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Design of Bank Credit Card Customer Relationship Management System Based on MVC Mode

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Abstract. Customer relationship management can efficiently provide customers with satisfactory and thoughtful service to improve satisfaction and loyalty for customer, to maximize value and maximize business benefits for customer. In order to promote the sustainable development of bank information card business, this paper designed based on MVC model. Firstly, the design of the framework structure by the interface layer, functional layer and support layer; and then design system functions consisted of the customer information management, customer service management, customer maintenance management and customer analysis management; finally, in order to ensure that the network and data security design data encryption. The research results of this paper solve the key technical problems of software development; in the actual development it can be adjusted to improve the applicability of the software.

Introduction

Credit card, also known as credit card, is issued by commercial banks or other financial institutions, according to the user's credit and financial resources issued to the cardholder, with consumer payments, credit loans, transfer settlement, access to cash and all the functions or some functions of the electronic payment. Card credit card business as a major part of the banking business, directly to financial institutions to bring annual fees, deposit spreads, special merchants fees and overdraft interest income, is an important source of profit banks. With the economic development, financial services demand provided by banks for individual are more and more, personal credit card business is also more and more important in the banking business.

Economic globalization makes the market competition more and more intense, the economic knowledge and technology makes the product differentiation is getting smaller and smaller, homogeneity is getting higher and higher, just rely on a good product, can not form a competitive advantage, Good customer relationship to make long-term profits of the important guarantee [1]. Customer relationship management thought advocates from the long-term interests of enterprises, and customers to establish long-term and good relations, and through the maintenance of this benign relationship, to maximize customer value and maximize corporate profits. Customer relationship management can ease the pressure of highly competitive environment on the enterprise; can improve the profitability of enterprises.

Customer relationship management has become the sustainable development strategy for commercial banks obtaining competitive advantage. The customer-centric business philosophy is the business purpose of commercial banks, but the lack of business model and process of implementing customer relationship management business philosophy. The proportion of credit card business in commercial banks is getting higher and higher, with the increase in the number of cards, simply rely on the number of cards to occupy the market and create profits is not feasible. Therefore, the development bank credit card customer relationship management system, the use of information science and technology, to achieve marketing, sales, service and other activities of automation, so that banks can more effectively provide customers with satisfactory and thoughtful service to improve customer satisfaction and loyalty, And then improve the economic efficiency, and promote the sustainable development of bank information card business.

MVC Mode

Model is a solving method for experienced designers finding problems and solving the problem, MVC has become a mature design for enterprise applications. The full name of MVC is Model View Controller, is the abbreviation of Model-View-Controller, is a software design model and a method organization code with business logic, data and interface display separation, business logic will be gathered into a component, Improve and personalize the interface and user interaction at the same time, do not need to rewrite the business logic. The ideas of MVC model separation design improved the overall quality of the software [2]. MVC is used in a logical graphical user interface structure for mapping traditional input, processing and output functions. MVC design pattern structure is shown in Fig. 1.
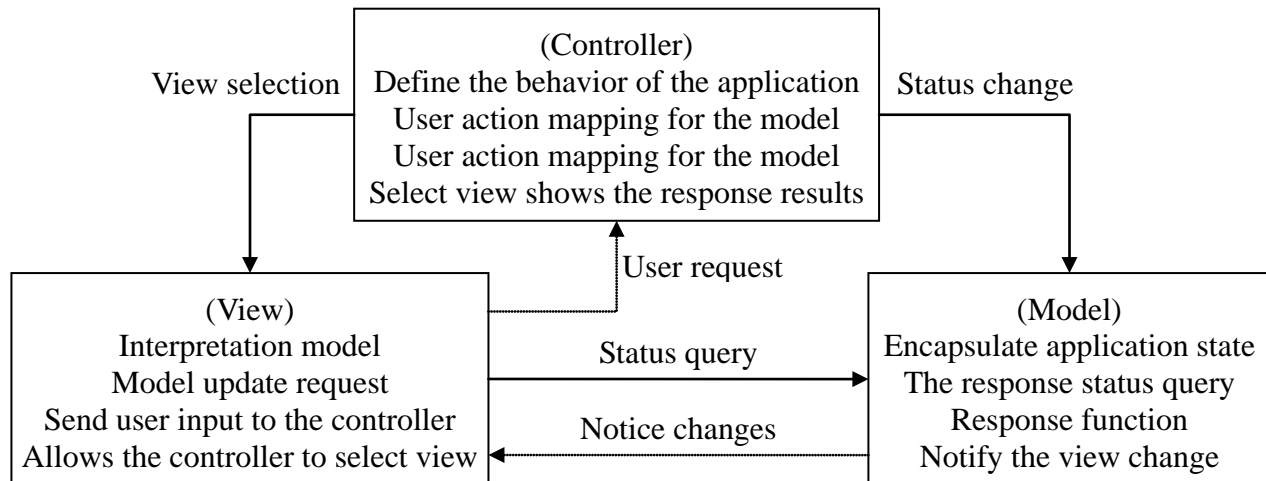

