THE INVESTIGATION OF PROPERTY MANAGEMENT AND DEVELOPMENT OF "BUILDING ADMINISTRATION SYSTEM"

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ABSTRACT : Because each building is built in different time, there exists different equipment to meet the need for each age. Before the announcement of "Community Management Regulation", the old communities usually suffer the problem of lower requirement and living quality. This may bring some security problem that we should face. In this research, we construct "Building Administration System" to provide users a tool to perform a standard operation procedure in community management. This powerful tool will also help manager to effectively handle important tasks in property administrating by reducing unnecessary documentation. In the current regulation, all community committee members shall be voted each year. This will seriously affect the cumulative of management knowledge and cause a worse efficiency.

In this research, we use Object Oriented concept and Visual Modeling techniques to combine with Interbase, ER/Studio, and Delphi to develop this management system for Building Property. Through the help of current computing technology, we can solve the problem that can not be inherited and the storing of the huge amount of data. In this system, we develop the modules such as Basic Data Module, Administrative Expense Calculation, Receipt Print, and Inquiring for Inheritance. In this system, we have integrated all houses, parking lots, and public equipments in it. Manager will only need to handle some basic accounting data; the system will automatically handle the rest. Through the help of this system, the community management staff can be easily accomplished and put more manpower on some needed aspect to improve the living quality.

Key words：Property Administration, Object Oriented, Visual Modeling, ER/Studio

1. ORIGINS & OBJECTIVES

From ancient days to the present time, architectural work has been playing an irreplaceable role in human history of development. However, increases in population, economic development and result of urbanization along with change of time have caused high level enlargement and complication on building scale and format. Under progressive complication, the function and equipment has produced residential problems such as building maintenance & repair, living safety of residents, planning & application of public facility, improvement of living environment, communication with neighbors and market value of the building, which were different from the past. Bad building utilization and management would also make our residential environment into a grey area full of contamination and dirt.

The business of community & apartment building management is complicated and it is not easy to control the composition of residents in normal communities. Moreover, the management organization of various communities and apartment buildings is formed by general residents that have limited knowledge and experience on community management; the management commission has to be re-elected every year under the current legal structure. All these have created difficulties in passing on various historical information of management and practical experience. This research was based on relevant domestic laws for apartment building management to deeply understand current operations of management organizations for the building industry, where current existing issues such as the method of calculation & acquisition of various management expenses, maintenance & planning of public facilities & equipment, allocation of legal authority & responsibility for building industry, management & maintenance for relevant companies, and operation of organizational finances were considered. From this, "Maintenance & management for building utilization" was integrated and systemized to build an auxiliary system of automatic management.

This auxiliary management system will help and provide companies in the "apartment building management service industry" or residents and administrator standardized procedures and regulations of management operation. The system produces relevant procedures of basic management operation, which are able to promptly and effectively participate in supervision or execute various key points on building maintenance and management. From this,

unnecessary expenditure of social costs such as documentation, administration, financial calculation and time are reduced. This research expects to use tools such as Object Oriented concept, Delphi development of environment and ER Studio to build an automatic auxiliary management system for communities & apartment buildings. The objective is to put government promotion on management of communities & apartment buildings into practice and improve the quality of residential utilization. The main functions are to provide supportive information for administrators to manage the communities; these functions include systematic operation, administrational operations, accounting operations, management fees operation, payment operations, payment reminding operations and search operations.

2. FUNCTIONAL REQUIREMENT

The "Auxiliary Management System for Building Industry" includes the following items:

1. Construct basic information structure for the system, which includes establishment of basic community information, as well as method of numbering for houses and parking bays.

2. Develop the management system for administrational operation, which mainly maintains information for houses, residents, parking bays and management fees of the community.

3. Develop the management system for accounting operations, which mainly carries out accounting work such as calculation of management fees, recording of income / expenses.

4. Develop the management system for management fees operation, which mainly focuses on fees payable and management of other fees.

5. Develop the management system for payment operations, which clearly differentiates management fees and miscellaneous fees paid.

