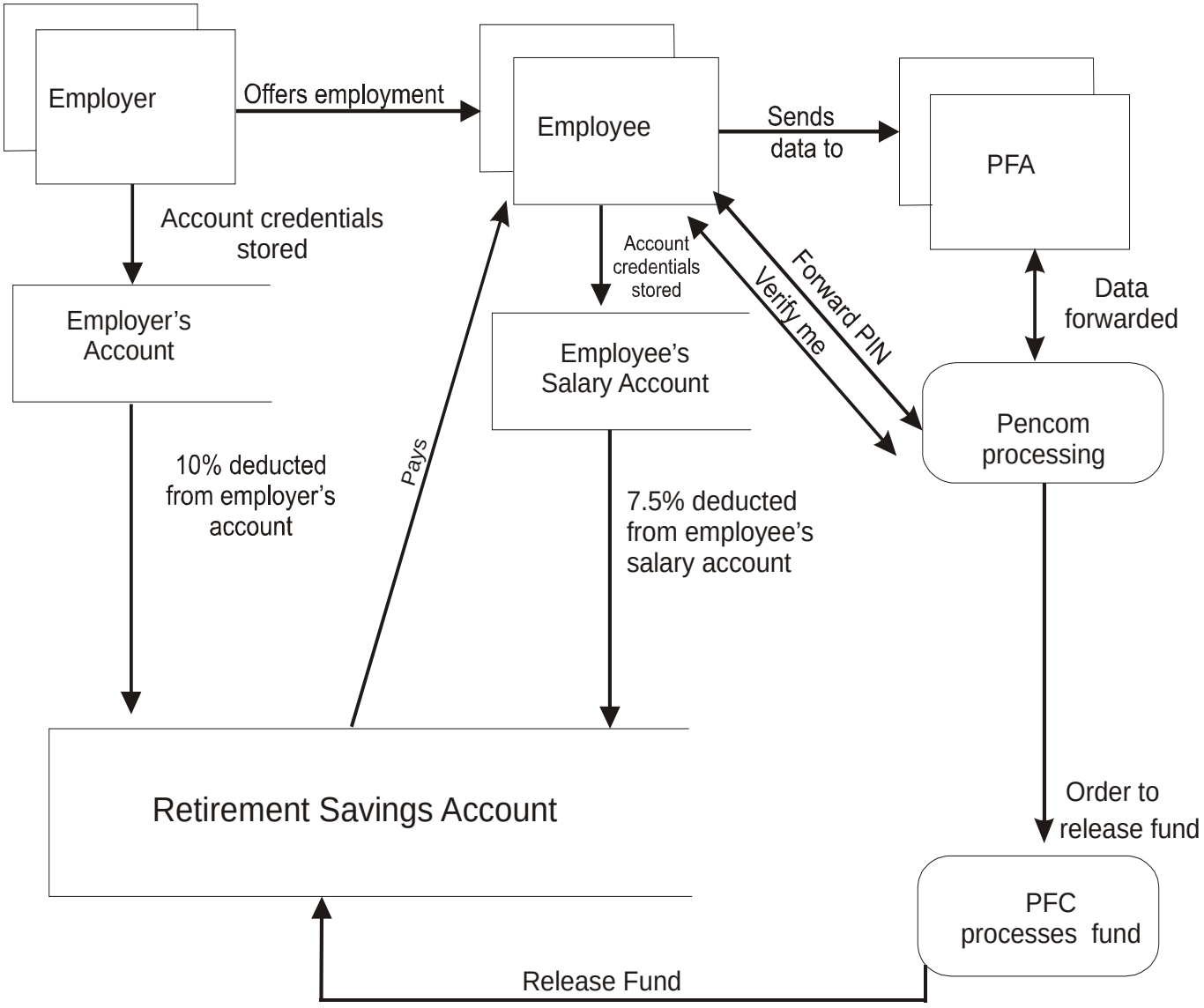

Figure 2.1 Dataflow Diagram of the existing System

2.3 Analysis of the Proposed System

As a result of the problems encountered in the existing system, in the proposed system, the institution or personnel departments forwards the data of his employees to PFAs, who enter the data online by themselves with employees passport attached to his data. Employee are expected to login with his user name created by Pencom, requesting for PIN.

The PIN is then forwarded to employee's phone, which he uses to check whether his data is correct. If his data is not correct he forward query which calls for immediate attention. As the PFAs worked with the given

information in the system, the retiree is expected to login using his initial PIN of registration to verify his/herself.

If the retiree is cleared, the PFA notifies Pencom who then send messenge across to Pension Fund Custodians to release Fund to Retirees Retirement Savings Account

2.3 Data flow Diagram of The New System

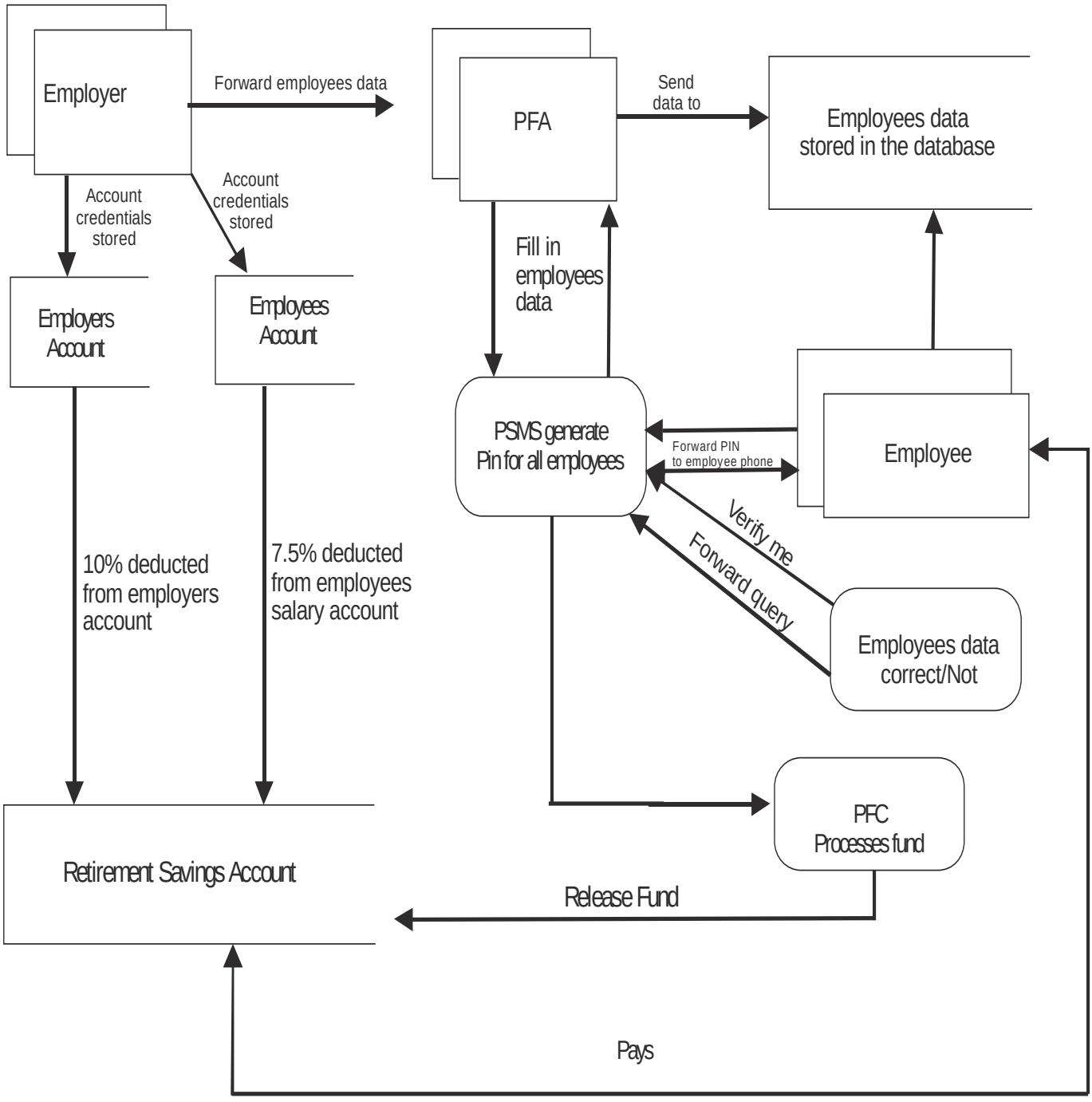

Figure 2.2 Dataflow Diagram of the Proposed System

2.5 Content Model Diagram of the New System

Content model diagram is a representation of the types of content and their inter-relationship. It appear to be the black sheep of information architecture, in addition it is the process of creating content models that describe structured content.

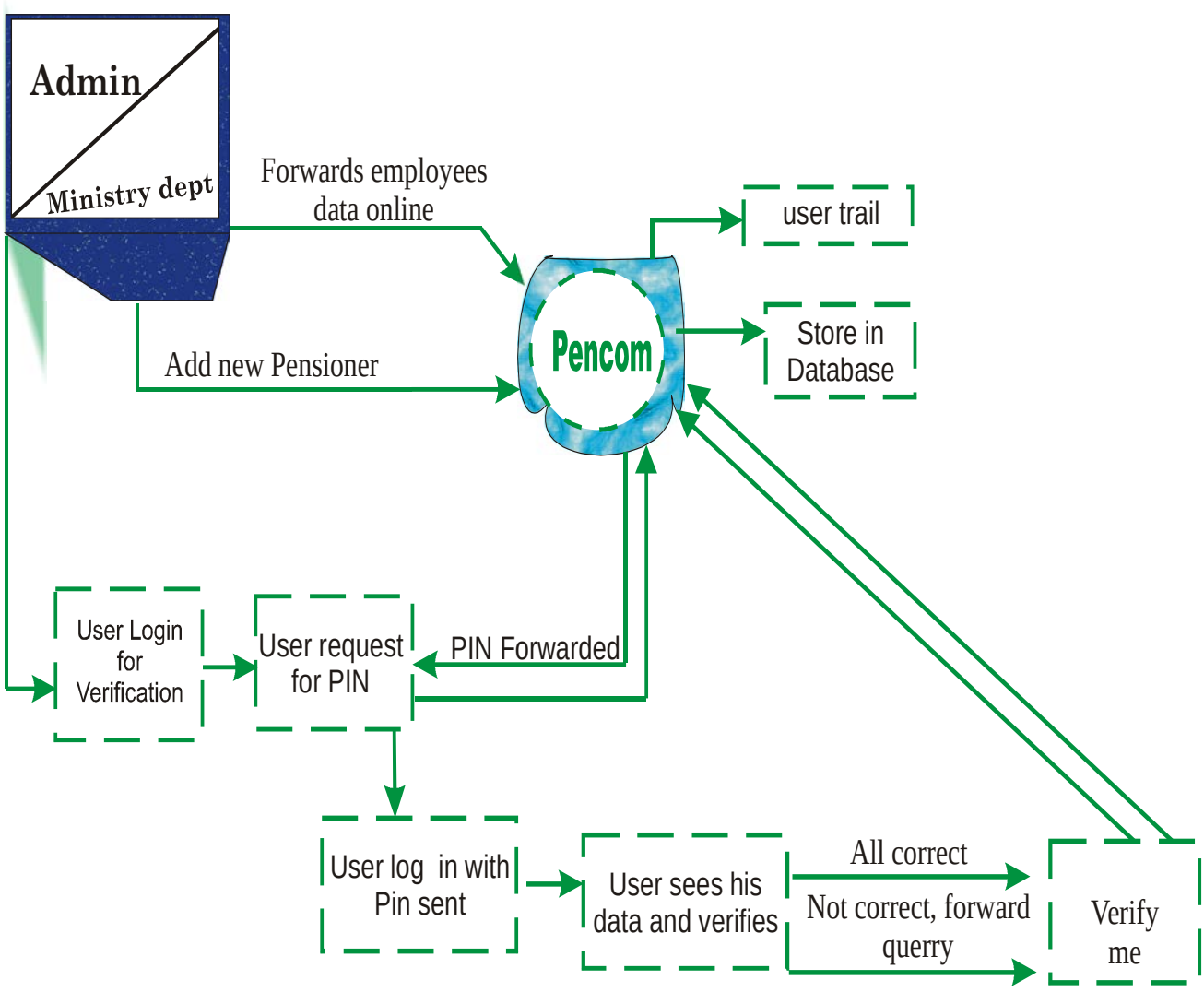

Figure 2.3 Content Model Diagram of the Proposed System

2.6 High level Model of the Proposed System

High–level model describe the architecture that would be used for developing a software product. The architecture diagram provides an overview of an entire system, identifying the main components that would be developed for the product and their interfaces.