Fig. 1. MVC design mode structure

The MVC model enhances application readability and code reusability and scalability by forcing the application's control, model, and view modules. The separation of the model, the view from the controller allows a model to correspond to multiple views, and a model can be reused by multiple views to improve code reusability. The model is relatively independent, for business logic changes; do not have to involve the controller and view, to facilitate the expansion of the program, maintenance, transplantation. If the user changes the data of the model through a controller of a view, all other views that depend on the data should be reflected in those changes. Therefore, whenever the data changes occur, the controller will notify all changes to the view, actually which is a propagation mechanism of model.

Framework Structure Design

The complete CRM system enables the full management of customer sales, marketing, support and service, enables the tracking of customer basic data, tracking, customer order process tracking, customer market segmentation and trend research, and customer support services analysis, and on certain extent to achieve business process automation and comprehensive analysis of data processing. Therefore, only through the CRM operation, analysis and collaboration functions in order to build a complete CRM system, the structure is shown in Fig. 2.

(1) Interface layer. Is the contact point that communicates, access or input information with the user or customer for CRM system, by providing an intuitive and using interface, the users or customers can easily provide request and get requested information.

(2) Functional layer. It consists of various subsystems that perform the basic functions of CRM and external application modules that provide data analysis functions, including procurement subsystems, sales subsystems, and support and service management subsystems. External function modules include data warehousing and data mining technology and decision support system.

(3) Support layer. It is the auxiliary system that can provide support for the CRM system, including database management system, operating system, network communication protocol, is

basis to maintain the normal operation of the entire CRM system.

Interface layer	Web page	E-mail	Call	Phone and fax

SCM
OA
ERP

Customer information management	Customer service management	Customer maintenance management	Customer analysis management