6. Develop the management system for payment reminders; when the residents are not willing to pay for the management fees, information established in the system can be printed according to requirement in order to achieve the function of payment reminding.

7. Develop the management system for search operations, which allows understanding of resident information card and overview in the community via output of simple report.

8. Develop the management system for miscellaneous operations, which provides maintenance and management with relevant detail information on various public facilities or buildings.

9. Develop the management system for information operations, which provides relevant information for search on relevant apartment building laws.

3. FUNCTIONAL REQUIREMENT

The system divides the database into groups of administrational operation, which include gradual construction of relevant information such as setting of community parameters, buildings, houses, parking bays, residents, committee members and groups.

After that, discussion is made on interrelations of databases on accounting operation, management fees operation, payment operation, payment reminding operation, miscellaneous operation and information operation, where mutual combination is made afterwards. The interrelations of databases in the system are constructed with ER/STUDIO software and the structure is as shown in Diagram 1:
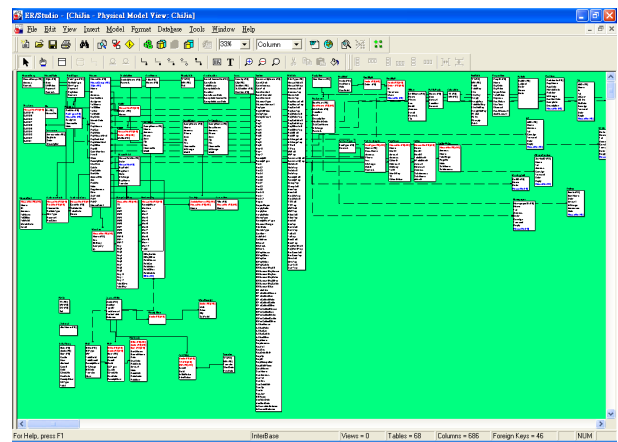

Figure 1. Structure of database relationships

4. PLANNING FOR SYSTEM STRUCTURE AND CONTENT OF WORK

"Auxiliary Management System for Building Industry" developed in this research includes the following sub-systems:

1. Systematic Operation System
2. Administrational Operation System
3. Accounting Operation System
4. Management Fees Operation System
5. Payment Operation System
6. Payment Reminding Operation   System
7. Search Operation System
8. Miscellaneous Operation System
9. Information Operation System

4.1 Systematic Operation System

The functional items were mainly made to control use of the system and maintain safety of database in the system. The following section would introduce options of functions in the "system operation", which included maintenance of user information, setting of password, setting of printer and exit:
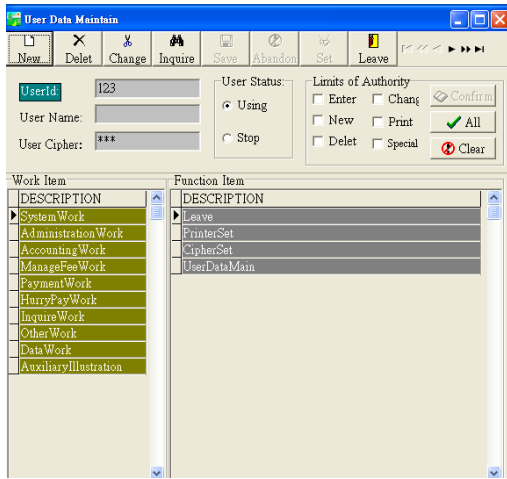
Figure 2. Maintenance of user information