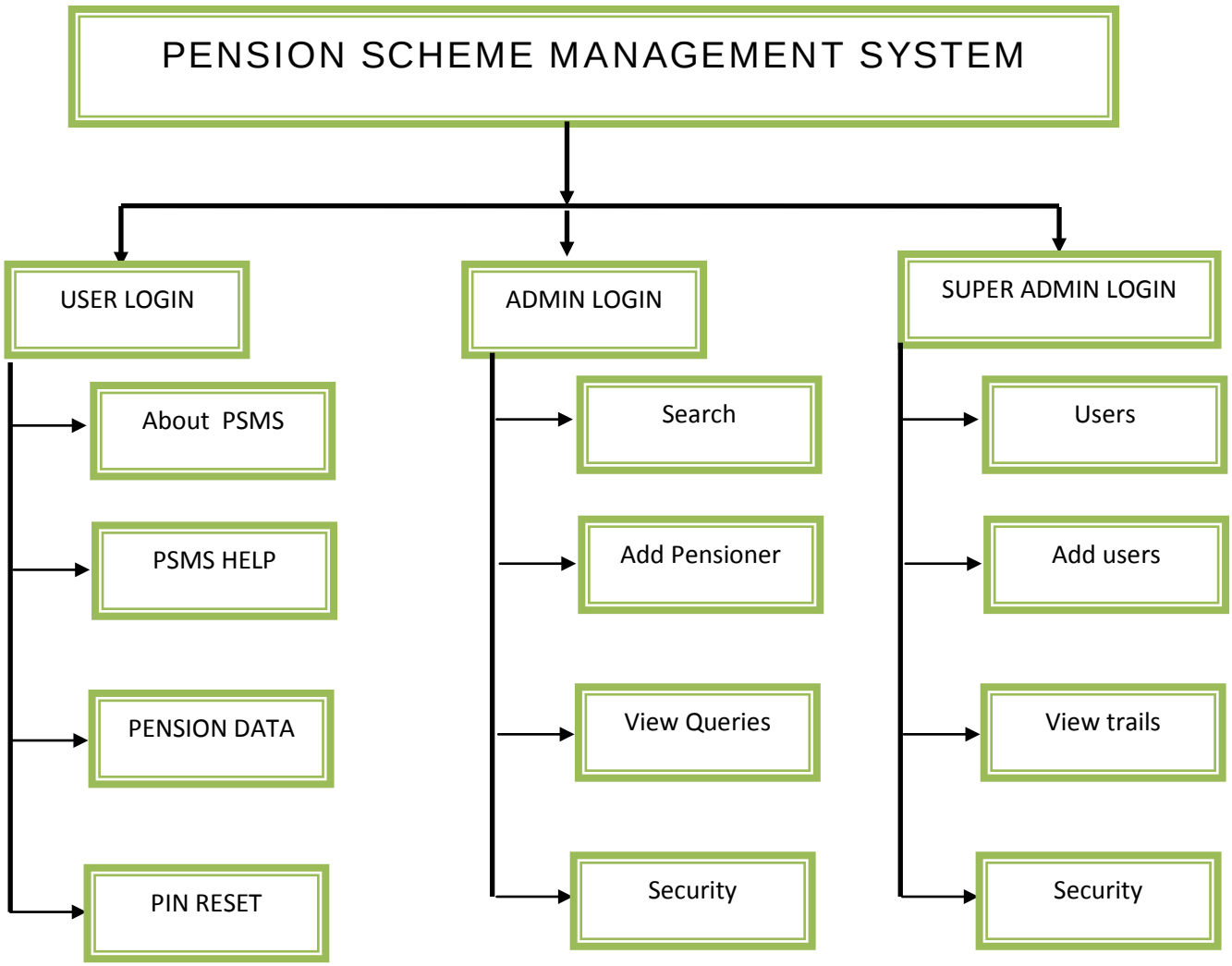

Figure 2.4 High Level Model of the Proposed System

2.7 Database Design and Structure

The database contains six (6) tables whose structures are shown in tables 2.1 to 2.5. It is concerned with all data, fields and records during the course of the research to ensure effective database management system .These data and records are represented in terms of field, name, and data type.

Table 2.1: members_official Table

S/N	Field Name	Field Type	Default
1	Idx	int(11)	AUTO_INCREMENT
2	Penid	varchar(100)	*None*
3	Ministry	varchar(100)	*None*

4	Department	varchar(100)	*None*
5	Rank	varchar(100)	*None*
6	Worklga	varchar(100)	*None*
7	Gl	int(2)	*None*
8	Step	int(2)	*None*
9	Bankname	varchar(100)	*None*
10	Bankac	varchar(100)	*None*
11	Bvn	varchar(100)	*None*
12	Lastpromotion	Date	*None*
13	Retirement	Date	*None*
14	Employed	Date	*None*
15	Pay_state	Float(10,2)	*None*
16	Pay_fed	Float(10,2)	*None*
17	Pay_gratuity	Float(10,2)	*None*

Table 2.2: Admin Table

Field Name	Field Type	Default
Idx	int(20)	AUTO_INCREMENT
Usern	varchar(100)	*None*
Pasd	varchar(100)	*None*
Level	tinyint(1)	*None*
Lastlogin	Datetime	*None*
Logincount	int(10)	*None*
Created	Datetime	CURRENT_TIMESTAMP

Table 2.3: Trail Table

Field Name	Field Type	Default
Idx	int(10)	AUTO_INCREMENT
Admin	int(10)	*None*

User	varchar(20)	*None*
Actionid	int(10)	*None*
Addeddate	Datetime	*None*

Table 2.4: Queries Table

Field Name	Field Type	Default
Idx	int(20)	AUTO_INCREMENT
Penidx	varchar(10)	*None*
Fhrom	int(11)	*None*
Query	text	*None*
Addeddate	Datetime	CURRENT_TIMESTAMP

Table 2.5: Members_Personal Table

Field Name	Field Type	Default
Idx	int(11)	AUTO_INCREMENT
Sname	varchar(100)	*None*
Onames	varchar(100)	*None*
Phone	varchar(15)	*None*
Email	varchar (100)	*None*
PenID	varchar (12)	*None*
PIN	varchar (35)	*None*
Piclink	varchar (100)	*None*
Sex	tinyit (1)	*None*
Dob	Date	*None*
Martial	int(1)	*None*
street1	varchar (100)	*None*
street2	varchar (100)	*None*
Town	varchar (100)	*None*
Lga	varchar (100)	*None*
State	varchar (100)	*None*

Nokname	varchar (100)	*None*
Nokphone	varchar (15)	*None*

2.8 Program Modules Specification

This is the tabular representation of the Module Specification and their description.

Table 2.6: Program Module

Modules	**Description**
User Module	The function of this module is to enable the pensioner view his/her records and communicate with the pension admin officers directly.
Admin Module	The admin module is used by the pension staff to add and edit pensioners' information as well as communicating with the pensioners and answering queries.
Super Admin Module	The super admin module is the only one that can access the User Trail and view Admin activities. This helps mitigate internal fraud and unauthorized alterations. The super admin also creates and edit Admin accounts
User Trailer	This is a module that runs in the background and not directly tied to any module. It logs every activity carried out by the Admin users and stores them in a read-only database.