Functional layer	Data warehouse	Data mining	Decision support

Support layer	Database management system	Network and communication protocol	Operating system
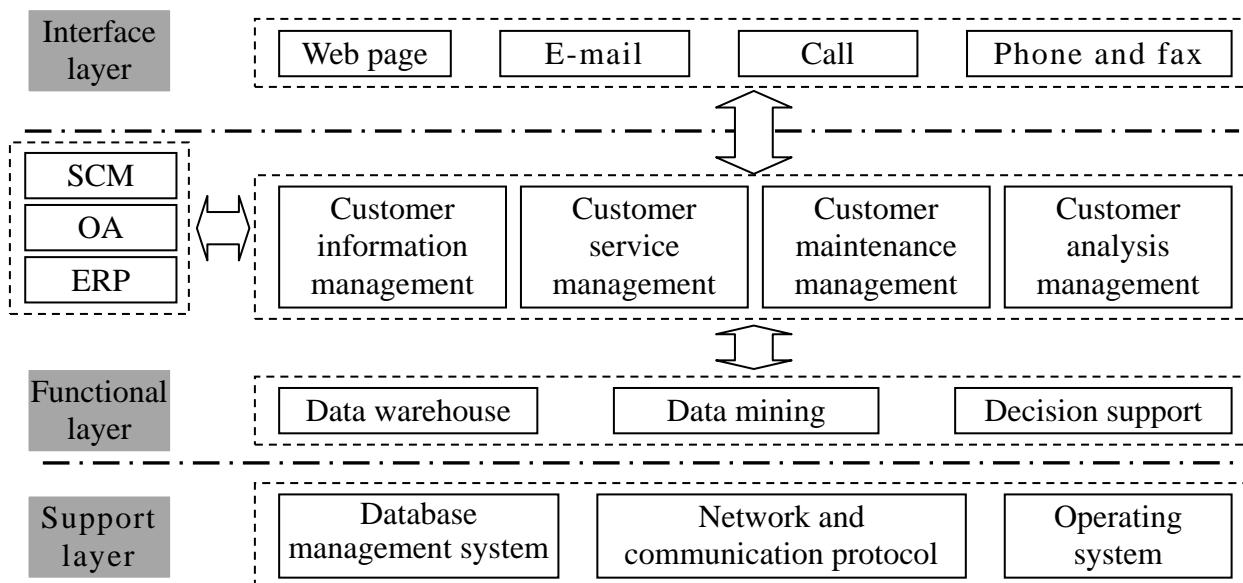
Fig. 2. Framework structure on bank credit card customer relationship management system

System Function Design

The commonly used method of functional design is modularization. Modularization is an important design idea that breaks down a complex system into smaller, simpler, and easier to establish and modify parts. On the one hand, each module has relatively independent and can be designed separately, on the other hand, the relationship between the modules through a certain way to be explained. Each module under the constraints of these relations together constitute a unified whole, the completion of the system functions. The process of functional design is to decompose, constitute the function of the relationship between the representations of the graphics. Functional decomposition process can design from large to small, from course to fine, from top to bottom. Conceptually, the upper layer functions control the lower layer function, the more the upper layer function is more general, the more the underlying function is more specific. The process of functional decomposition is a process from abstract to concrete, from complex to simple. Function modules can be divided according to the specific circumstances of the larger or smaller, the smallest decomposition of the functional modules can be a process of each process, and the larger function module can be a task to complete a set of procedures.

The main business need of bank credit card customer relationship management is [3]: through collecting, finishing and perfecting the credit card customer information, timely communicate with customers, accurately handling of customer comments and suggestions. For customer characteristics, the development of customer activities and product promotion plan, to understand customer feedback, the bank credit card product marketing strategy to adjust. Using data warehouse technology in-depth analysis customer and product data, through customer segmentation, for the leadership to develop marketing strategies to support and help. According to business needs, the system functions are divided into customer information management, customer service management, customer maintenance management and customer analysis and management of four modules, each module also includes a number of sub-modules. Functional design result is shown in Fig. 3.

Data Encryption Design

With the development of network technology, credit card customers can through the computer, tablet and mobile phone and other information terminals, in the Internet and mobile Internet payment, transfer and repayment business in the anytime and anywhere. Into the mobile Internet financial age, network theft and telecommunications fraud and other frequent crime, new risk points

continue to appear [4]. In addition, the bank store a large number of credit card customer personal information, which involves the customer's personal privacy, so the protection of customer information security is essential, once the leak will give banks serious consequences, not only to bear the responsibility of information disclosure, but also Resulting in high-quality credit card customer churn, resulting in bank reputation and economic benefits of the double loss. Therefore, the network or data security is the bank information card customer relationship management system must solve the problem.

