# REQ1: Company Employee Management System

公司雇员管理系统主要用于管理公司雇员的信息。雇员的基本信息包括身份证号、姓名、出生日期和电话，每个雇员的身份证号是唯一的；公司雇员分为普通雇员和工时雇员，普通雇员包括佣金雇员和非佣金雇员。其中，

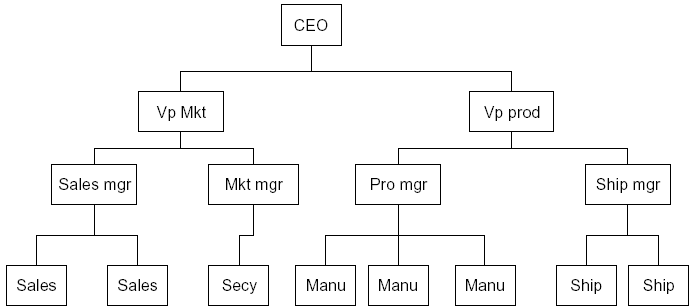
1. 工时雇员有固定的小时薪水（即每小时支付的费用），其薪水在每周五按照其每周的工作记录进行计算，每个工作记录包括一个工作日期和工作的小时数，如果在某工作日期，其工作时间超过8个小时，超过的每小时按照小时薪水的1.5倍来计算。系统需要保存工时雇员每周的所有工作记录；
2. 非佣金雇员每月的薪水仅包含固定的月薪，其薪水在每月的最后一个工作日期进行计算，系统需要记录非佣金雇员固定的月薪和每月的工作记录，每个工作记录包括一个工作日期和工作的小时数。
3. 佣金雇员每月的薪水除了包含固定的月薪之外，还包含按照其每月的销售额获得的佣金。其佣金计算方式为：销售额超过10万部分，提取超额部分的10%作为其佣金；超过20万部分，提取超额部分的15%作为佣金。对于每个佣金雇员，系统需要保存其固定的月薪、每月的工作记录（每个工作记录包括一个工作日期和工作的小时数）以及每月的销售记录，销售记录中的每一销售项包括已售的产品名称、单价、数量及其销售日期。

在该应用系统中，用户可以：

1. 显示雇员的基本信息；
2. 根据指定的日期，显示雇员的周工作记录或月工作记录；
3. 根据指定的日期，显示雇员周或月的薪水信息；
4. 根据指定的日期，显示佣金雇员某个月的销售记录。

# REQ2: Cost Access System

A company has the organizational chart we see below:



Each of these company members may receive a salary, and we could at any time ask for the cost of any employee to the company. We define the cost as the salary of that employee and those of all his subordinates.

* The cost of an individual employee is simply his salary (and benefits).
* The cost of an employee who heads a department is his salary plus those of all his subordinates.

可以完成的功能要求：可以实现访问公司每个雇员的薪水(salary)及对公司的贡献价值(cost)。

# REQ3: Specification of the Library System

The library system tracks the items checked out by borrowers. The system contains a catalog of the items owned by the library. There are two kinds of catalog items: books and recordings. All catalog items are identified by a unique code. (If the library owns several copies of the same book or recording, each copy has a unique code.) The information for each item includes title, year, and availability. An item is available if it is not checked out.

In addition:

* The information for a book includes the author and number of pages.
* The information for a recording includes the performer and format (*CD* or *tape*).

The system contains a database of the borrowers. Each borrower has a unique identification code in addition to a name. The system maintains a list, for each borrower, of the catalog items checked out.

In the library system, the user should be able to:

* Display the catalog by listing the code, title, and availability of each item.
* Display a catalog item.
* Display the borrowers by listing the identification code and name of each borrower.
* Display the catalog items checked out by a borrower.
* Check out a catalog item by adding the item to borrower's list of borrowed items.
* Check in a catalog item by removing the item from borrower's list of borrowed items.

# REQ4: The Tourism Information System

The tourism information system maintains a catalog of tourism products and tracks the tourist routes. There are four kinds of products: domestic tourism, peripheral tourism, outbound tourism，and cruise tourism. All products are identified by a unique code.

