Information system analysis and design for a small business

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1 Development background

With the improvement of living standard and the progress of society continuously, people have higher and higher requirement on their spiritual life, and they adopt more and more romantic modes to express their emotions, such as sending a beautiful carnation to mother in Mother's Day, sending a white tulip to girlfriend in Girls' Day and sending a fresh rose to partner in Valentine's Day. flower materials represent a kind of beauty, harmony and life attitude. It can always bring warmth and romance, and add colors to people's life. Accompanied with the demand on flower materials, many small-sized flower material shops have appeared. In some undeveloped areas, most small-sized flower material shops are still in the stage of manual management, therefore, the shop managers hope to rely on an effective management system to improve management efficiency thus to increase revenue.

Before computer became popular, flower material management was conducted based on manual mode. Currently, flower material shops usually adopt intelligent computer management mode and depend on flower material shop inventory management procedure to assist the managers to conduct flower material management effectively.

The necessary materials for the developed system can be collected from the existing flower material shop management systems. Compared with traditional management mode, this system is characteristic by high efficiency, lost cost and high quality, which can save a lot of human powers, material and financial resources. Therefore, from perspective of economics and human power, this system can provide convenient service for customers and improve work efficiency of personnel.

1.1 Basic situation

Renmin flower material Shop is nearby to the First Hospital affiliated to Lanzhou University and owns product types of fresh flowers, green plants and some artificial flower materials. Wherein, it mainly engages in fresh flowers, including lily, rose, violet, eustoma grandiflorum, African daisy, shixiangzhu (carnation) and gypsophila elegans; besides, the green plants include asparagus fern, scindapsus aureus, fernleaf hedge bamboo, calathea makoyana and dracaena sanderiana.

Up to now, the flower material shop has a store and warehouse. Moreover, it owns a shop manager and three shop assistants, wherein, the shop manager is responsible for finance and overall arrangement while the shop assistants take charge of picking and purchasing, flower material arrangement and sales. Because it is near to hospital, most customers purchase flower materials to see patients. In addition, it achieves monthly sales volume of about 35,000 Yuan and pays its staff with monthly salary of 3,500 Yuan, besides, the flower material cost is 8,000 Yuan per month and the monthly rental is 4,000 Yuan, furthermore, its expenditure is about 3,000 Yuan per month and its net profit is 10,000 Yuan per month.

At present, the flower material shop exists with some deficiencies, such as limited targets, knowing little about the flower material market, sales situation and customer situation. Therefore, it is needed to design the management information system in order to manage the flower material shop business better and provide reliable basis for daily operation and management on personnel, finance and material resources.

1.2 Current management situation

Renmin flower material Shop mainly engages in flower material maintenance and cultivation as well as flower material package and sales, meanwhile, it provides door-to-door service of short distances.

- Purchasing: the current flower material purchasing channels include: firstly, the shop assistants purchase flower materials from the flower material suppliers; secondly, telephone ordering. But owing to the flower material characteristics of short storage life and being withered easily, the flower material shop tends to purchase flower materials form the flower material market.
- Sales: the sales modes of the flower material shop mainly include store sales and telephone book, wherein, about 4/5 of customers will choose to purchase flower materials in physical store while 1/5 of them will make telephone booking. Owing to the limited storage life of flower materials, discount sales will be conducted when the storage life of flower materials is coming.
- Inventory: the flower material shop has one warehouse only to place the flower material raw materials ("flower material area" in short"). After the flower materials are purchased from the market, they will be classified and numbered to be stored in the warehouse. And then the shop assistants will make selection, conduct flower material arrangement and make package to produce fresh flower products for subsequent management (notes: the flower material raw material will be shortened from "flower material" and fresh flower product will be shorted from "fresh flower").
- Membership system: for the customers with one-off consumption of 300 Yuan, they will be registered as members. They can obtain integrals through consumption and can exchange for one product of less than 200 Yuan freely when their integrals reach to certain amount.
- Existing problems: this flower material shop establishes relaxed and mixed management system, owns incomplete purchasing, sales and inventory information, and is equipped with ineffective financial management system. Besides, the shop manager knows little about the financial situation of the flower material shop and can not formulate reasonable plan for long-term development of the flower material shop. Moreover, the management on customer information relies on manual accounting and the mode of integral card stamping, which is not only inaccurate but also inefficient.

In summary, in order to realize better development and provide high-quality service for customers, Renmin flower material Shop should establish a reasonable management system urgently to improve its overall operation efficiency.

1.3 Current situation of informatization

Currently, the flower material shop is equipped with computer and POS cash register, therefore, the customers can make payment through scanning the QR codes in WeChat and Alipay. In addition, the flower material shop has three monitor units, one at the door of warehouse, one at the door of the shop and one within the shop. And there are no other informationization equipment. The flower material shop is suggested to apply for exclusive microblog account for publicity and flower material booking thus to facilitate communication with customers.

2 System overview

2.1 System objective

The management system objective of Renmin flower material Shop: conduct unified and effective management on daily operation activities of the flower material shop, establish reasonable and precise business

process thus to make work personnel maximize their work efficiency and provide high-quality and convenient service for customers.

2.2 System introduction

The management system of Renmin flower material Shop is a set of information system used for managing business activities of the flower material shop in daily operation and management process, which adopts the object-orientated system design method. This information system is mainly used to improve management efficiency and provide more convenient and effective service for customers.