Figure 3. Account management

Figure 4. Setting of printer

4.2 Administrational Operation System

This system mainly describes each function in option list of "administrational operation" in the system. The option list mainly describes each function for "administrational operation", which mainly maintains information such as houses, residents, parking lots and management fees. The following section would introduce functional option of the "administrational operation". The pulled options list for "administrational operation" includes: maintain name of community, set parameters of community, and maintain building information, house information, parking lot information, resident information, name list of committee members and group information:
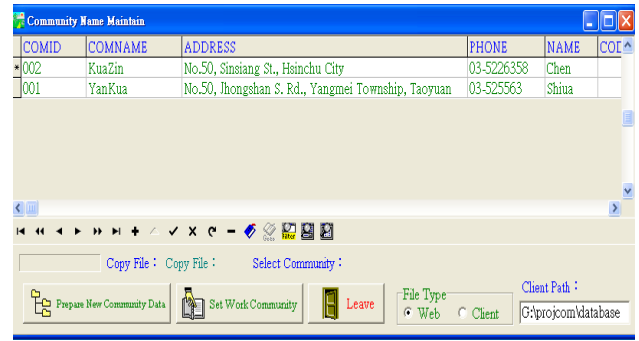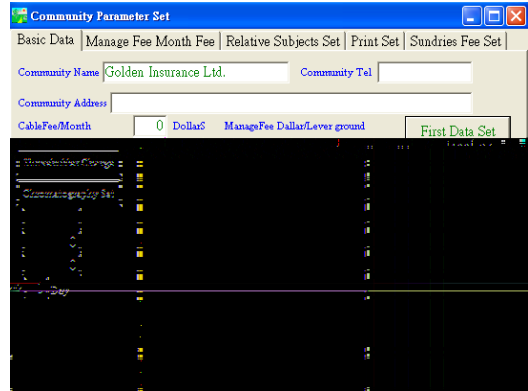

Figure 5. Maintain name of community

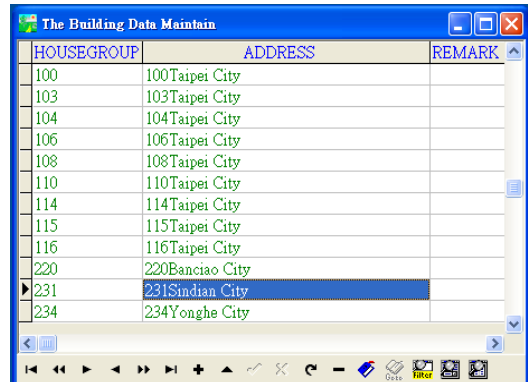

Figure 6. Set parameters of community

Figure 7. Maintain building information

4.3 Accounting Operation System

The system mainly describes how to perform accounting work such as calculating management fees and record income / expense books. The option list for functions of "accounting operation" include: maintain subject name, billing operation, annual carry over, input of slip operation, journal book, general ledger, detail ledger, trial balance, income & loss, assets & liabilities, and printing of slip on relevant accounting information, which makes them clearer via this operation system.
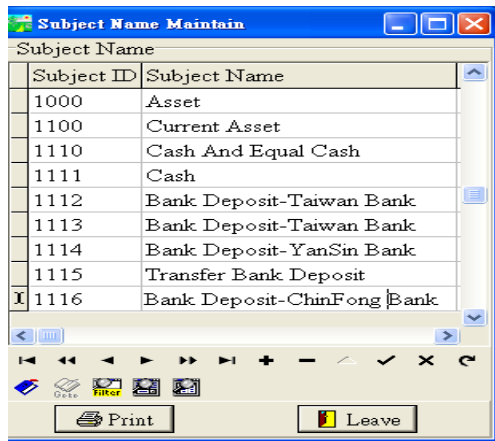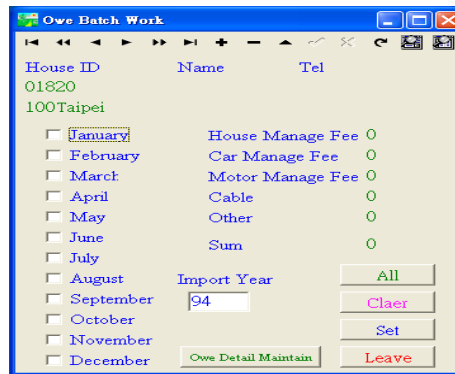
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Figure 8. Maintenance of subject name