a) Input Specification

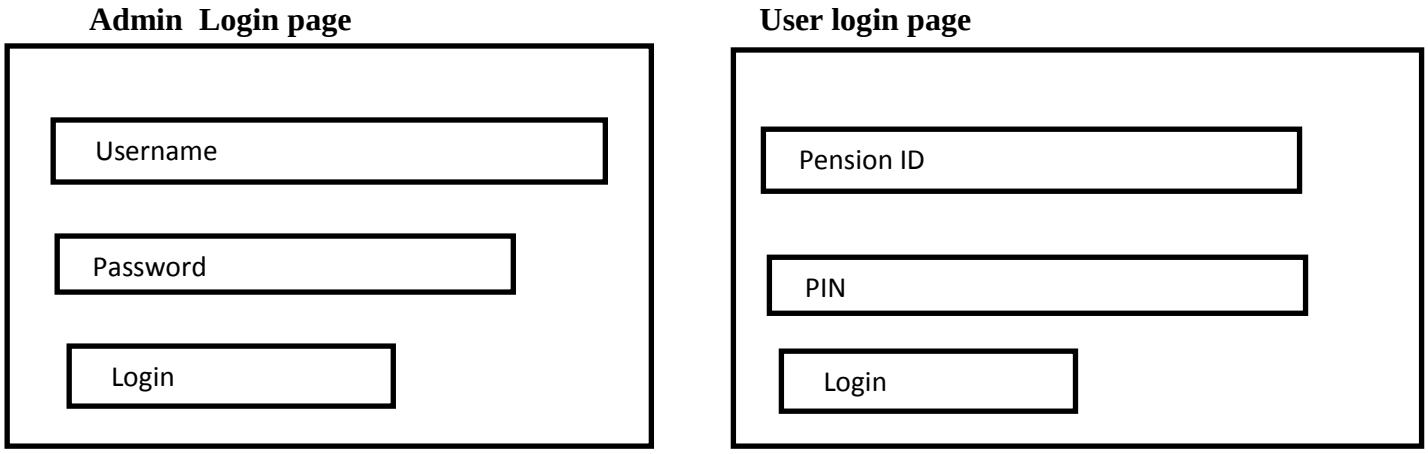

Figure 2.5 Admin/User Login

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Output Specification

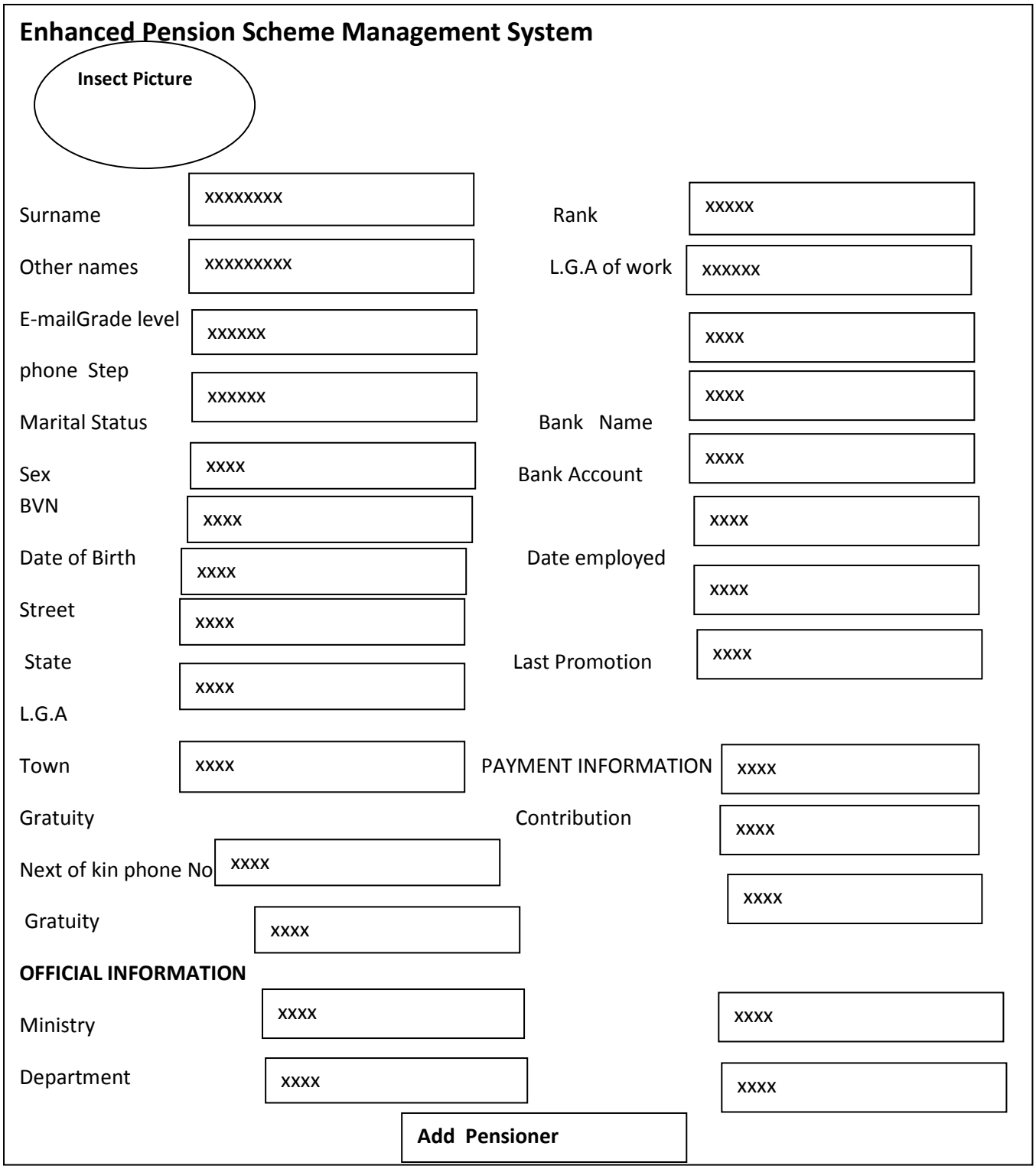

Figure 2.6 Output Specification

2.8 Overall object diagram of the new system

a. Use Case Analysis

This is a technique used to identify the requirements of a system. It is a collection of actors and processes.

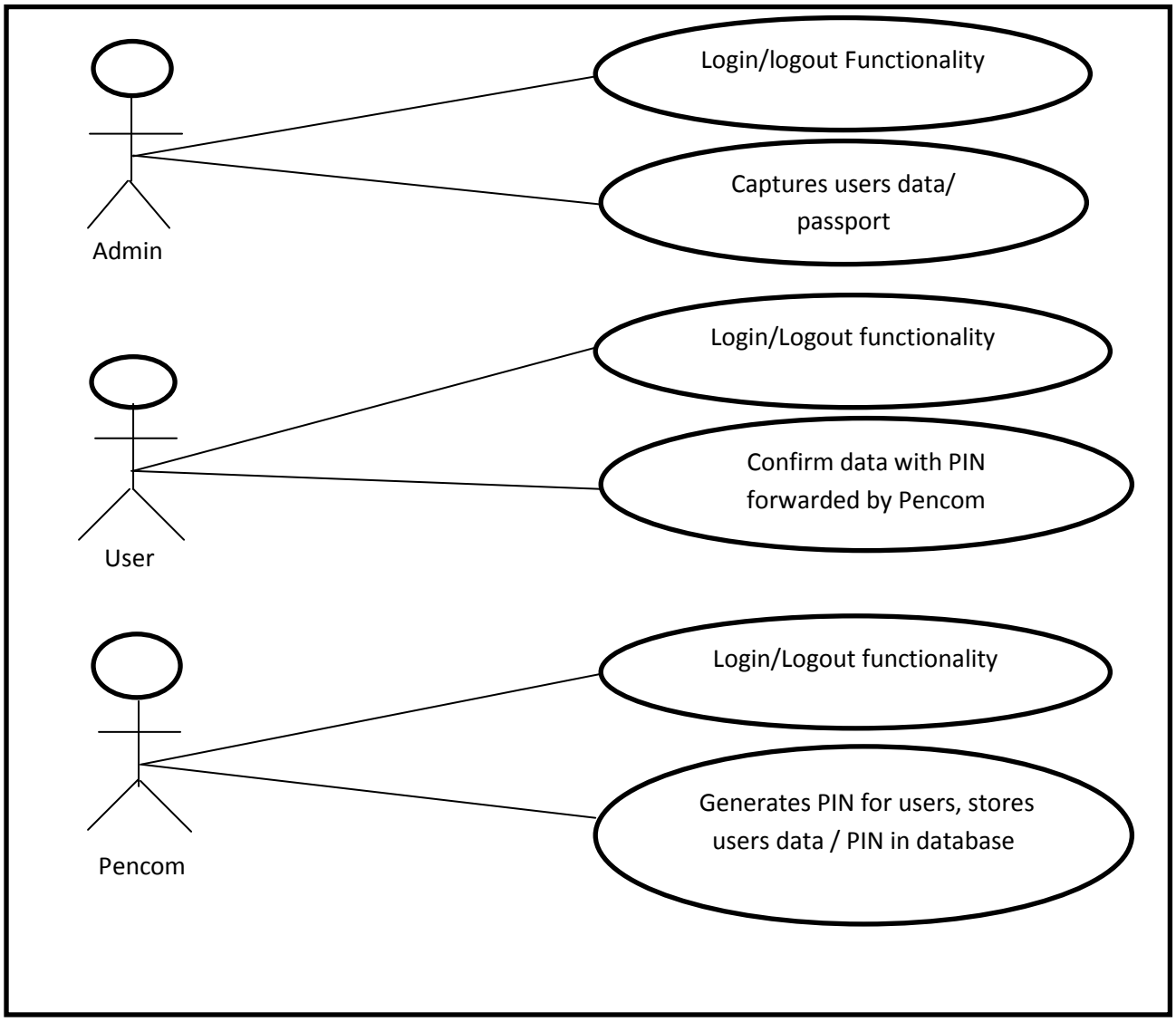

Figure 2.7 Overall object diagram of the new system

2.9 Activity Diagram of the System

This is another important diagram in Unified Markup Language (UML) to describe thedynamic aspects of the system. It is basically a flowchart to represent the flow from one activity to another activity. This activity can be described as an operation of the system.

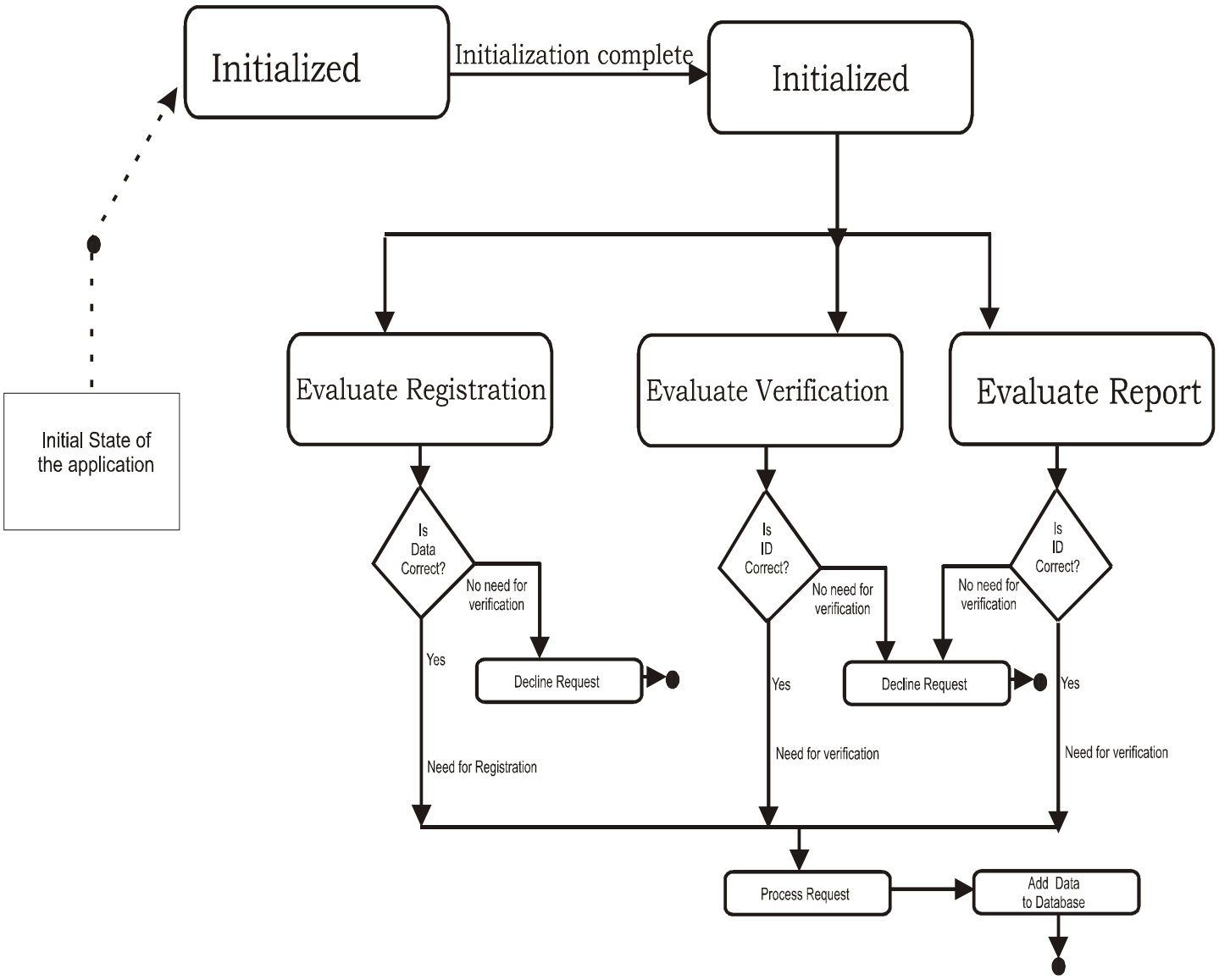

Figure 2.8 Activity Diagram of the System

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2.10 The Activity Diagram of Registration Subsystem

It is basically a flowchart to represent the flow from one activity to another activity in the registration Subsystems. This activity can be described as an operation of the system.