The management system is composed of five sub-systems, including sales management subsystem, member management subsystem, financial management subsystem, purchasing management subsystem and storage management subsystem. In the sales management subsystem, the purchasing orders can be added, as well, the orders can be deleted, modified and inquired; in the member management subsystem, the basic customer information and consumption information can be added, deleted, modified and inquired; in the financial management subsystem, the financial revenue and expenditure situations can be managed, obtained and analyzed; in the purchasing management subsystem, the purchasing information can be added, deleted, modified and inquired; and in the storage management subsystem, the product stock-in and stock-out can be managed and the inventory product information can be inquired and obtained.

2.3 System scope

The management system of Renmin flower material Shop involves sales, finance, purchasing inventory and member management. The five subsystems coordinate with each other to complete various operation activities, such as flower material purchasing, storage and timely clearing-up, order receiving, member information registration and consumption information registration, journal account record of capital, gain and loss analysis within certain period. And the flower material shop has no other management systems.

3 Operation environment

3.1 Hardware environment

- Server
  ThinkServer RD450 (Xeon E5-2609 v3)
  Type: rack-mounted
  CPU type: Xeon E5-2603 v3
  CPU quantity: 1
  Memory capacity: 4GB
  Hard drive capacity: 1TB
  Quantity: 1

- Client
  Lenovo Yangtian M4000e(i5 6500/8GB/1TB/2G discrete graphics card)
  Processor type: Intel Core i5 6 generation quad core
  Internal storage: DDR4
  Graphics chip: entry-level discrete graphics card
  Hard drive capacity: 1TB
  Quantity: 3

- Switcher
  Huawei S5700S-28P-LI-AC
  Product type: Gigabyt Ethernet switch
  Application level: second level
  Backplane bandwidth: 356Gbps
  Packet forwarding rate: 42Mpps
  Port organization: non-modularization
  Transmission mode: full duplex/half duplex self-adaptation

3.2 Software environment

- Server side
  Operating system: Windows Server 2012;
  Database management system: Microsoft SQL Server 2008 and above.

- Client side
  Operating system: Windows 7 and above.

3.3 Network environment

Owing to the small scale of the flower material shop, it needs three clients and one server to complete basic establishment of the system, therefore, LAN can meet with the requirement of daily operation, the network topology is as shown in Fig. 1.

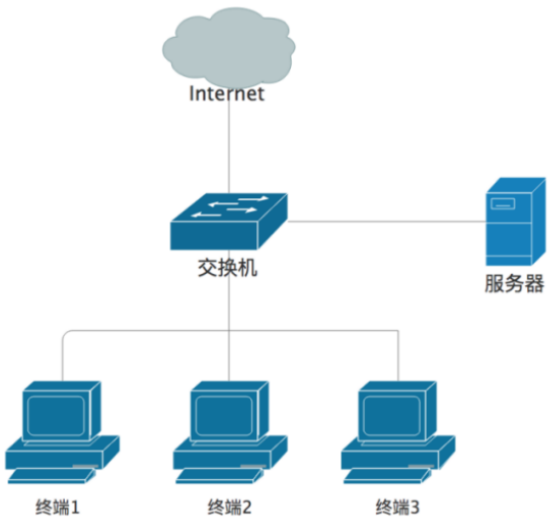

Figure 1: Network topology of the management system of Renmin flower material Shop.

4 Constraint and hypothesis

4.1 Form of schedule and personnel allocation

The form of schedule and personnel allocation is as shown in Table 1.

4.2 Capital constraint

The capital budget situation of the system is as shown in Table 2.

5 Requirement specifications

5.1 Function demand

According to the various customers and management practices, the Functional Block Diagram can be obtained based on the management system function demand, as is shown in Figure 2.

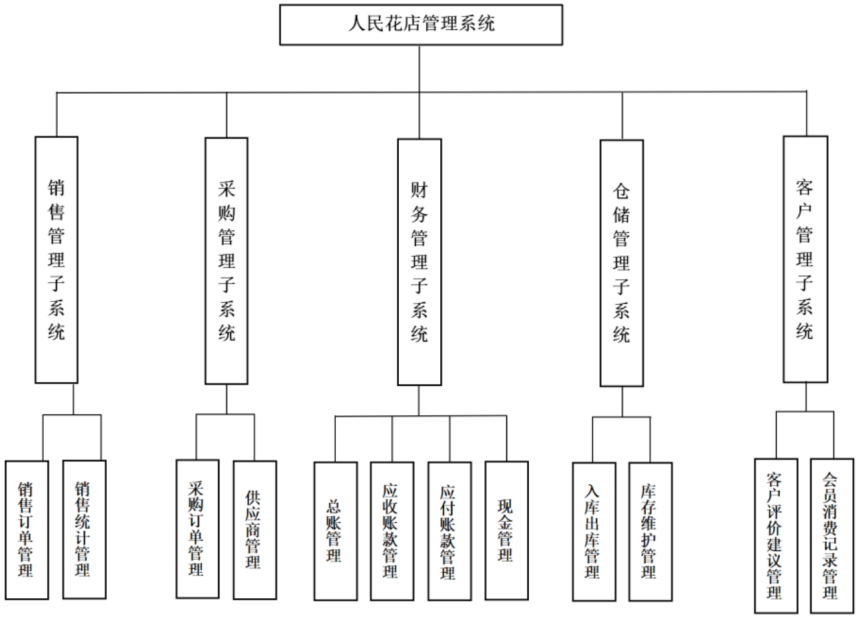

Figure 2: Functional Block Diagram of the management system of Renmin Flower Shop.

