A Study of Object Oriented Design for   framework of Automated Teller Machine: Challenges and Problems

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Abstract

　　　Object Oriented Design (OOD) is based on approach that works around the real-world entities and their characteristics instead of functions involved in the software system. Automated Teller Machine (ATM) is a financial electronic machine that runs computer software, which allows user to withdraw and deposit cash, pay bills, request for a statement and other banking financial transactions. An ATM is today's most preferred delivery channel of financial transactions in every country. Customer's satisfaction in context of ATM services is an important factor for capturing the market, also for retaining the existing customers. But there are many problems related with ATM in current days in reference to fraud, security, software related and services. This study is related with to provide a review of ATM sources and Object Oriented Design concepts and emphasis is on service quality of ATM services.

Keywords –   Object Oriented Design, ATM Model, Challenges and Problems

I.   INTRODUCTION

Software Design is an important engineering representation and structure of software product that is to be developed as per user specification requirement. A Software Design can be traced to the user's requirements and can be assessed for well-engineered quality product against predefined criteria. In the software engineering context, Software design focuses on four major areas of concern - Data, architecture, interfaces and components.
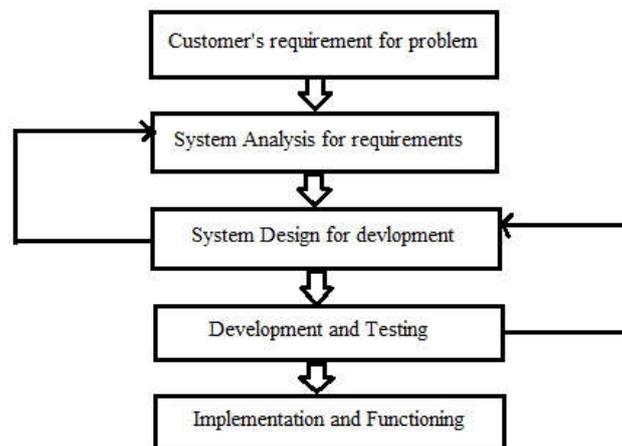

Fig. 1 – Software Development Process

The software design process is very important phase of software development life cycle. The emphasis in design is on quality and this phase provides us with representation of software that can be assessed for well-engineered quality. Software implementation involves running the software and checking for unexpected behavior and find out errors of the software product.

Automated Teller Machine (ATM) is a financial electronic machine that runs software, which allows user to withdraw and deposit cash, pay bills, request for a statement and other banking transactions. An ATM is today's most important delivery channel of financial transactions in every country [11]. Customer's satisfaction is a meaningful factor for capturing the market and also for retaining the existing customers and Banks concentrate in opening of ATM

Centre's in various places for the easy access of account day and night, weekends or holidays from any ATM centres of their bank and thereby enhance the customer satisfaction. ATMs can be placed at any convenient location in the city. An ATM is generally made up of the following components [8]:

1. Central Processing Unit (CPU)
2. Magnetic or chip card reader
3. PIN pad EEP4 keypad
4. Secure crypto-processor
5. Display Screen
6. Function key buttons or a touch screen
7. Record printer to a record of the customer transaction
8. Vault for store the parts of the machine restricted access
9. Sensors and indicators
10. ATM Software for running all financial banking transactions
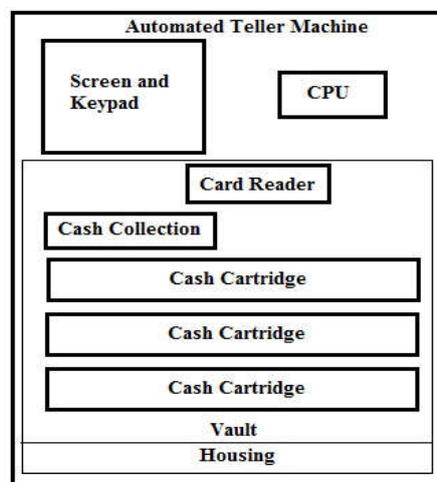

Fig. 2 – Block Diagram of ATM

II.   RELATED WORK

The first ATM in Korea was installed by Korea exchange Bank in 1975 After installation of ATM by Shinhan Bank in 1982, the civilian can use the ATM of various banks with Starting of operation of common network which is controlled by Korea financial telecommunications & clearings institute.