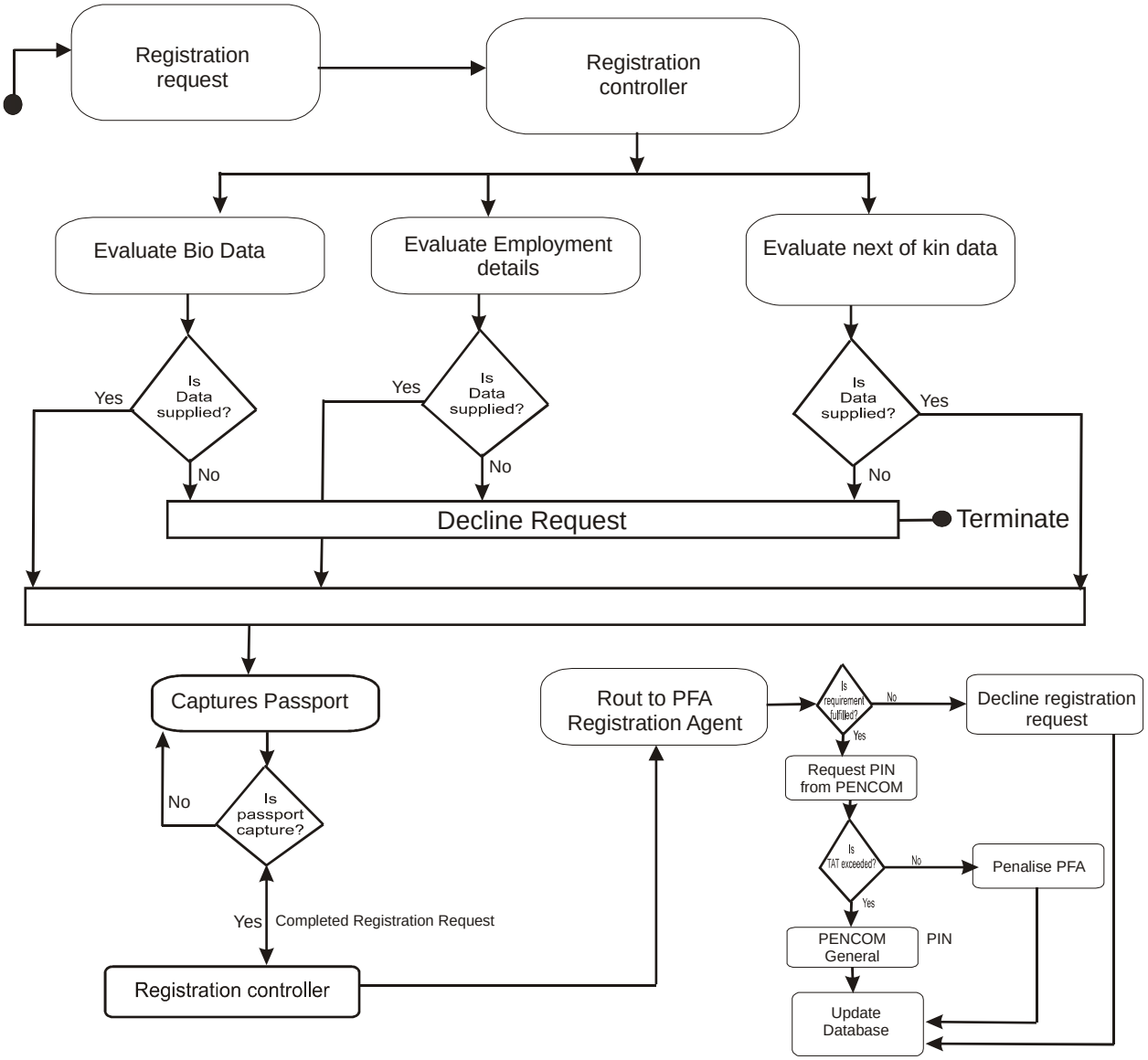

Figure 2.9 The Activity Diagram of Registration Subsystem

2.11 Activity diagram of the Verification Request Subsystem

It is basically a flowchart to represent the flow from one activity to another activity in the verification request subsystem. This activity can be described as an operation of the system.

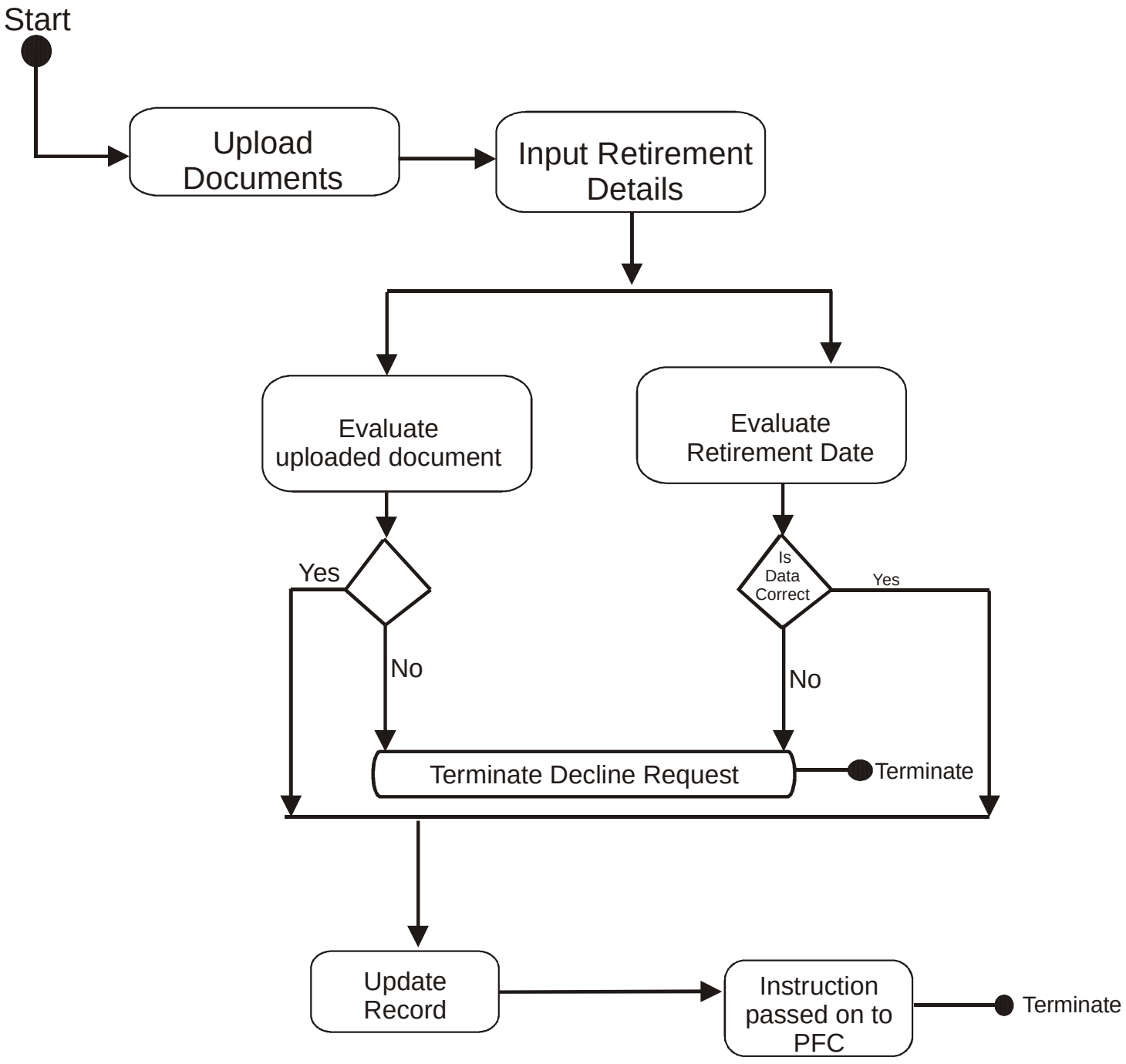

Figure 2.10 Activity diagram of the Verification Request Subsystem

2.12 Registration State Diagram in The Proposed System

Specifically a State Diagram describes the behavior of single objects in response to a series of events in a system. In this state diagram the PFA'S handles the initial registration by themselves in order to avoid lots of problem at the long run.

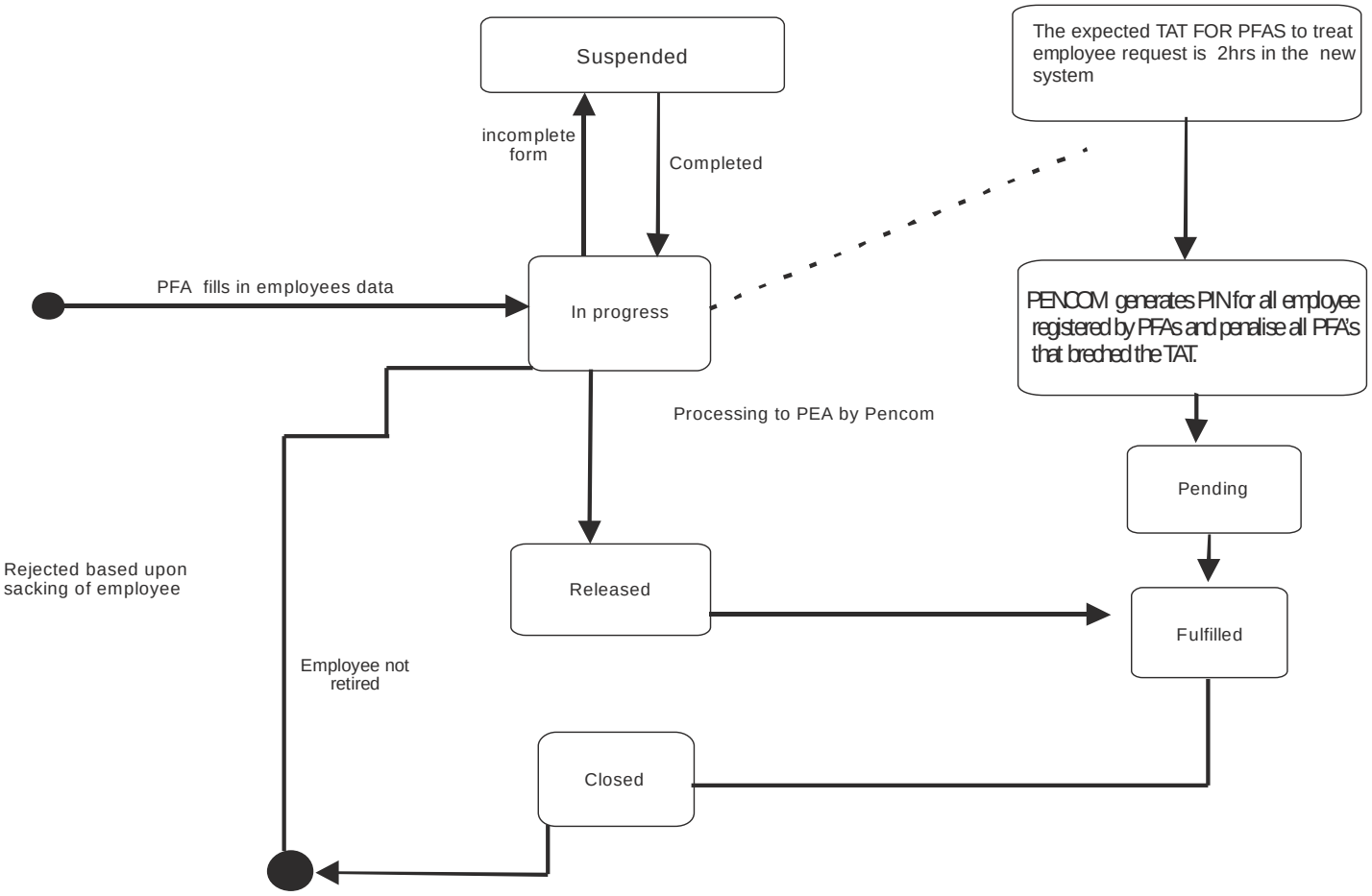

Figure 2.11 Registration State Diagram in the Proposed System

2.13 Verification State Diagram In The Proposed System

This is also another state diagram which describes the behavior of single objects in response to a series of events in a system. In this diagram the retiree login to be verified.