- Sales management subsystem
  The sales management subsystem has two secondary subsystems, including
  (1) Sales order management: register the sales order information: number of order, name of customer, number of product, sales date, total amount, receivables, money received, handler, notes. The orders can be added, deleted and modified.
  (2) Sales statistics management: summarize the information of flowers for sales, including flower variety, customer type and so on to conduct descriptive statistics and analysis, wherein, the preference of customers on different varieties of flowers and targeted group for different varieties of flowers can be analyzed.

- Financial management subsystem
  The financial management subsystem includes four secondary subsystems, such as
  (1) General accounting: manage all financial revenues and expenditures of the flower shop. Summarize the income, expense, cash and salary to obtain the general accounting, input and register the accounting voucher, output daily accounting, detail amount and general ledger, and prepare the primary accounting statement.
  (2) Accounts payable management: include purchasing cost of various flowers, employee salary, rental,

management expense and unpaid debts. The product cost is an important economic indicator to reflect the production and operation activities of the flower shop, wherein, cost calculation is used for reflecting the operation situation. Cost management module has the functions of cost analysis, cost calculation and cost prediction, meets with the management demands of cost prediction and post-calculation for cost analysis and planning. The salary settlement, checking, distribution and related expense withdrawing can be realized.
(3) Receivable management: record the credit-based accounts for product purchasing, the advance package fee and transportation expense as well as returned advance payment.
(4) Cash management: control the cash flow, calculate the petty cash fund and bank deposit.

- Warehouse management subsystem
  The warehouse management subsystem includes two secondary subsystems, such as
  (1) Entry and delivery management: record the entry time of flower materials, variety, number, qua, unit price, entry handler, delivery time and delivery handler of flower materials.
  (2) Inventory maintenance and management: owing to the unavoidable losses caused from storage life of flower materials, control the entry and delivery through calculating the storage life of flower materials, record the storage life of different varieties and numbers of flower materials, the quantity of waste flower materials, the unit price and total losses, besides, various expenses for warehouse maintenance should be recorded regularly.

- Purchasing management subsystem The purchasing management subsystem includes two secondary subsystems, such as
  (1) Purchasing list management: record related information of each purchasing, including order number, variety, number, unit price, quantity of flower materials, number of purchaser, purchasing time, handler.
  (2) Supplier management: mainly record the related information of flower material suppliers, such as name, contact way and address of supplier, variety, number and price of flower materials.

- Customer management subsystem The customer management subsystem includes two secondary subsystems: (1) Member consumption record management: record the name, number, class, contact way, birthday, age and preference of member, as well as the purchasing time, purchasing variety, unit price, quantity and single consumption integral.
  (2) Customer evaluation and suggestion management: collect the evaluations and suggestions of customers on product and service, including specific contents, involved links (sales, storage and service), proposal time and problem-solving situation.

5.2 Performance demand

1. The management system of the flower shop should guarantee timely response under normal network environment, wherein, the response speed should be second level in daily processing and timely thus to make information feedback timely. Besides, the system needs to guarantee work efficiency during the working period, especially the ordering, information inquiry and information saving, and the system response should be within three seconds.

2. The network transmission rate of the system should be 10MB/s at least and the peak transmission rate should be 20MB/s.

3. The information system has few customers, therefore, no conflict should be guaranteed when the concurrent users reach to 100 and use the server log-in system at the same time. At least, normal operation should be guarantee in face of transaction throughout capacity of 300.

4. In addition, the system should operate continuously for 7×24 hours, the annual downtime should not more than 8 hours, besides, it can changed to the backup system in face of fault.

5.3 Interface demand

The management system of the flower shop targets directly at the users while some users are not familiar with computer, which requires the system to focus on user experience, to be simple and convenient. The users don't need to know professional database technology but can operate the system based on basic computer application ability. The following modes can be used: provide friendly user interface, and then the human-computer interaction interface will be simple and clear; all operation buttons should be clear, and the system color should be consistent with the advertising board color.

Each function for the administrator and system manager should be equipped with online help file, namely, the users can click the button F1 to obtain related help information in the usage process.

5.4 Security demand

1. System user privilege

One user name should be provided to present user identity in face of logging in the system. In the system, all legal user names are recorded, which can be helpful for the system to identify whether the users are legal. If yes, the user can enter the system, and different operating interface will be presented according to the user type and user privilege. The specific user privilege is as shown in Table 3.

2.System robustness

The authorized users can only use and modify the information in the information system, besides, they must prevent the information from being revealed illegally and without authorization. Recognize the system resource, analyze the possible index of the resource likely to be attacked, know the vulnerability of the system and evaluate all possible security risks. It should have the function of real-time monitoring on virus, support manual scanning and support background monitoring. Regular virus scanning, searching and killing should be conducted automatically. According to the actual situation, the virus files can be killed, deleted, renamed and reported in real time, besides, the file backup can be conducted before file deleting, and the unprocessed virus files can be insulated as well.

5.5 Integrity demand

1. System integrity

The current on-duty shop assist conducts data backup in the end of business of each night at 11:30. Wherein, the complete backup and difference backup should be conducted for one respectively in the hard disk and network disk. Once the database appears with fault, data can be recovered within one working day based on the backup file or log file. Regular backup can not only guarantee system integrity but also can enhance system security.