Figure 9. Maintenance for input of slip operation

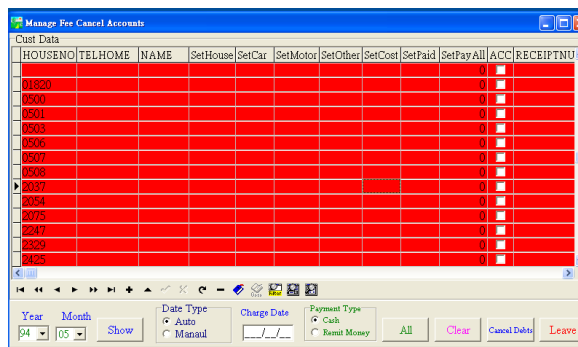**Figure 10.** General ledger

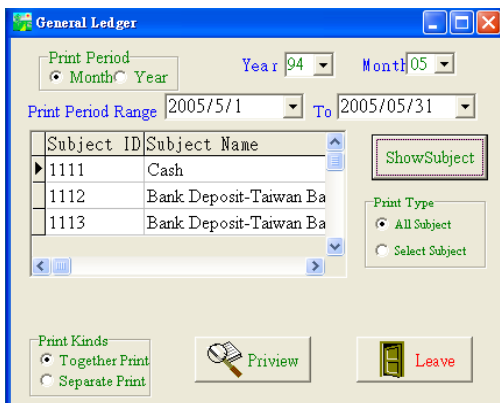**Figure 11.** Batch operation of fees payable

Figure 12. Settlement of fees

4.4 Management Fees Operation System

The content includes fees collectable, maintenance of details of fees payable, batch operation of fees payable, input of other expenses, billing of management fees at present period, print payment notification, settlement of management fees, receipt for management fees paid, overview of annual fees paid and overview of management fees paid. Relevant information for management fees was understood via input and search of some simple information.

4.5 Payment Operation System

The system mainly focuses on checking of payment operation, where the content of report includes paying management fees and miscellaneous expense. The function of paying management fees sets individually and separately on search of management fees, paying management fees, paying fees per item, payment confirmation, print receipt, penalty for delayed payment, discount on paying management fees and method of payment for ease of management.

For some miscellaneous expenses collected by management commission on tickets for community bus, tickets for swimming pool, guarantee and donations often require issuance of receipts. With this function, receipts can be printed promptly, which allows more convenient management on payment of miscellaneous expenses.

4.6 Payment Reminding Operation System

User may use print function of this system to print information established in this system per requirement. If there is a resident who is not willing to pay the management fees, it is unfair to residents that obey the rules when proper process is not made promptly. Therefore, when certain residents from the community delay the payment of management fees on purpose, this system provides four methods for further process, namely the printing of list for delayed payment, verification of access card, delivery of legal attest letter and application of court order for payment to achieve effect of payment reminding.

4.7 Search Operation System

The main search function is made by means of report; the content of report includes information card for residents in the community, overview of residents in the community,

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overview of access cards in the community, overview of committee members in the community, name list of owners, overview of empty houses, overview of lessees, communication label of residents, various document, meeting notice and meeting minutes.
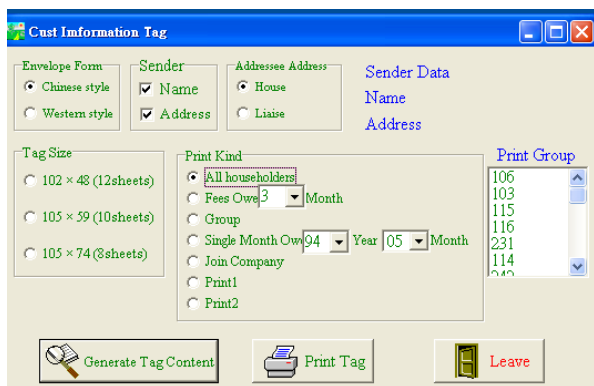