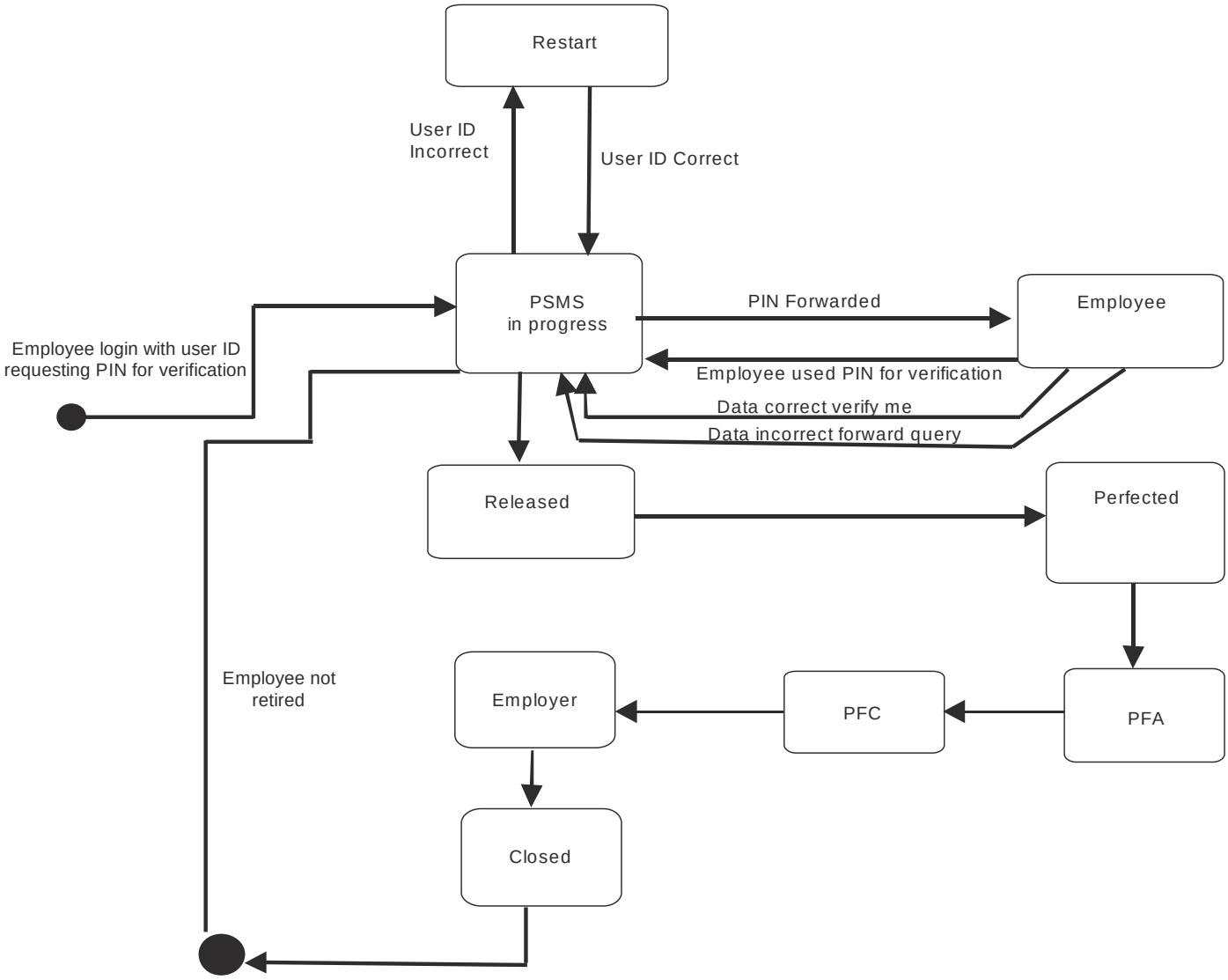

Figure 2.12 Verification State Diagram In The Proposed System

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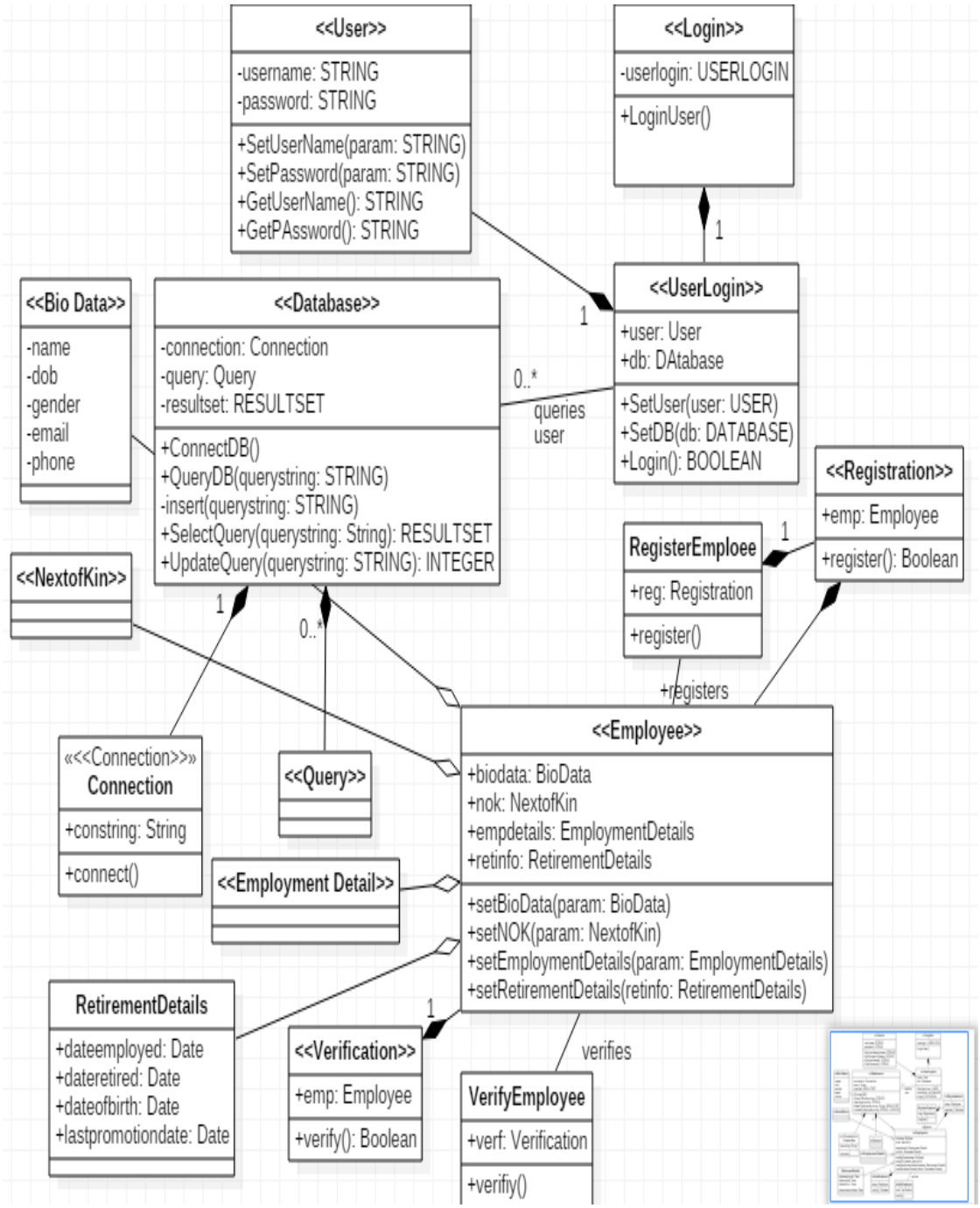
2.14 The Class Diagram for the EPSMS System.

A class diagram in the unified Modeling language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations or methods and the relationships among objects.



2.13 The Class Diagram for the EPSMS System.

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2.15 Transaction Generalization/ Member Generalization Relationship.

Generalization is the process of extracting shared characteristics from two or more classes, and combining them into a generalized superclass.

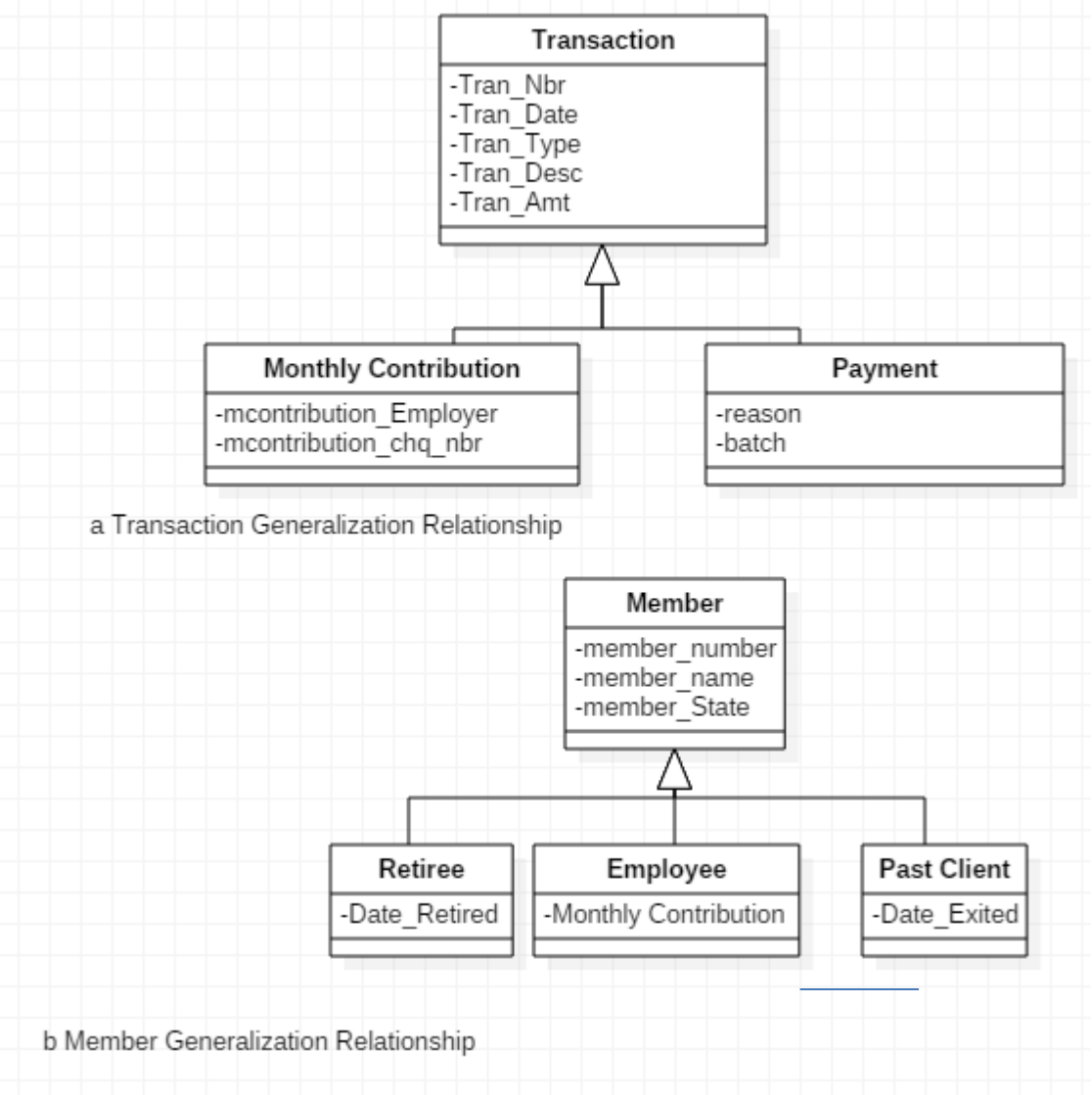

Figure 2.14 Transaction Generalization/Member Generalization Relationships.

2.16 Sequence Diagram of the Registration Process

A sequence diagram is an interaction diagram that shows how objcets operate with one another and in what order. In other word, a sequence diagram shows interactions arranged in time sequence. This is a sequence diagram illustrating registration process.