2. Database integrity

(i) The database design fully considers the entity integrity, reference integrity and user definition integrity.
(ii) Entity integrity: guarantee the primary attribute of each relation r in the database is not empty. Reference integrity: For two or multiple relations having relationship in the database, the data connection correctness should be guaranteed.
(iii) User definition integrity: in view of the management system of the flower shop, if one non-primary attribute of one relation in the database is inevitable, it should be guaranteed to be not empty. Meanwhile, data backup and recovery mechanism should be guaranteed to realize minimum loss in face of system fault.

5.6 Data demand

This system is a small system and requires each computer should be placed in one place singly. Wherein, each computer may have a complete copy of DBMS, or partial copy, as well as partial database, therefore, the concentrated database is adopted and deployed in the server. Its advantages include reducing the data transmission cost, enhancing system reliability and convenience in system expansion.

Different data will be formed in each link of the operation and management process of the flower shop, meanwhile, corresponding data are needed for support in order to complete corresponding functions. The management system of the flower shop needs the following data:

- Product information:
  All product information are needed for product management, including number, type, cost, unit cost, sales price and quantity of product.
- Sales information:
  It is used for sorting sales information and reflect the sales situation, including number and time of order, number, type, unit sales price and quantity of product, total order amount)
- Inventory information:
  It is used for inventory management and timely maintenance, including product number, inventory quantity and storage life of product.
- Financial information:
  It involves all financial revenues and expenditures, handles the input and registration of accounting voucher, output daily accounting, detailed account and general ledger.
- Purchasing list information:
  It is used for sorting the purchasing list information, including number of purchasing list, product name, entry quantity, entry price, purchasing time and name of supplier.
- Member information:
  It records the basic personal information of members, including number, name, contact way, age, preference, transaction record, integral record and discount record of members.

5.7 Other demands

1. System adaptation and transportability:
   When the operating mode, operating environment, software interface or development plan changes, the system should have adaptation ability. Additionally, the phone booking function may be added, therefore, the procedure and phone platform (Android system) compatibility problem should be considered, such as system reserving the java development interface. This is called
2. System maintainability demand:
   The system adopts log record for recording user operation and fault information, meanwhile, the system adopts C/S architecture, which is simple and clear, and facilitates the maintainer for maintenance.

6 Application system design

6.1 Design class diagram

The overall design class diagram is huge, therefore, divide it into single class diagram and then describe its navigation visibility.

1. Shop manager design class diagram
2. Salesperson design class diagram
3. Purchaser design class diagram
4. Warehouse maintainer design class diagram
5. Financial management system border design class diagram
6. Member system control design class diagram
7. Financial statement design class diagram
8. Sales order design class diagram
9. Payment interface design class diagram
10. Member design class diagram
11. Member system interface design class diagram
12. Supplier design class diagram
13. Purchasing list design class diagram
14. Warehouse warrant design class diagram
15. Delivery list design class diagram
16. Inventory design class diagram
17. Fresh material design class diagram
18. Fresh flower design class diagram
19. Navigation visibility

6.2 Detailed sequence diagram

The detailed sequence diagram can be found in Figure 3. Each block corresponding to the sub-block mentioned in the last subsection.

6.2.1 Sequence diagram of sales management system

This system conducts no statistics of the detailed information of ordinary customers but only records the related information of members. The salespersons get the order number, number, name, quantity, discount and total price of fresh flower from the orders. If the customers are the members of the shop, discount will be made for them according to their integrals and member class, when the order is completed, integrals will be obtained according to the consumption situation to be recorded in the member management system.