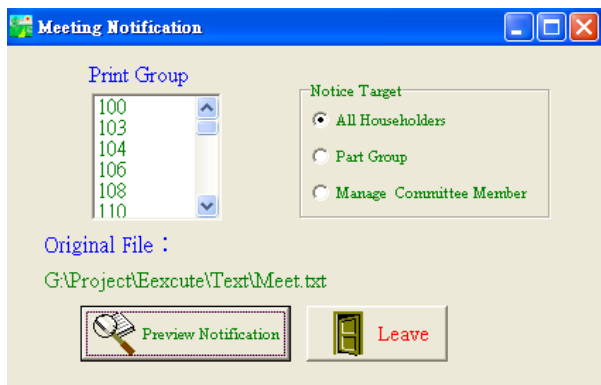**Figure 13.** Communication label for residents

Figure 14. Meeting notice

4.8 Miscellaneous Operation System

The system mainly focuses on various public facilities in the community or relevant detail information of buildings, which also provides functions of maintenance and management: information management on land registration, information for community construction, architects, construction company, construction factory and public facilities, as well as relevant public unit, type of cooperative company, information of cooperative company, record of facility maintenance, information maintenance of property, overview of miscellaneous information and overview of cooperative companies. Numerous options can be maintained and managed for relevant information on other miscellaneous items via this function.
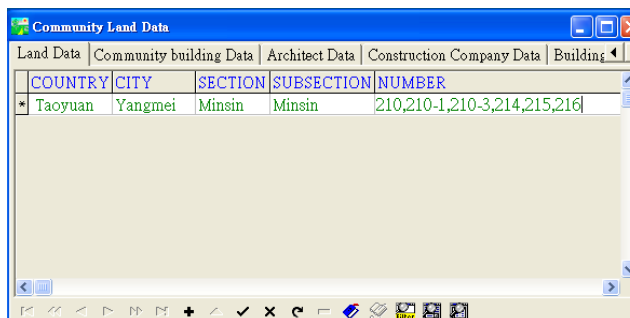

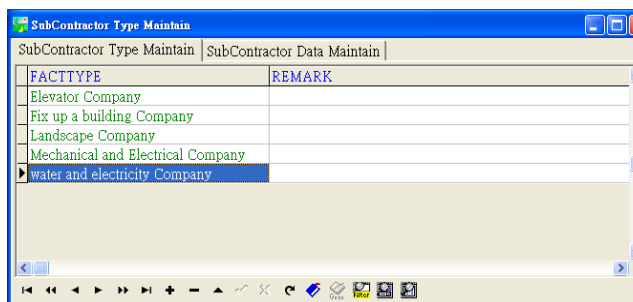**Figure 15.** Information management on land registration

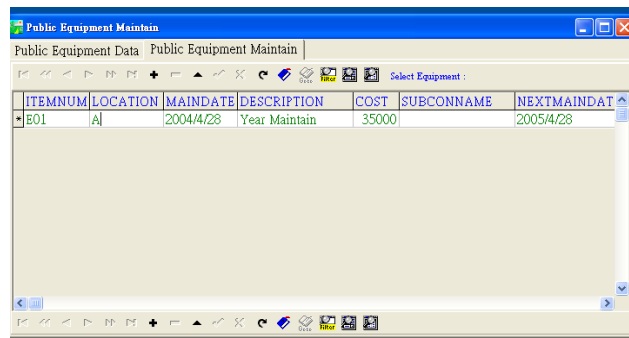**Figure16.** Information for cooperative companies

Figure 17. Records of facility maintenance

4.9 Information Operation System

On the aspect of information operation, this system mainly collects many relevant management measures on search for relevant legal apartment building regulations and committee's reference. These documents include: management regulations on apartment buildings, template of rules for apartment buildings, agreement among residents, constitution of management committee, measures of payment reminder for management fees, measures of management income / expense, rules for administrator, reference clauses for duty of administrator / security guard, management rules for entrance guard, key point of safety management, rules for lift utilization, management measures for underground parking lot, key point for cleaning work and management, necessary file information for the building, management measures of house for lease / sale, management measures for decoration and measure of waste disposal.
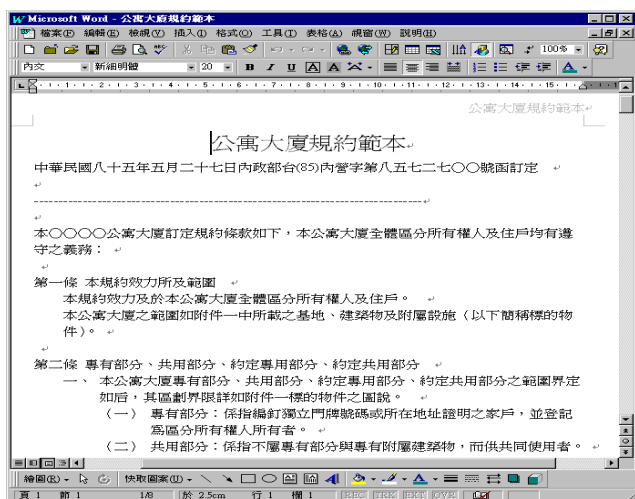
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Figure18. clauses ons