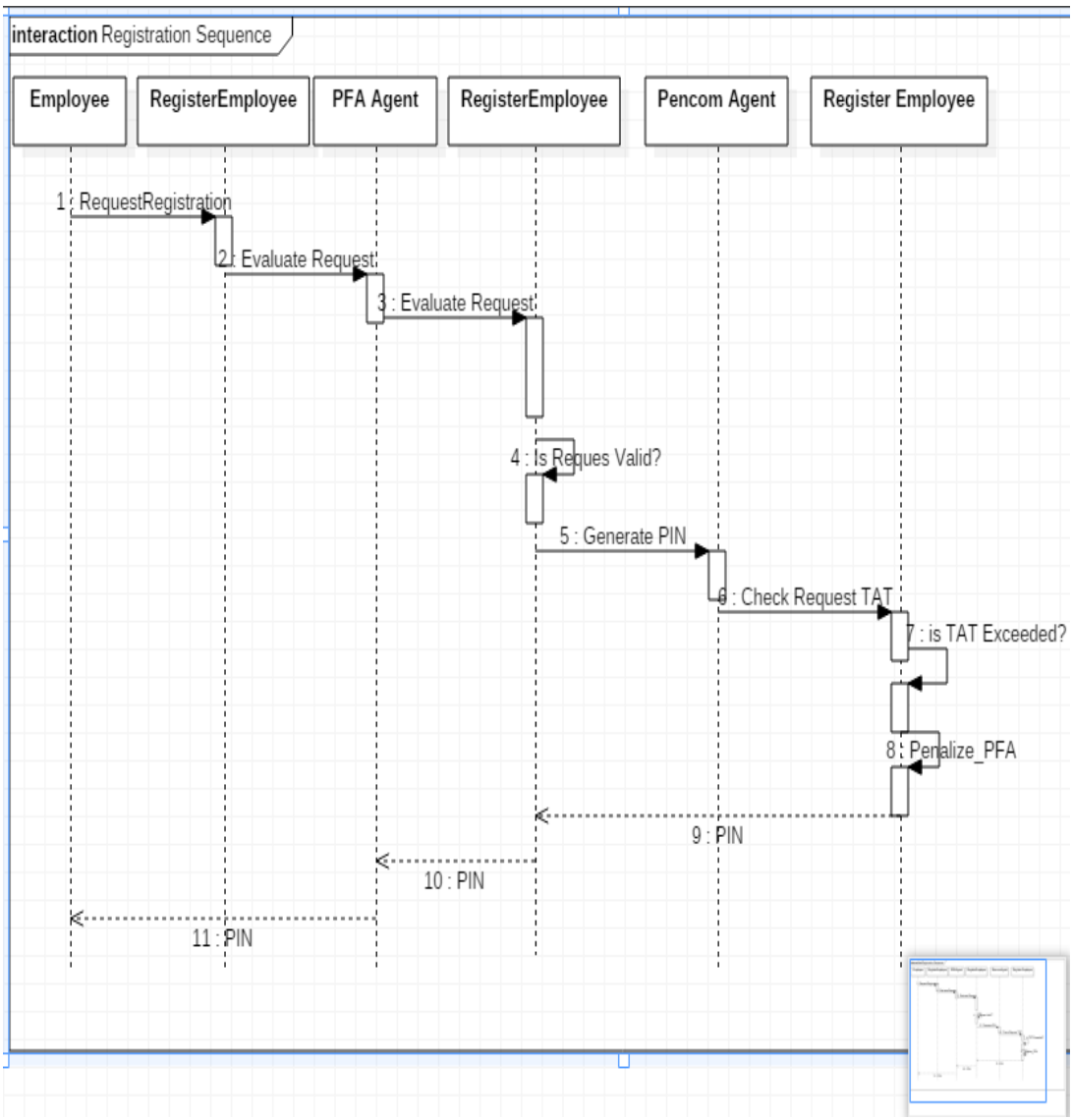

Figure 2.15 Sequence Diagram of the Registration Process

2.17 Algorithm

An algorithm is a step by step procedure for solving a given problem or accomplishing some end .It can be represented in a pseudo code or flowchart.

A pseudo code is an informal language way of programming description that does not require any strict programming language syntax.

Admin Login Module Pseudo Code

1. Prompt admin to enter username and password

2. If username and password in database THEN

a. Grant access into the admin dashboard

b. Prompt admin to add new pensioner

3. Else

b.Return to step 1

User login Module Pseudo Code.

1. Prompt user to enter pension ID and PIN

2. If user pension ID and PIN is in database THEN

a. Grant access into *user dashboard*

3. Else

b. Return to step 1

Super Admin Login Module Pseudo Code

1. *Prompt super admin to enter username and password*
2. *If username and password in database THEN*

a. Grant access to add new admin and view all trails

3. *Else*

b. Return to sstep 1

2.18 Data Dictionary

A data dictionary is a centralized repository of information about data, such as its meaning, relationships with other data, origin, usage and format.

Table 2.7: Data Dictionary for Members_Official Table

Short name	Long name	Description
Idx	Identity	Stores the unique identification for the rows in the database table. It is auto generated to avoid repetition.

Penid	Pension ID	Stores the pensioners' identification number from existing records.
Ministry	Ministry	Stores the pensioners' last ministry of work
Department	Department	Stores the pensioners' last department of work
Rank	Rank	Stores the pensioners' last rank before retirement
Worklga	Last Local Government of Work	Stores the pensioners' last local government of work before retirement
Gl	Grade Level	Stores the pensioners' last grade level
Step	Step	Stores the pensioners' last step
Bankname	Name of Bank	Stores the pensioners' bank name
Bankac	Bank Account Number	Stores the pensioners' bank account number
Bvn	Bank Verification Number	Stores the pensioners' bank verification number
Lastpromotion	Last Promotion Date	Stores the pensioners' last promotion date
Retirement	Retirement Date	Stores the pensioners' retirement date
Employed	Employment Date	Stores the pensioners' employment date
pay_state	State Pension Contbnribution	Stores the pensioners' state contribution
pay_fed	Federal Pension Contribution	Stores the pensioners' federal contribution
pay_gratuity	Gratuity	Stores the pensioners' gratuity

Table 2.8: Data Dictionary for Admin Table

Shortname	**Long Name**	**Description**
Idx	Identity	Stores the unique identification for the rows in the database table. It is auto generated to avoid repetition.
Usern	User name	Stores the username of the Admin officer
Pasd	Password	Stores the password of the Admin Officer
Level	Access Level	Stores the access level of the admin (1) and the super admin (2)
Lastlogin	Last Login Time	Stores the last day and time the user logged in

Logincount	Login Count	Stores the number of times the user logged into the system
Created	Date Created	Stores the date and time the user account was created

Table 2.9: Data Dictionary for Trail Table

Shortname	Long Name	Description
Idx	Identity	Stores the unique identification for the rows in the database table. It is auto generated to avoid repetition.
Admin	Admin User ID	Stores the ID of the Admin user
User	Pensioner ID	Stores the ID of the pensioner stored as a foreign key related to the ID field in the members personal table depicted in table 4.6
Actionid	Activity ID	Stores the activity ID performed
Addeddate	Activity Log Time	Stores the time of the activity

Table 2.10: Data Dictionary for Queries Table

Shortname	Long Name	Description
Idx	Identity	Stores the unique identification for the rows in the database table. It is auto generated to avoid repetition.
Penidx	Pension ID	Stores the ID of the pensioner stored as a foreign key related to the ID field in the members personal table depicted in table 4.6
From	Sender ID	Stores the senders ID, that is the originator of the query or the responder's ID
Query	Query	Stores the actual query
Addeddate	Query Log Time	Stores the date and time the query was made

Table 2.11: Data Dictionary for Members Personal Table

Shortname	Long Name	Description
Idx	Identity	Stores the unique identification for the rows in the database table. It is auto generated to avoid repetition.
Sname	Surname	Stores the Pensioners' surname
Onames	Other names	Stores the Pensioners' other names
Phone	Phone	Stores the Pensioners' phone
Email	Email	Stores the Pensioners' email
PenID	Pension ID	Stores the ID of the pensioner stored as a foreign key related to the ID field in the members _personal table depicted in table 4.6
PIN	Private ID Number	Stores the Pensioners' Secret Identification Number
Piclink	Picture Link	Stores the Pensioners' Passport Picture
Sex	Sex	Stores the Pensioners' Sex
Dob	Date of Birth	Stores the Pensioners' Date of Birth
Marital	Marital Status	Stores the Pensioners' Marital Status
street1	Street Address Line 1	Stores the Pensioners' Address
street2	Street Address Line 2	Stores the Pensioners' Address
Town	Town	Stores the Pensioners' Town of Origin
Lga	Local Government Area	Stores the Pensioners' Local Government Ares
State	State	Stores the Pensioners' State
Nokname	Next-of-Kin Name	Stores the Pensioners'
Nokphone	Next-of-Kin Phone	Stores the Pensioners'

The name of the database is **Evelyn**. The database contains five (5) tables whose structures are shown in tables 2.12 to 2.16

Table 2.12: members_official Table

S/N	Field Name	Field Type	Default
1	Idx	int(11)	AUTO_INCREMENT
2	Penid	varchar(100)	*None*
3	Ministry	varchar(100)	*None*
4	Department	varchar(100)	*None*
5	Rank	varchar(100)	*None*
6	Worklga	varchar(100)	*None*
7	Gl	int(2)	*None*
8	Step	int(2)	*None*
9	Bankname	varchar(100)	*None*
10	Bankac	varchar(100)	*None*
11	Bvn	varchar(100)	*None*
12	Lastpromotion	Date	*None*
13	Retirement	Date	*None*
14	Employed	Date	*None*
15	Pay_state	Float(10,2)	*None*
16	Pay_fed	Float(10,2)	*None*
17	Pay_gratuity	Float(10,2)	*None*

Table 2.13: Admin Table

Field Name	Field Type	Default
Idx	int(20)	AUTO_INCREMENT
Usern	varchar(100)	*None*
Pasd	varchar(100)	*None*
Level	tinyint(1)	*None*
Lastlogin	Datetime	*None*
Logincount	int(10)	*None*
Created	Datetime	CURRENT_TIMESTAMP

Table 2.14: Trail Table

Field Name	Field Type	Default
Idx	int(10)	AUTO_INCREMENT
Admin	int(10)	*None*
User	varchar(20)	*None*
Actionid	int(10)	*None*
Addeddate	Datetime	*None*

Table 2.15: Queries Table

Field Name	Field Type	Default
Idx	int(20)	AUTO_INCREMENT
Penidx	varchar(10)	*None*
From	int(11)	*None*
Query	text	*None*
Addeddate	Datetime	CURRENT_TIMESTAMP

Table 2.16: Members_Personal Table

Field Name	Field Type	Default
Idx	int(11)	AUTO_INCREMENT
Sname	varchar(100)	*None*
Onames	varchar(100)	*None*
Phone	varchar(15)	*None*
Email	varchar (100)	*None*
PenID	varchar (12)	*None*
PIN	varchar (35)	*None*
Piclink	varchar (100)	*None*
Sex	tinyit (1)	*None*
Dob	Date	*None*

Martial	int(1)	*None*
street1	varchar (100)	*None*
street2	varchar (100)	*None*
Town	varchar (100)	*None*
Lga	varchar (100)	*None*
State	varchar (100)	*None*
Nokname	varchar (100)	*None*
Nokphone	varchar (15)	*None*

2.18 Hardware Requirements

The hardware requirements for designing an enhanced pension scheme management system are as follow:

i. Server CORE i,7
ii. Client system
iii. Network to upload the server
iv. 250mb of hard disk
v. 2GB memory to run on the client side
vi. 8GB memory to run on the server side

2.19 Software Requirements

The software requirements of a system tell us the needed software resources for effective installation and running of the application. The following are the needed software (client and server) for the implementation.

i. ASP.NET Programming Language
ii. JAVA Programming Language
iii. HTML(Hypertext transfer markup language .
iv. CSS Programming language (Cascading Style Sheets)

Windows Operating System

2.20 Program Development

The language used for coding this work is ASP.NET, with a combination of HTML, because of the following reasons:

a) Enhanced Pension scheme management system(EPSMS) is designed to be used on the web , so it is only normal to use a web programming language
b) ASP.NET is an open source server–side web application framework designed for webdevelopment to produce dynamic web pageswhich is part of why it is considered the most secure web programming language
c) It is an object oriented programming language, making code management less cumbersome and generally easy to learn and use.

2.21 Choice of Programming Environment

Web browsers are used to access web applications, and web applications are coded with HTML. Since enhanced pension scheme management system (EPSMS) the titled software is an online application, the use of HTML for the coding of this system is inevitable. Hypertext Markup Language (HTML) is the standard markup language used to create web pages. In other word it is a programming language that powers the web, along with CSS, and JavaScript, as well as to create user interfaces for mobile and web applications. Web browsers are usually used to read HTML files and render them into visible or audible web pages. HTML describes the structure of a website semantically and, before the advent of Cascading Style Sheets (CSS), included cues for the presentation or appearance of the document (web page), making it a markup language, rather than a programming language.