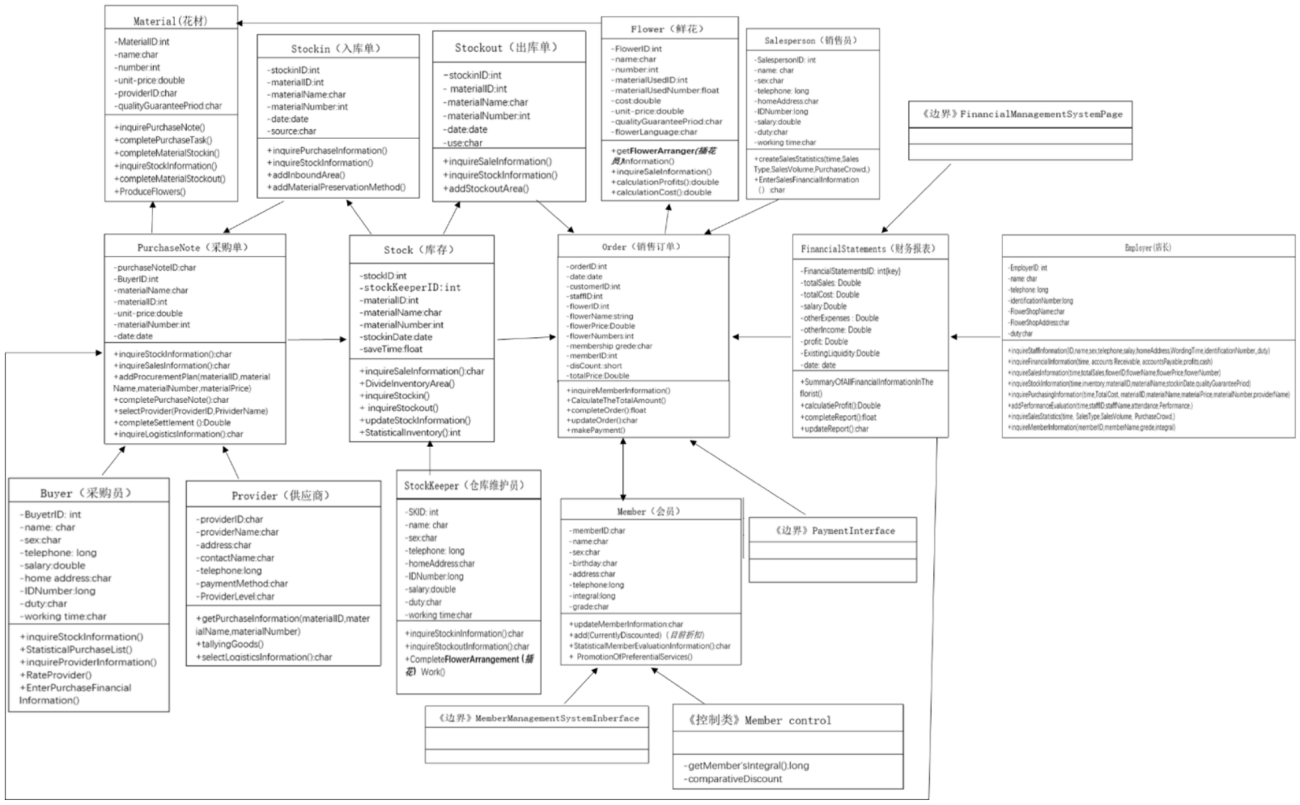

Figure 3: Detailed sequence diagram

6.2.2 Sequence diagram of warehouse management system

The warehouse mainly stores the flower materials and the fresh flower products will be placed in the shop for sales. The warehouse maintainer mainly manages the entry and delivery situations of flower material, clear up the waste flower materials or conduct discount processing according to the entry time and storage time, and make flower material arrangement to product flower material products according to the sales situation. (after the flower materials are delivered from the warehouse, the warehouse maintainer will make flower material arrangement, process and package the flower materials to produce fresh flower products, wherein, flower material and fresh flower are not same, but difference between material and product, flower materials exist in the purchasing and inventory stages while fresh flowers exist in the sales stage.

6.2.3 Sequence diagram of purchasing management system

In the purchasing process, the purchasing list is formulated according to the inventory situation, the suppliers provide raw material list, the purchaser inquires needed raw material, choose suitable supplier and form purchasing list to conduct purchasing and settlement thus to complete the purchasing task. The flower material shop needs to know detail flower material supply situation and demand situation, such as the ID of supplier, ID, name, quantity and price of flower material, supplier class and so on. Finally, the financial information will be input according to the purchasing list, and the material cost will be calculated.

6.3 Package diagram

Figure 6 shows the diagram of the package.

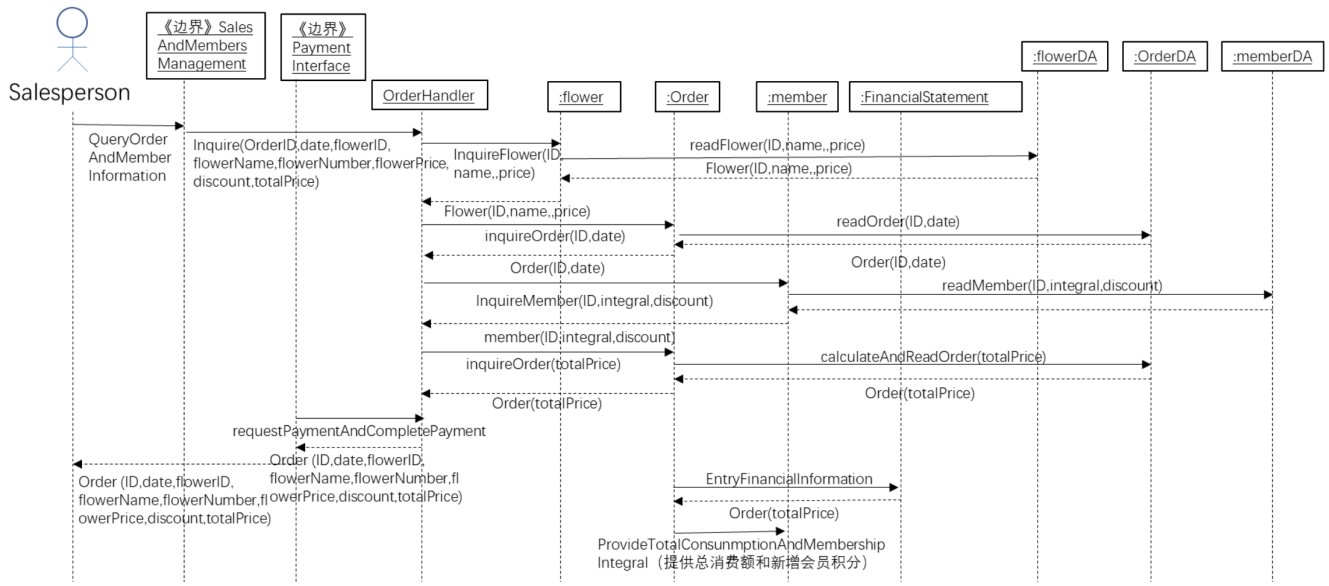

Figure 4: Sequence diagram of sales management system.