Surajit Borah, Shinjit Kamal Borah in this paper deals with all transactions of actual ATM centers like login to customer account according to his pin number given, checking balance amount of savings account as well as current account [11].

Gade Swetha, M. Santhosh Kumar, in today's technically advanced world, autonomous systems are gaining rapid popularity. As the social computerization and automation has been increased and ATM, credit card has been installed and spread out to simplify the activity for financial activity, the banking activity has been simplified, and the crime related with financial organization has been increased in proportion to the ratio of spread out of automation and system devices [12].

Sivakumar T, Gajjala Askok, k. Sai Venuprathap, in this paper deals with prevention of ATM theft from robbery. So overcome the drawback found in existing technology in our society. Whenever robbery occurs, Vibration sensor is used here which senses vibration produced from ATM machine [14].

K. Hema Sai Sivaprasad, B. Kanna Vijay, the main aim of this paper is to provide the security to the ATMs from theft as well from physical damage. Automated Teller Machines (ATMs) security is the field of study that aims at solutions that provide multiple points of protection against physical and electronic theft from ATMs and protecting their installations [15].

A.P.Suganth, A.Suriyakumar, R.Rajagopal, this research paper is based on the concept of smart security system in automatic teller machine by using face recognition, finger print scanner and ATM access card method [16].

III. CHALLENGES AND PROBLEMS

In present digital era, there are many problems related with ATM in current days in reference to fraud, security, software related and services. The emphasis in design is on service quality of ATM services for customers. Object oriented design technology has evolved rapidly within the last two decades. Today, Object Oriented paradigm has been opted by every organization and is particularly widely preferred for large scale technique design. It increases software reusability, interoperability in addition to reliability. The key questions are as –

1. What is the importance of object oriented design in software development in present era?
2. Why objects oriented design methodology is used in present time for ATM software development?
3. What are various factors affecting ATM services for customer's satisfaction?
4. What are the security and service gaps for ATM services by public and private sector banks?
5. What is the importance of reliability in ATM services for customer's satisfaction?
6. What are the various problems and challenges faced for ATM services in present days?
7. How to increase the ATM usage with security features?

IV. OBJECT ORIENTED DESIGN CONCEPTS FOR AUTOMATED TELLER MACHINE

Object Oriented Design (OOD) works around the real-world entities and their characteristics instead of functions involved in the software system. This design strategy focuses on entities and its characteristics [1]. In the object-oriented design approach, the system is viewed as collection of objects i.e. real-world entities. Objects have their own internal data structure which defines their data and methods. In other words, each object is a member of class. Classes may inherit features from base class and objects communicate by message passing. The following are important concepts of object oriented design -

- **Objects -** All real-world entities involved in the design are known as objects. Every entity has some attributes or characteristics associated to it and have some methods to perform on the attributes.

- **Classes -** A class is a generalized description of an object. An object is an instance of a class. Class defines all the features, which an object can have and functions, which defines the working of the object.

- **Encapsulation -** In OOD, the attributes (data variables) and methods (operation on the data) are bundled together is called encapsulation. This is called information hiding.

- **Inheritance -** OOD allows similar classes to create new classes from base classes in hierarchical manner where the sub-classes can import, implement and re-use allowed attributes and methods.

- **Polymorphism -** OOD languages provide a mechanism where methods performing similar tasks but vary in arguments, can be assigned same name. This is called polymorphism, which allows a single interface performing tasks for different types.

V. CONCLUSION

ATM is today's most preferred delivery channel of financial transactions in every country. Customer's satisfaction in context of ATM services is an important factor for capturing the market, also for retaining the existing customers and Banks concentrate in opening of ATM at various places for the easy access of account day and night, weekends or holidays from any ATM centres of their bank and thereby enhance the customer satisfaction. But there are many problems related with ATM in current days in reference to fraud, security, software related and services. Object Oriented Design features can be used for framework of ATM and removing all problems for customer's satisfaction.

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