HTML in brackets: <html> and </html>. These tags tell the Web browser that the content between the tags should be assembled into an HTML document. There are programs such as Dreamweaver designed to help you create HTML code for a webpage. The application provides a graphical user interface that enables one to click, drag and copy parts of the webpage. The application generates the HTML code for the user

3.1 Summary

In this research, we designed and implemented an Enhanced Pension Scheme Management System called (EPSMS). It is a softwarethat is hosted on a live web server using file transfer protocol (FTP).On account of the problems associated with the old pension scheme in Nigeria, the government developed a new scheme. This paper looks at some aspects of the evolution of the new scheme, and finds that the scheme is limited in terms of coverage, investment outlets, lack of transparency, and financial limitation of workers, poor funding, incomplete/incorrect enrollment, double enrollment. Therefore there is the need for PenCom to be strengthened as an institution, to enable it carry out its operations more effectively. Hence, with the implementation of the Enhanced Pension Scheme Management System designed, it will go a long way to strengthen the weak pension scheme management system.

3.2 Conclusion

Conclusively Enhanced Pension Scheme Management System is designed to be able to carry out registration and verification exercise online, thereby reducing stress and enabling monies getting to its destination as at when due, provision of security in the database that will block out manipulation and corruption. Allow retirees will be verified online at their base location. Finally provision of common database for employee, employer and pension regulators which will ease information sharing.

3.3 Recommendation

There are however challenges regarding coverage of the scheme as lower tiers of government are slow in switching to it, difficulty of reaching small firms especially those in the informal private sector that have the potential of employing more workers and the issue of corruption that has been critical to effective and efficient management in the country. Recommendations For sustainable development of the Nigerian Public Civil Servants, the following recommendations will enhance the Pension Fund Management. National Pension Commission (PENCOM) should organize more awareness, seminars to educate the public and stakeholders on how to calculate their entitlements.

4.0 REFERENCES

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4.1 Appendix A

Program codes

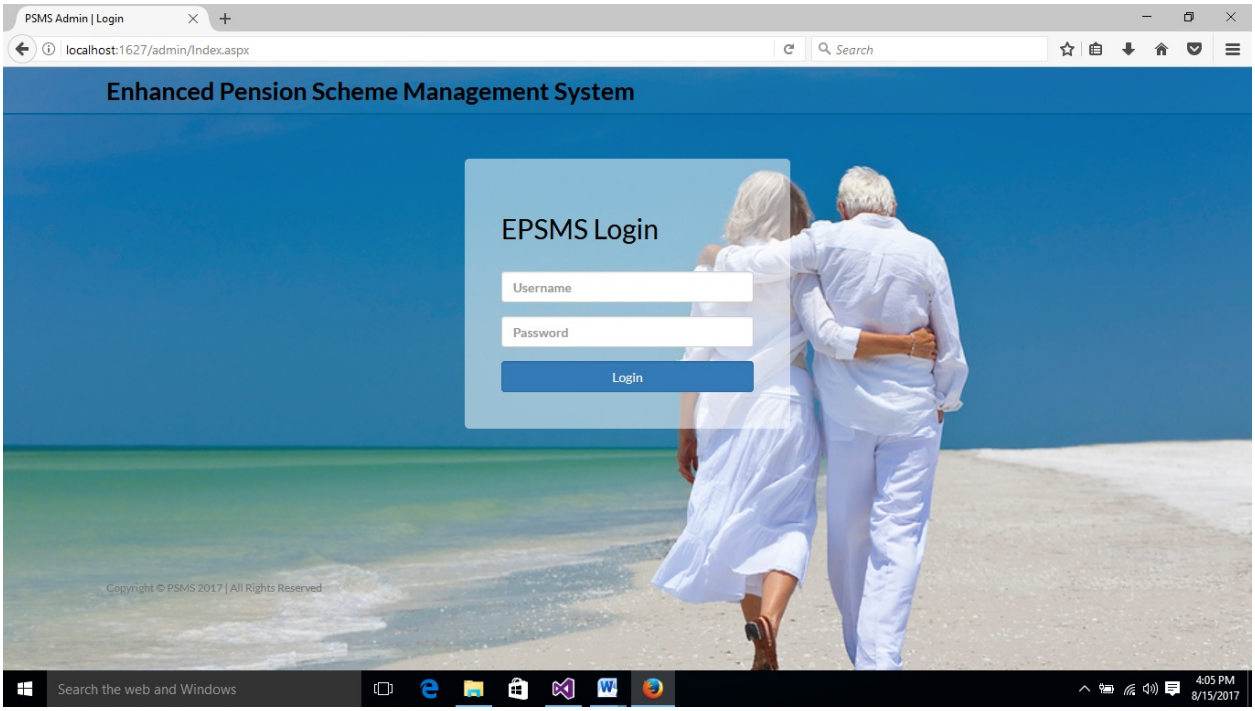
```
<asp:Content ID="Content1" ContentPlaceHolderID="head" Runat="Server">
</asp:Content>
<asp:Content ID="Content2" ContentPlaceHolderID="ContentPlaceHolder1" Runat="Server">
        <!-- Page Content -->

        <div class="content-section-a">

                <div class="container">

                        <div class="row" style="padding:50px 0px;">

                                <div class="col-md-12" style="background:rgba(255, 255, 255, 0.52);
border:1px solid #CCC; border-top: 8px solid #069; border-radius: 5px;  margin-bottom:20px">
                                        <h2 class="section-heading">User's Info</h2>

                                        <div class="col-md-8" style="margin-bottom:20px">
                                                <div class="form-inline">
                                                        <asp:Literal ID="litPasswordUpdate"
runat="server"></asp:Literal>
                                                </div>
                                                <div class="form-horizontal">
                                                        <div class="form-group">
                                                                <label for="inputEmail3" class="col-sm-3
control-label">Username</label>
                                                                <div class="col-sm-5">
                                                                        <asp:TextBox ID="txtUsername"
runat="server" Enabled="False" CssClass="form-control"></asp:TextBox>
                                                                </div>
                                                        </div>

                                                        <div class="form-group">
                                                                <label for="inputEmail3" class="col-sm-3
control-label">New Password</label>
                                                                <div class="col-sm-5">
                                                                        <asp:TextBox ID="txtPassword"
runat="server" CssClass="form-control" placeholder="New Password"
TextMode="Password"></asp:TextBox>
                                                                </div>
                                                        </div>

                                                        <div class="form-group">
                                                                <label for="inputEmail3" class="col-sm-3
control-label">New Password Again</label>
                                                                <div class="col-sm-5">
                                                                        <asp:TextBox ID="txtPasswordAgain"
runat="server" CssClass="form-control" placeholder="New Password Again"
TextMode="Password"></asp:TextBox>
```

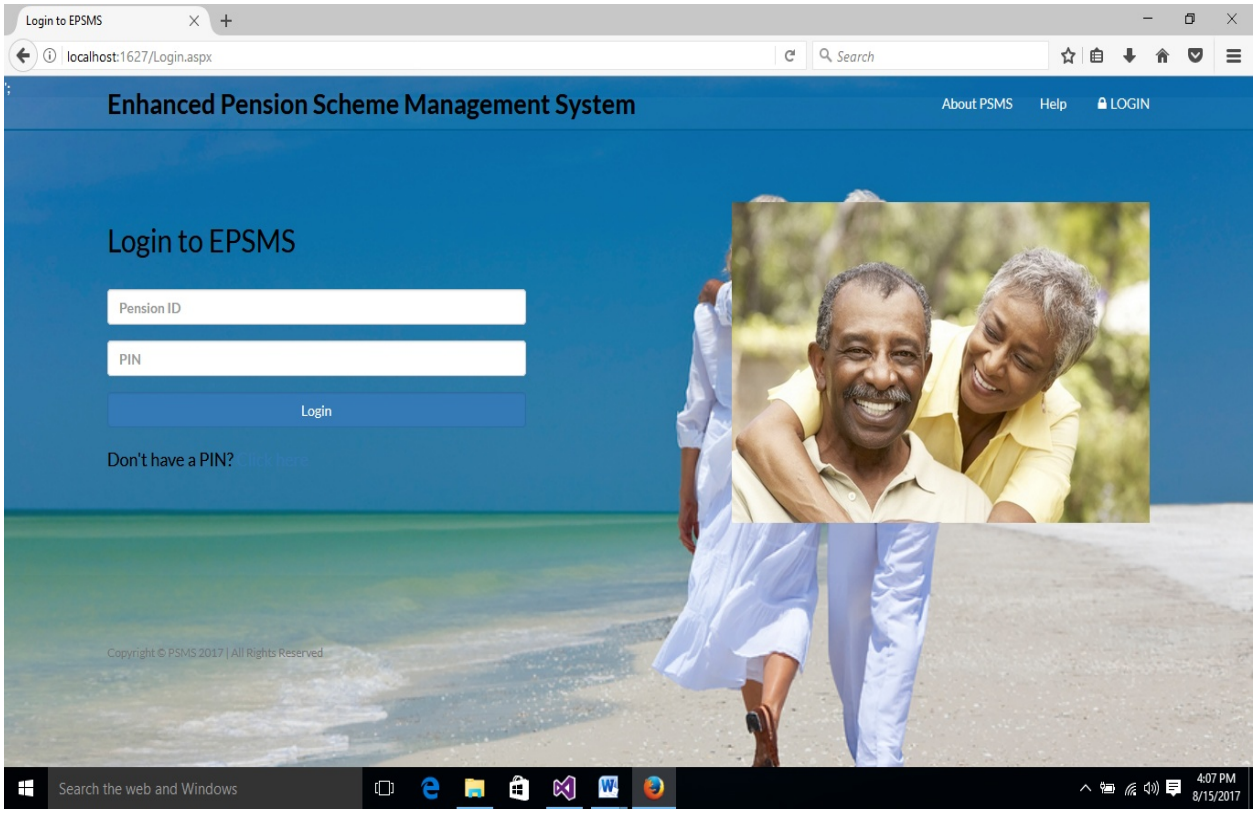
```
                                                    </div>
                                                </div>

                                                <div class="form-group">
                                                    <div class="col-sm-offset-4">
                                                        <asp:Button ID="btnUpdate"
runat="server" Text="Change Password" CssClass="btn btn-default" OnClick="btnUpdate_Click" />
                                                    </div>
                                                </div>
                                            </div>
                                        </div>


                                        <asp:Panel ID="panContainer" runat="server" CssClass="col-md-4"
style="margin-bottom:20px; color:black;">
                                            <h3><asp:Literal ID="litUsername"
runat="server"></asp:Literal>'s User Trail</h3>

                                        </asp:Panel>

                                    </div>



                                    </div>
                                    <!-- /.col-md -->

                                </div>
                                <!-- /.row -->

                            </div>
                            <!-- /.container -->

</asp:Content>

Page Title="" Language="C#" MasterPageFile="~/admin/MasterPageBack1.master"
AutoEventWireup="true" CodeFile="Nupensioner.aspx.cs" Inherits="admin_Nupensioner" %>

<asp:Content ID="Content1" ContentPlaceHolderID="head" Runat="Server">
    <title>Add New Pensioner</title>
</asp:Content>
<asp:Content ID="Content2" ContentPlaceHolderID="ContentPlaceHolder1" Runat="Server">
    <!-- Page Content -->

    <div class="content-section-a">

        <div class="container">

            <div class="row" style="padding:50px 0px;">
```