6.4 Database design

6.4.1 Entity relation mode

1. Shop manager (ID, name, phone number and ID Card number of shop manager, name and address of flower material shop, responsibility)

2. Salesperson (ID, name, gender, phone number, home address, ID Card number, salary, responsibility and working time of salesperson)

3. Warehouse maintainer (ID, name, gender, phone number, home address, ID Card number, salary, responsibility and working time of warehouse maintainer)

4. Purchaser (ID, gender, phone number, home address, ID Card number, salary, responsibility and working time of purchaser)

5. Flower material (ID, name, quantity and unit price of flower material, ID of supplier, storage life of flower material)

6. Financial statement (ID of financial statement, total sales, total cost, salary, other incomes, other expenditures, profit, existing cash, formation date)

7. Sales order (ID of sales order, formation date, customer number, ID of work personnel, number, name, price and quantity of fresh flower, member class, member number, discount, total price)

8. Member form (ID, name, gender, birthday, address, phone number, integral and class of member)

9. Inventory list (ID of warehouse, ID of warehouse maintainer, ID, name, quantity, entry date and storage life of flower material)

10. Warehouse warrant (ID of warehouse warrant, ID, name, quantity, entry date and source of flower material)

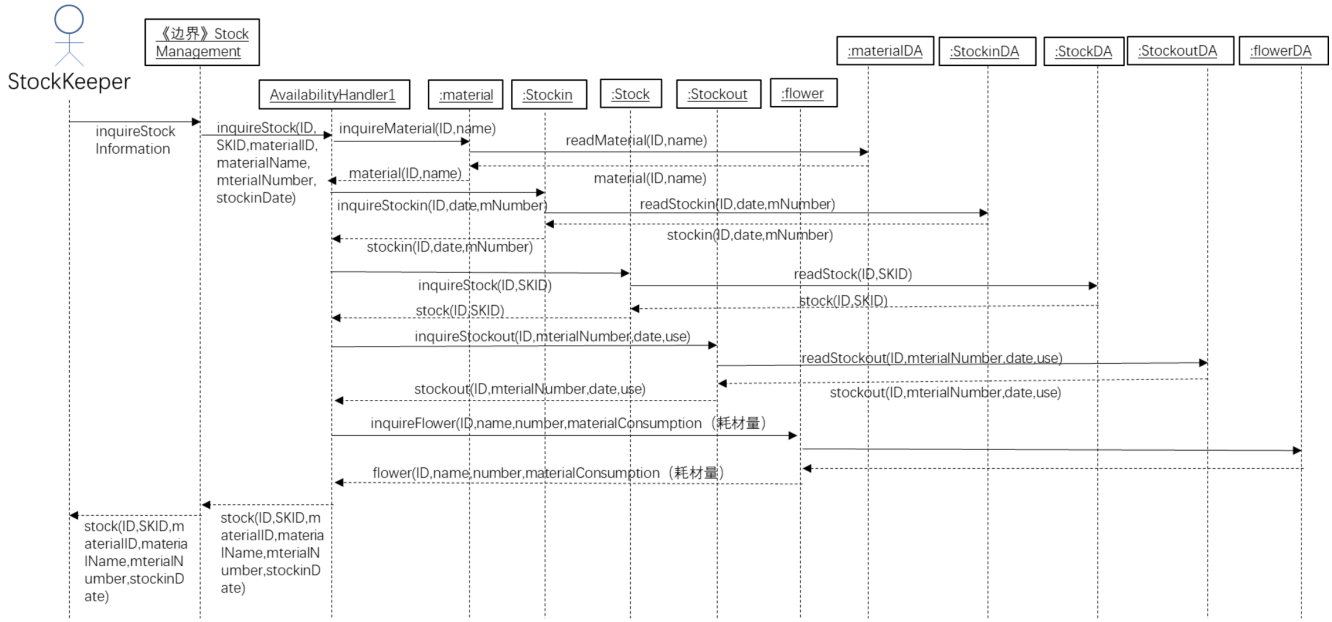

Figure 5: Sequence diagram of warehouse management system.

11. Delivery list (ID of delivery list, ID, name, quantity, delivery date and disposition of flower material)
12. Purchasing list (ID of purchasing list, ID of purchaser, name, ID, quantity, unit price and date of flower material)
13. Supplier list (ID, name and address of supplier, name and phone number of contact person, payment mode, supplier class)
14. Fresh flower (ID, name and quantity of fresh flower, ID and quantity of consumable item, cost, price and storage of fresh flower, flower material language)

6.4.2 Connection relation mode

1. One-to-one connection:
   Management (ID of warehouse, ID of warehouse maintainer, quantity of flower material)
2. One-to-many connection:
   - Employment (number of shop assistant, number of shop manager, contract, salary)
   - Sales (number of fresh flower, customer number, sales price, sales quantity)
   - Collection (number of sales order, customer number, discount amount, total amount)
   - Payment (number of purchasing list, number of supplier, total amount)
   - Delivery (number of delivery list, number of warehouse, delivery time, delivery quantity)
   - Storage (number of flower material, number of warehouse, inventory of flower material)
   - Management (number of financial statement, number of shop manager, operating profit)
   - Summary 1 (number of purchasing list, number of financial statement, total purchasing expense)
   - Summary 2 (number of sales order, number of financial statement, total sales)

3. Many-to-many connection:

    - Supply (number of supplier, number, supply quantity and total price of flower material)
    - Package (number of fresh flower, number of warehouse maintainer, fresh flower production time)
    - Consumption (number of fresh flower, number of flower material, consumption quantity of flower material)