Online capture potential customer	Customer feedback management
Customer satisfaction management	Customer complaint handling
Customer caring management	Customer complaint registration
Potential customer management	Online customer service
Contact information management	Customer service knowledge base
Customer basic information management	Customer service automation
Customer information management	**Customer service management**

Bank credit card customer relationship management system

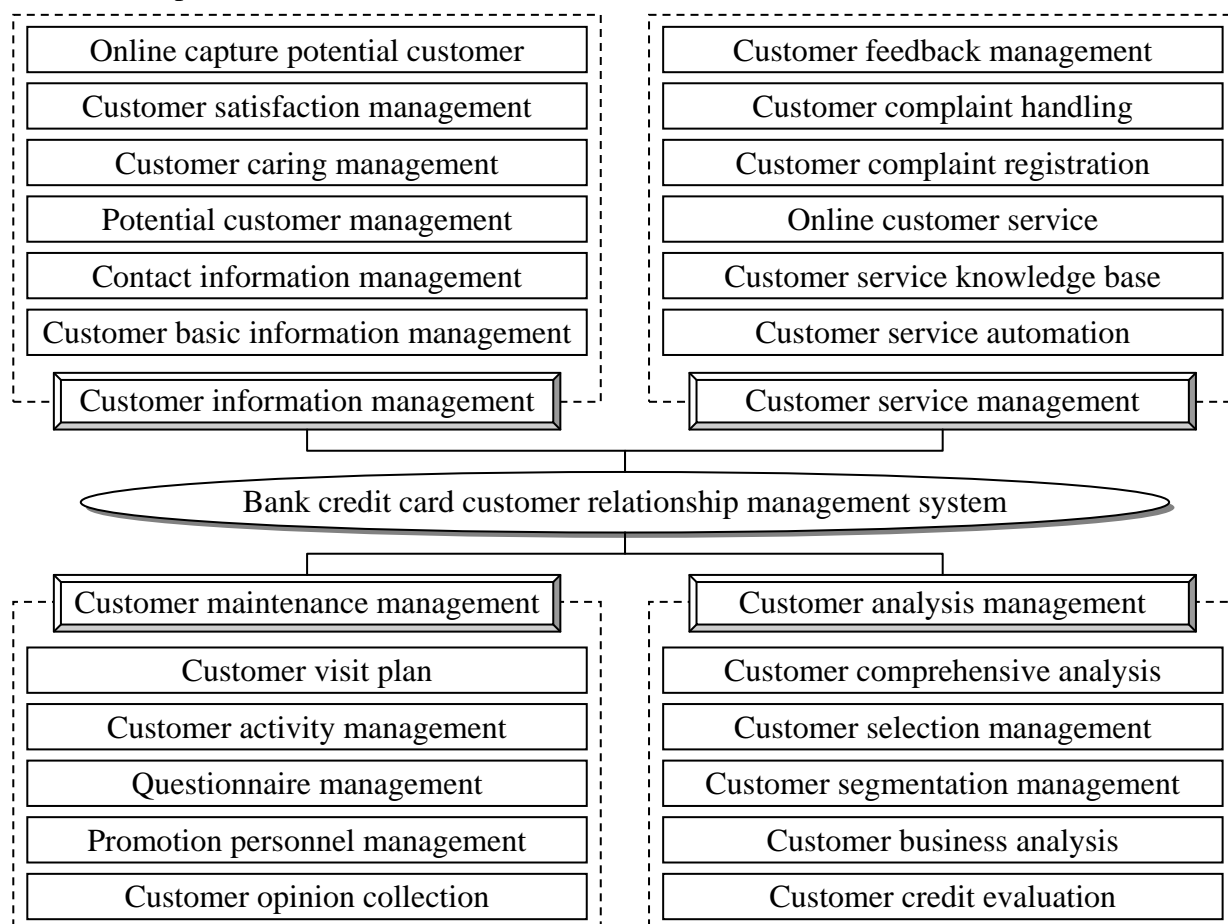| **Customer maintenance management** | **Customer analysis management** |
Customer visit plan	Customer comprehensive analysis
Customer activity management	Customer selection management
Questionnaire management	Customer segmentation management
Promotion personnel management	Customer business analysis
Customer opinion collection	Customer credit evaluation

Fig. 3. Function on bank credit card customer relationship management system

Data encryption is a technology that has long history, through the encryption algorithm and encryption key to clear text into cipher text, and decryption is through the decryption algorithm and decryption to restore the cipher text to plaintext. The core of data encryption is cryptography. Data encryption is the computer system to protect the information the most reliable way to use the password technology to encrypt the information to achieve information concealment, which plays a protective information security role.