The information for each domestic tourism product includes：

* + code
  + title
  + departure
  + destination
  + tourist route
  + selling price
  + The travel agency name

The information for each peripheral tourism product includes：

* + code
  + title
  + departure
  + destination
  + tourist route
  + product feature description
  + selling price
  + The travel agency name

The information for each outbound tourism product includes：

* + code
  + title
  + departure
  + destination
  + tourist route
  + stay of days
  + selling price
  + The travel agency name

The information for each cruise tourism product includes：

* + code
  + title
  + departure
  + destination
  + cruise company
  + stay of days
  + tourist route
  + selling price
  + The travel agency name

The system also contains a catalog of tourist routes. Each tourist route has a unique code in addition to a name. The system maintains a responsible person for each tourist route. The system stores an ID and the information about this person (name, home telephone number, QQ and email). The list of tourist attractions for each tourist route is tracked by the system. Each tourist attraction includes the name, type, and the province that it belongs to.

In the tourism information system, the user should be able to:

* Add a product into the system
* Add a route into the system
* Display the catalog by listing the code, title, departure, destination and selling price of each product.
* Display the catalog by listing the code, the responsible person and the list of tourist attractions of each route.
* Look up the information of the product which contains the specified departure and destination
* Look up the information of the route which contains the specified attraction
* Look up the information of the routes which contains the specified responsible person.

# REQ5: Bright Fresh Milk System

*Bright Fresh Milk* is a store that sells pure milk from countries around the globe. It also sells milk drinks, yogurt and jelly. The *Bright Fresh Milk System* maintains a product catalog, processes orders, and tracks the store's sales. The catalog maintains the following information about the store's products:

* Pure milk
  + Code
  + Description
  + Price
  + Production date
  + Shelf life
  + Country of origin
  + Butterfat
  + Protein
* Milk drink
  + Code
  + Description
  + Price
  + Production date
  + Shelf life
  + Flavor
  + Sugar
* Yogurt
  + Code
  + Description
  + Price
  + Production date
  + Shelf life
  + Type
  + Dilute concentration
* Jelly
  + Code
  + Description
  + Price
  + Production date
  + Shelf life
  + Flavor

*The* *Bright Fresh Milk System* maintains a current order. The system can process the current order to the store's sales and empty the current order. A current order contains a list of products, their quantities, and the total cost. The following is an example of a current order including three sale items and the total:

Table 1

|  |  |  |  |
| --- | --- | --- | --- |
| Quantity | Code | Description | Price |
| 2 | A002 | skim milk,800ml | 18 |
| 3 | C001 | chocolate flavor,270ml | 5 |
| 1 | D001 | taro flavor,250ml | 13.1 |
| 3 | B001 | solid,250ml | 8.5 |
| order total |  |  | 89.6 |

In the *Bright Fresh Milk System*, the user can:

* Display the catalog: lists the code, description, production date of each product
* Display the information of a product by its code
* Display the current order: lists quantity, code, and price of each product in the current order, and the total of the order.
* Add a product to the current order —if the specified product is already part of the order, this command will modify the quantity of that product
* Remove a product from the current order
* Adds the current order to the store's sales and empties the current order
* Display the sales including all the orders that have been sold

# REQ6: Component System

A component system has [composite component](http://www.baidu.com/link?url=ZhfjR3dFyiq0yNbSmmanyn5aIHAOGh3e4XlSdIZW03mkdGsSdy7FcF0ugMN_TtFDQXsttC3VnDgkMtaj615cQlmzTECzNWgeX94_u1u3p5JboFXqvd0sk9dK7Z9QD3lc" \t "_blank)s, and [composite component](http://www.baidu.com/link?url=ZhfjR3dFyiq0yNbSmmanyn5aIHAOGh3e4XlSdIZW03mkdGsSdy7FcF0ugMN_TtFDQXsttC3VnDgkMtaj615cQlmzTECzNWgeX94_u1u3p5JboFXqvd0sk9dK7Z9QD3lc" \t "_blank)s contain atomic components or more [composite component](http://www.baidu.com/link?url=ZhfjR3dFyiq0yNbSmmanyn5aIHAOGh3e4XlSdIZW03mkdGsSdy7FcF0ugMN_TtFDQXsttC3VnDgkMtaj615cQlmzTECzNWgeX94_u1u3p5JboFXqvd0sk9dK7Z9QD3lc" \t "_blank)s, or both. Each component or [composite component](http://www.baidu.com/link?url=ZhfjR3dFyiq0yNbSmmanyn5aIHAOGh3e4XlSdIZW03mkdGsSdy7FcF0ugMN_TtFDQXsttC3VnDgkMtaj615cQlmzTECzNWgeX94_u1u3p5JboFXqvd0sk9dK7Z9QD3lc" \t "_blank) has name, type and creation date. In addition, each atomic component has functional description.