4. Combination connection: In the above relations, some relations have same primary keys for combination:

    - Collection (number of sales order, customer number, discount amount, total amount) and summary 2 (number of sales order, number of financial form, total sales) can be combined to be financial form of sales (number of sales order, customer number, discount amount, total amount, number of financial form, total sales).
    - Payment (number of purchasing list, number of supplier, total amount) and summary 1 (number of purchasing list, number of financial form, total purchasing expense) can be combined to be financial form of purchasing (number of purchasing list, number of supplier, total amount, number of financial form, total purchasing expense)
    - Package (number of flower, number of warehouse maintainer, flower production time) and consumption (number of flower, number of flower material, consumption quantity of flower material) can be combined to be fresh flower processing form (number of flower, number of warehouse maintainer, number of flower material, consumption quantity of flower material, fresh flower production time)

5.
    - Warehouse management form (number of warehouse, number of warehouse maintainer, inventory of flower material)
    - Shop assistant form (number of shop assistant, number of shop manager, contract, salary)
    - Financial form of sales (number of sales order, customer number, discount amount, total amount, number of financial statement, total sales)
    - Financial form of purchasing (number of purchasing list, number of supplier, total amount, number of financial statement, total purchasing expense)
    - Fresh flower processing form (number of flower, number of warehouse maintainer, number of flower material, consumption quantity of flower material, fresh flower production time)
    - Flower material storage record form (number of flower material, number of warehouse, quantity of flower material)
    - Supply form (number of supplier, number of flower material, supply quantity, total price)

6.4.3 Standardized processing

- INF: based on judgement, all attributes in the above relation modes are inseparable basic data items, and all the above relation modes meet with the requirement of the First Normal Form
- NF: Based on judgement, all non-primary attribute total functions rely on master codes, therefore, they meet with the Second Normal Form.
- NF: in the financial form of sales (number of sales order, customer number, discount amount, total amount, number of financial form, total sales), the total amount and total sales are repeated and

redundant, if one of them is deleted, the financial form of sales is changed to be the one (number of sales order, customer number, discount amount, number of financial statement, total sales), and the financial form of purchasing (number of purchasing list, number of supplier, total amount, number of financial form, total purchase expense) will be changed to be the one (number of purchasing list, number of supplier, number of financial statement, total purchase expense). Unify the salesperson, purchaser and warehouse maintainer to be shop assistant (ID, gender, phone number, home address, ID card number, salary, responsibility and working time of shop assistant). After modification, each non-primary attribute in the above relation modes don't rely on and transmit code, therefore, they meet with the Third Normal Form.

- BCNF: according to the above (3), the above relation modes meet with 3NF, besides, all primary attributes transmit and rely on nothing, therefore, they meet with BCNF.

6.4.4 Final logic mode structure

1. Shop manager (ID, name, phone number and ID card number of shop manager, name and address of flower material shop, responsibility)
2. Shop assistants (ID, gender, phone number, home address, identity card number, salary, responsibility and working time of shop assistants)
3. Flower materials (ID, name, quantity and unit price of flower materials, ID of supplier and storage life of flower materials)
4. Financial statement (ID of financial statement, total sales, total cost, salary, other incomes, other expenditures, profit, existing cash, formation date)
5. Sales order (ID of sales order, formation date, customer number, ID of work personnel, fresh flower number, name, price and quantity, member class, member number, discount, total price)
6. Member form (ID, name, gender, birthday, address, integral and class of member)
7. Inventory list (ID of warehouse, ID of warehouse maintainer, ID of flower material, flower material name, quantity, entry date and storage life)
8. Warehouse warrant (ID of warehouse warrant, ID, name, quantity, entry date and source of flower material)
9. Delivery list (ID of delivery list, ID, name, quantity, delivery date and disposition of flower material)
10. Purchasing list (ID of purchasing list, ID of purchaser, name, ID, quantity, unit price and date of flower material)
11. Supplier form (ID of supplier, name and address of supplier, name and phone number of contact person, payment mode and supplier class)
12. Fresh flower (ID, name and quantity of fresh flower, ID and quantity of consumable items, fresh flower cost, sales price, storage life and flower material language)
13. Shop assistant form (number of shop assistants, number of shop manager, contract, salary)
14. Flower material storage record form (flower material number, warehouse number, flower material quantity)

15. Supply form (number of supplier, number of flower material, supply quantity, total price)
16. Warehouse management form (number of warehouse, number of warehouse maintainer, inventory of flower material)
17. Fresh flower processing form (number of fresh flower, number of warehouse maintainer, number of flower material, consumption quantity of flower material, fresh flower production time
18. Financial statement of purchasing (number of purchasing list, number of supplier, number of financial statement, total purchasing expense)
19. Financial statement of sales (number of sales order, customer number, discount amount, number of financial statement, total sales)

Table 1: Form of schedule and personnel allocation

Project Stage	Time	Tasks	Personal allocation
Topic selection	2018.6.25-7.1	Selected the topic related to system analysis and design	Common discussion of Yue Junjie, Yan Ling and Wang Yu
Demand analysis	2018.7.2-7.8	Conducted field investigation on the shop, knew the actual operation situation of the shop from the shop manager and shop assistants. According to the actual situation, made discussions and conducted demand analysis, and wrote system demand report	Yue Junjie was the team leader to organize the field investigation and communicate with the work personnel of the shop
System analysis	2018.7.9-7.15	Completed the system analysis report according to the requirement specifications of the system	Yan Ling was the team leader and completed the illustration, system sequence diagram and domain model class diagram
System design	2018.7.16-7.22	Wrote the system design report according to the requirement specifications and system analysis report	Wang Yu was the team leader and completed application system design and deployment environment design
System implementation	2018.7.23-8.13	Compiled the system procedure and conducted system development according to all development files	The team members complete the task commonly
System operation and maintenance	2018.8.14	Help the flower material shop to install the system well and conduct training on the work personnel, update and maintain the system for long time	The team members complete the task commonly