5. CONCLUSION & SUGGESTIONS

5.1 Conclusion

The business of community & apartment building management is complicated and the management organizations of various apartment buildings are formed by general residents that have limited knowledge and experience on community management. Therefore, the auxiliary management system developed from this research integrated and constructed a Systematic Operation System, Administrational Operation System, Accounting Operation System, Management Fees Operation System, Payment Operation System, Payment Reminding Operation System, Search Operation System, Miscellaneous Operation System, and Information Operation System, which was expected to achieve the following:

A. Establish the Systematic Operation System, which would control use of this system and maintain database in the system.

B. Develop the Administrational Operation System to maintain information such as house, resident, parking bay and management fees for the community.

C. Develop Accounting Operation System, which was used to do accounting work such as calculating management fees and recording income / expense books.

D. Develop Management Fees Operation System, which was used to inspect status of execution on general management fees.

E. Develop Payment Operation System, which used relevant reports including paying management and miscellaneous fees to confirm status of execution on relevant payment operation.

F. Develop Payment Reminding Operation System, which used printing function of this system to print name list of delayed payment, verify access cards, deliver legal attest letter and apply court order for payment to achieve function of payment reminding.

G. Develop Search Operation System, which achieves search function by means of report.

H. Develop Miscellaneous Operation System, which mainly focuses on various public facilities in the community or relevant detail information of buildings, as well as provision for functions of maintenance and management.

I. Develop Information Operation System, which collects many relevant management measures on search for relevant legal apartment building regulations and committee's reference.

5.2 Contribution

From achievement of this research, "apartment building management service industry" or residents and administrator could apply the "Auxiliary Management System for Building Industry" for execution of above mentioned works; as well as achievement of the following:

A. Helps general communities and apartment buildings to solve problem of existing management commission not familiar with work content of community management.

B. Increase feasibility of self-management by owners.

C. Reduce personnel expense for management & maintenance, as well as time consumption.

D. Put self-management of community & apartment building utilization & maintenance into practice.

E. Solve the problem of difficult experience accumulation on self management by sectional owners of the building and management commission, as well as preservation of historical management information.

F. Promote willingness of private participation and promote policy of self management promoted by government on management and maintenance for building utilization.

G. Prevent unnecessary data input and repetitive calculation of numbers, which reduces unnecessary documentation, financial paper work, as well as consumption of time and social cost.

H. Reduce mistakes from traditional human operation and put the management work and standard procedures into practice.

I. Allows sectional owners or management commission to rapidly search for various information on building operation, as well as provision of prompt information for decision making personnel to solve unexpected

problems.

J.   Provide schedule planning operation of maintenance for administrators on various facilities; so that normal operation of each facility and safety and residential quality can be ensured.

K.   From procedural regulation for management operation established in the system, it can also provide assignment on company management by residents and sectional owners as the basis of supervision and assessment on quality of management from Service Company. At the same time, this can also improve the quality of management made by Service Company.

L.   Open and transparent network management system can reduce distrust from section owners of the management commission.

5.3 Suggestions

Consequent research in the future suggested by this research includes:

A.   Possible use of Internet to strengthen the function, which allows users or residents to easily manage and understand status of actual execution by management commission via the Internet.

B.   Possible improvement on PDA functions for application on discussion of feasibility for maintenance & management of building utilization.

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