功能要求：

1.可以打印指定原子构件的名字，类型，创建日期及功能描述

2.可以打印指定复合构件内各原子构件或复合构件的相关信息

# REQ7: The Public Transport Query System

The public transport query system maintains information about public transport lines and stations. The system includes two kinds of public transport lines: bus lines and subway lines. At the same time, bus stations and subway stations are tracked by the system.

* + The information about eachsubway line includes:
    - line identification
    - line name
    - the time of the early subway
    - the time of the late subway
    - the length of the line
    - the sequence of subway stations
  + The information about each bus line includes:
    - line identification
    - line name
    - the time of the early bus
    - the time of the late bus
    - the length of the line
    - the sequence of bus stations
    - the availability of bus card( whether the bus card is allowed)
    - the availability of air-conditioned bus(whether the bus is air-conditioned)
    - the company that the bus line belongs to
  + The information about each station for buses and subways includes:
    - Station name
    - Station position which contains latitude and longitude
    - The set of the lines which pass through the station

For some unexpected safety accidents, the line may change. The system provides the list of the changing lines which change their routes due to traffic diversions. In addition, the system maintains the beginning and ending time of the changing for each changing line. Assume that the line name and identification of each changing line are left unchanged.

Assume that each line has a unique identification and that that identification cannot be modified. Assume each station has a unique name.

In the public transport query system, the user can:

* Add a bus line or a subway line into the system
* Add a bus station or a subway station into the system
* Look up the information of the line given the identification
* Look up the information of the lines which contains the specified station
* Look up the information of the station given a name
* Look up whether the line is changed given the identification (if the line is changed, please display the corresponding information)

# REQ8: Gourmet Coffee System

*Gourmet Coffee* is a store that sells coffee from countries around the globe. It also sells coffee brewing machines and other accessories for coffee consumption. The *Gourmet Coffee System* maintains a product catalog, processes orders, and tracks the store's sales.

The catalog maintains the following information

about the store's products:

* Coffee
  + Code
  + Description
  + Price
  + Country of origin
  + Type of roast
  + Flavor
  + Aroma
  + Acidity
  + Body
* Coffee brewer
  + Code
  + Description
  + Price
  + Model of the brewer
  + Type of the water supply: *Pour-over* or *Automatic*
  + Capacity: number of cups
* Coffee accessory
  + Code
  + Description
  + Price

The following tables show some of the products sold by *Gourmet Coffee*.

|  |  |
| --- | --- |
|  | |
| **Figure 1** *Coffee* | |
|  |
| **Figure 2** *Coffee brewers* |

|  |
| --- |
|  |
| **Figure 3** *Coffee accessories* |

The *Gourmet Coffee System* processes orders. An order contains a list of products, their quantities, and the total cost. The following is an example of an order:

|  |
| --- |
|  |
| **Figure 4** *Order* |

In the *Gourmet Coffee System*, the user can:

* Display the catalog: lists the code and description of each product
* Display a product
* Display the current order: lists quantity, code, and price of each product in the current order, and the total of the order.
* Add a product to the current order—if the specified product is already part of the order, this command will modify the quantity of that product
* Remove a product from the current order
* Register the sale of the current order—this command adds the order to the store's sales and empties the current order
* Display the sales: lists all the orders that have been sold
* Run the sample executable that is provided to learn more about the *Gourmet Coffee System*.