Table 2: The capital budget situation of the system

Expenditure items	Unit price (Yuan)	Quantity	Total price (Yuan)
Server	11500	1	11500
Client	4800	3	14400
Switch	1400	1	1400
Other comprehensive wiring materials	2000	-	2000
Personnel training	500	1	500
System development	12000	-	12000
Other expenses	5000	-	5000
Total: 46,800 Yuan			

Table 3: System user privilege

User	Privilege
Shop manager	Inquire all information of the flower shop and have the right to modify the information within his authority. As the local administrator of the database, have the statistics right to all data.
System administrator	Have the highest administration authority of the information system, have the right to conduct system maintenance, modification and upgradation; own the authority of system administrator of the database, which can be rewarded and collected.
Shop assistant	Inquire and modify all business information related to daily operation; have the ordinary administrator authority of database, have the right to add, delete and modify the database simply
Ordinary customer	Inquire and update the order information with the help of the shop assistant
Member	Inquire and update the integral information and price discount information with the help of the shop assistant

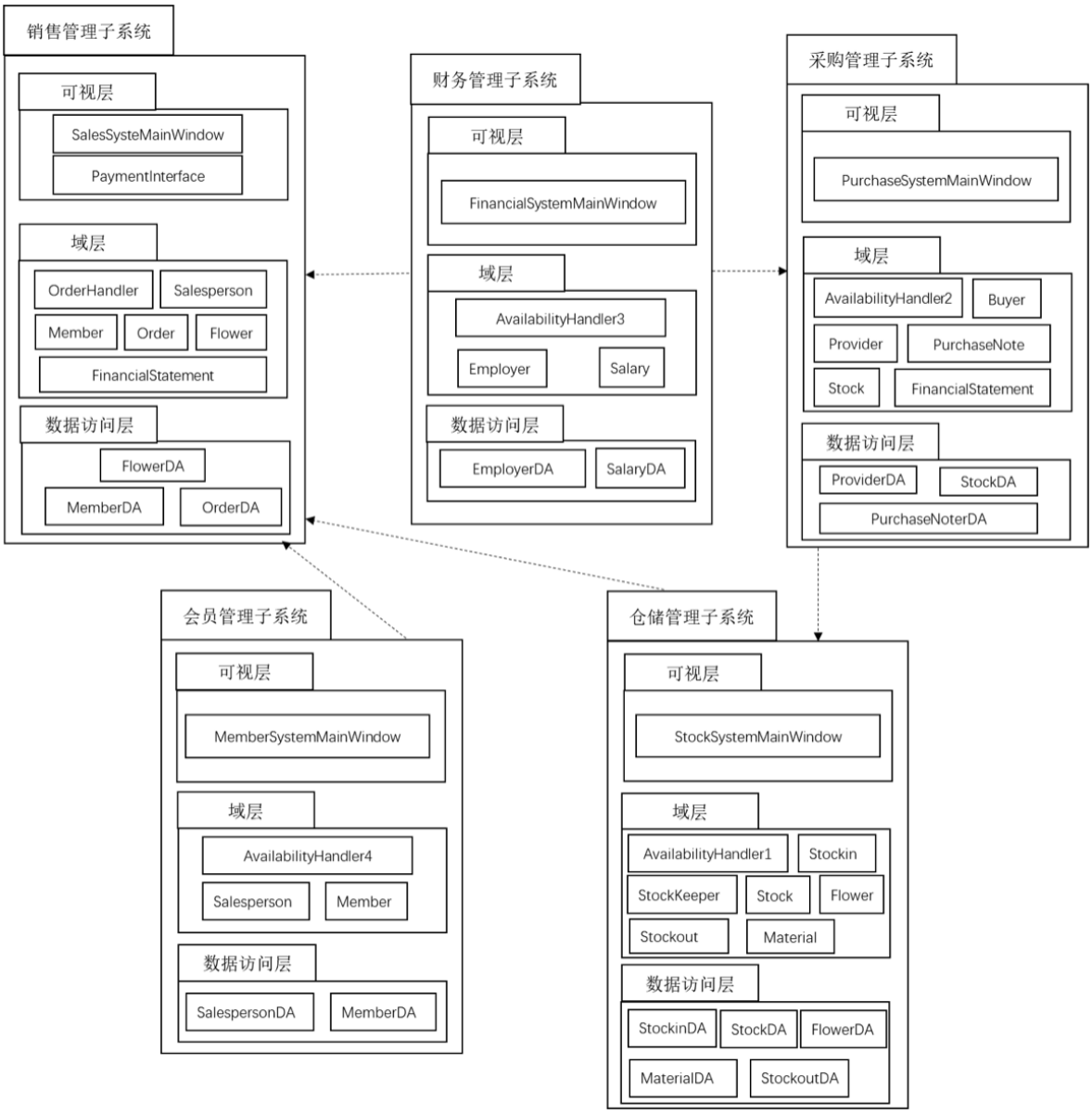

Figure 6: Package diagram.