The data in the database is confronted with threats from all sides. There are several flaws in technologies such as firewalls, intrusion detection, and audit trail and access control. Data encryption is an effective way to compensate for these shortcomings and to ensure confidentiality of data information. Encryption granularity is the smallest unit of database encryption, which can be divided into database level, table level, record level, field level and data item level according to the hierarchical structure. This article selects the field level, that is, only the important field information encryption, flexible, but also for the database for frequent query operation. But for the index field, the relationship between the operation of the field and foreign key field can not be encrypted. After the data information is encrypted into a cipher text, the data must be decrypted into plaintext when reading the data. Therefore, the data encryption contains the encryption and resolution process. The encryption / decryption process is shown in Fig. 4 [5]. Because different fields use different keys, the encryption process takes the key from the key store, encrypts the data using the encryption

algorithm, and then updates the encrypted dictionary. The encrypted dictionary records the encrypted information so that the key of the field is obtained when decrypted.
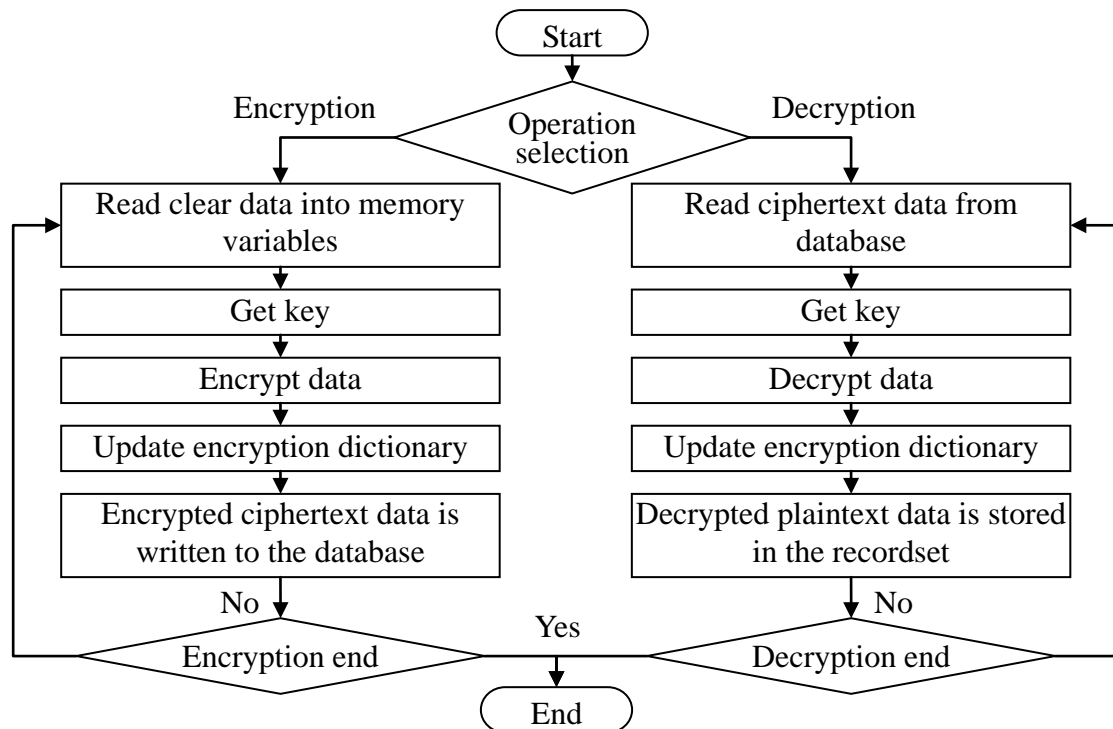

Fig. 4. Encryption / decryption process

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