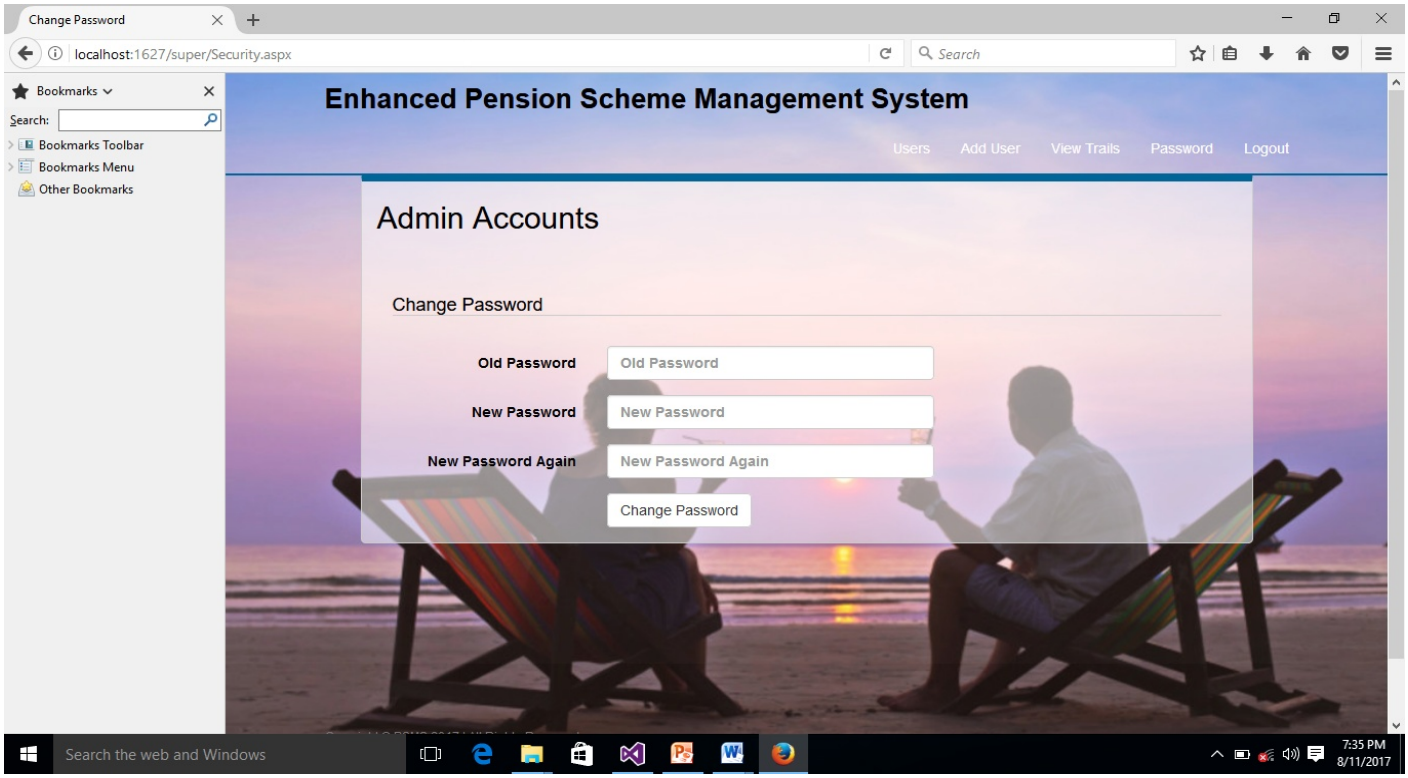
```
                    <div class="col-md-12" style="background:rgba(255, 255, 255, 0.52);
border:1px solid #CCC; border-top: 8px solid #069; border-radius: 5px;  margin-bottom:20px">
                        <h2 class="section-heading">Add New Pensioner</h2>

                        <div class="col-md-4 text-center" style="margin-bottom:20px">
                            <div>
                                <asp:FileUpload ID="imageFile" runat="server"
name="imageFile" style="display:none" />
                                <div id="imageError" class="red">
                                <asp:Literal ID="litPicMsg"
runat="server"></asp:Literal></div>
                                <div class="" id="" >
                                </div>
                                <asp:Button ID="btnUpload" runat="server"
Text="Upload" OnClick="btnUpload_Click"  style="display:none"/>
                                <asp:Panel ID="imageID" runat="server"
CssClass="profilepic" style="background-size: contain"></asp:Panel>
                            </div>
                            Click box to add picture
```

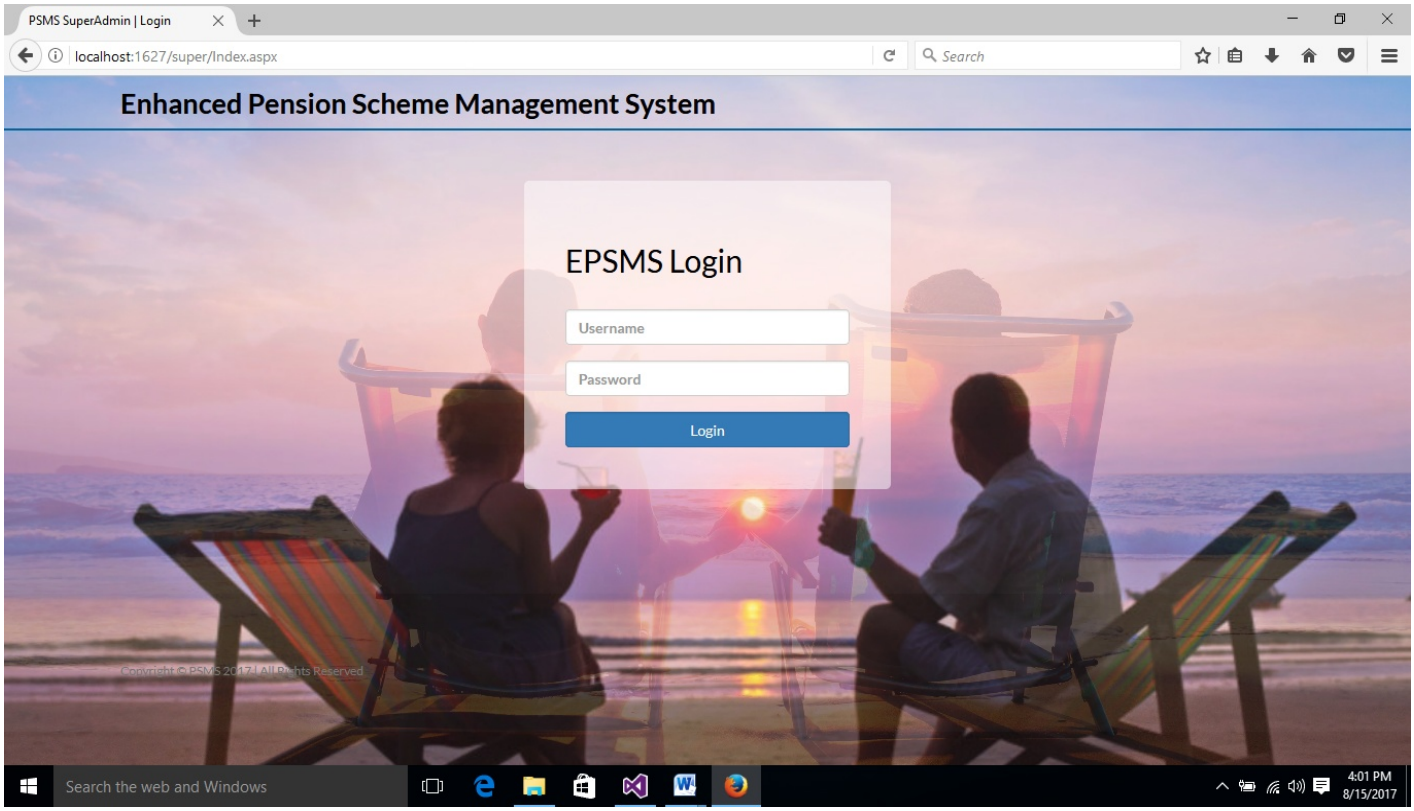
4.2 Appendix B

Sample Output




Login to EPSMS
localhost:1627/Login.aspx
Search
Enhanced Pension Scheme Management System
About PSMS
Help
LOGIN
Login to EPSMS
Pension ID
PIN
Login
Don't have a PIN?
Copyright © PSMS 2017 | All Rights Reserved
Search the web and Windows
4:07 PM
8/15/2017


Change Password
localhost:1627/super/Security.aspx
Search
Bookmarks
Search:
Bookmarks Toolbar
Bookmarks Menu
Other Bookmarks
Enhanced Pension Scheme Management System
Users
Add User
View Trails
Password
Logout
Admin Accounts
Change Password
Old Password
Old Password
New Password
New Password
New Password Again
New Password Again
Change Password
Search the web and Windows
7:35 PM
8/11/2017


PSMS SuperAdmin | Login
localhost:1627/super/Index.aspx
Search
Enhanced Pension Scheme Management System
EPSMS Login
Username
Password
Login
Copyright © PSMS 2017 | All Rights Reserved
Search the web and Windows
4:01 PM
8/15/2017

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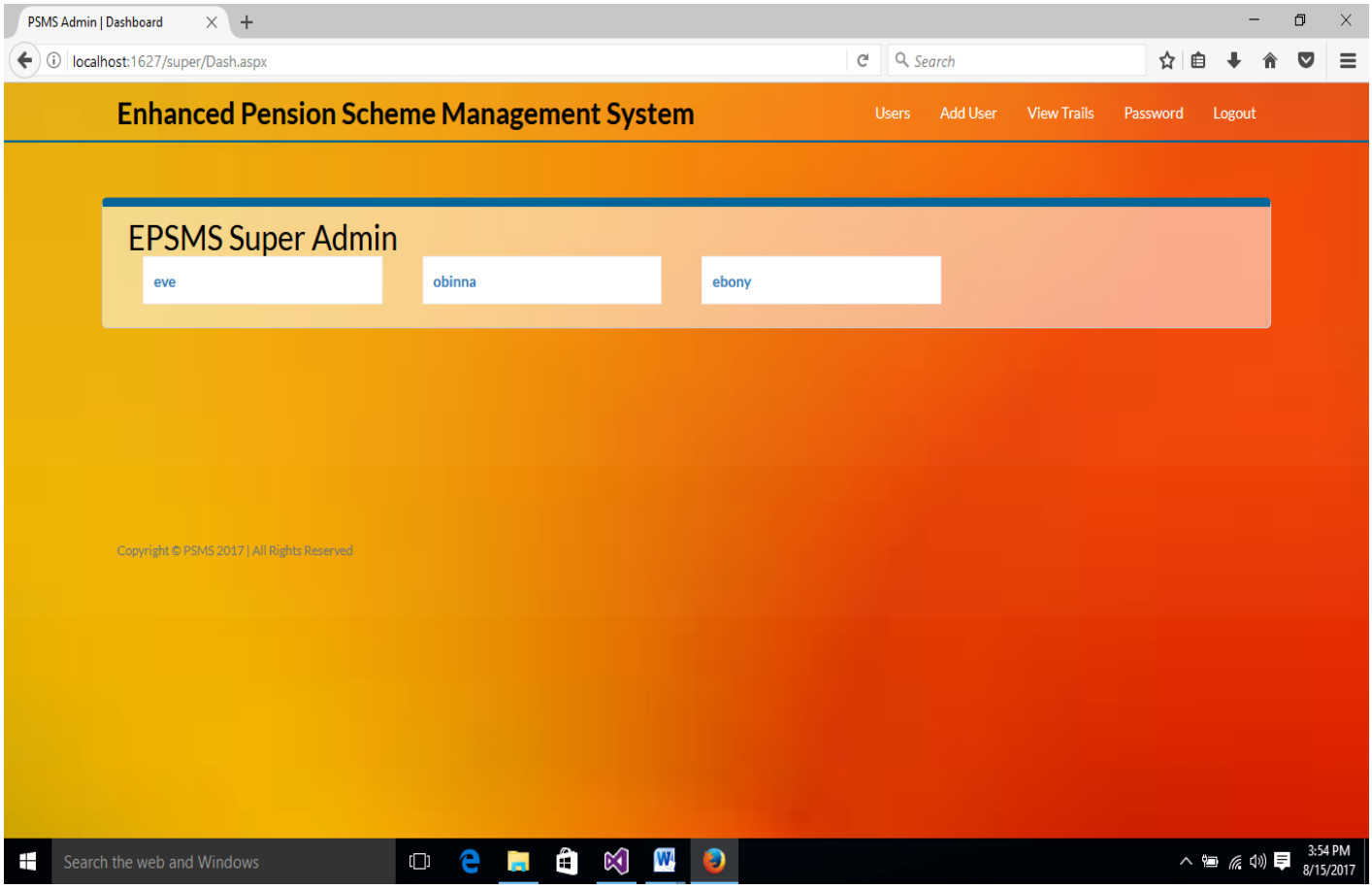

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