# REQ9: Medical Insurance Information System

The medical insurance information system maintains information about three different types of insurance:

* The medical insurance for urban workers(城镇职工医疗保险): For this type of insurance, the system stores a social insurance number (社会保险号), insurance limits(保险限额), the medical reimbursement records(医疗报销记录) and the information about the insured person (name, identification, institute (工作单位), working years(工龄)) . Each medical reimbursement record (医疗报销记录) includes the date (报销日期) and the amount used(报销金额).
* The medical insurance for urban residents（城镇居民医疗保险）: For this type of insurance, the system stores a social insurance number, insurance limits(保险限额), the amount used (已使用额度) and the information about the insured person (name, identification, address and age) .
* The medical insurance of new-style country collaboration（新型农村合作医疗保险）: For this type of insurance, the system stores a social insurance number, the amount of compensation (住院补偿数额) and the amount used (已使用额度)and the information about the insured person (name, identification, address and age) .

Assume that each insured person has a unique insurance number and that IDs cannot be modified.

The system provides the following functions:

* Add an insured person into the system
* Look up an insured person given an insurance number
* Remove an insured person from the system given an insurance number
* Add a medical reimbursement record to the system given an ID of urban workers

# REQ10: A file System

A file system has folders, and folders contain files or more folders, or both. Each file or fold has name,date and size. In addition,each file has extension.

功能要求：

1.可以打印指定文件的文件名，创建日期，大小及其扩展名

2.可以打印指定文件夹内各文件或文件夹的相关信息

# REQ11: Customer Information System

The customer information system maintains information about two different kinds of customers:

* Individual customers: For these customers, the system stores an ID and the information about a person (name, home telephone number, and email).
* Institutional customers: For these customers, the system stores an ID and provides the capability of defining one or more contact people for the institution. The system stores the following information for each contact person: name, home telephone number, email, work telephone number, and the job position of the contact in the institution.

Assume that each customer has a unique ID and that IDs cannot be modified. Assume each contact for an institution has a unique name.

The system provides the following functions:

* Add a customer into the system
* Look up a customer given an ID
* Remove a customer from the system given an ID
* Add a new contact for an institutional customer
* Look up a contact given the ID of the institution and the name of the contact
* Remove a contact given the ID of the institution and the name of the contact

# REQ12: Tourist Client Information System

The tourist information system maintains information about two different kinds of tourists:

* Individual tourists(散客): For these tourists, the system stores an ID and the information about a person (name, telephone number, and email).
* Tourist groups(旅游团): For these tourists, the system stores an ID and provides the capability of defining one or more contact people for the tourist group. The system stores the following information for each contact person: name, telephone number, email, and the job position(团长或导游或其他职务) of the contact in the tourist group.

Assume that each tourist has a unique ID and that IDs cannot be modified. Assume each contact for an institution has a unique name.

The system provides the following functions:

* Add a tourist into the system
* Look up a tourist given an ID
* Remove a tourist from the system given an ID
* Add a new contact for a tourist groups
* Look up a contact given the ID of the group and the name of the contact
* Remove a contact given the ID of the group and the name of the contact

# REQ13: Northwestern Polytechnical University Online Self Service Reimbursement System

西北工业大学网上自助报账系统包括报销项目录，报销项包括2种类型：日常报销、差旅报销。报销项包括：唯一标识码、经费号、报销人姓名，除此之外，日常报销还包括报销类别（即办公费、图书资料费或咨询费）；差旅报销还包括出差天数和出差地点。

用户实现如下功能：

1. 显示网上自助报账系统的所有报销项信息；
2. 根据唯一标识码，查找某报销项的信息。

# REQ14: An embedded system

一个嵌入式系统由构件集合构成，构件类型包括子系统、进程和线程。每个子系统可以包含若干进程，每个进程可以包含若干线程。每类构件都有构件名称、构件的输入集合和输出集合，每个输入、输出都有有名称和类型，其中，进程还有状态（就绪、运行、阻塞）、地址空间等属性，线程还有调度（分时调度和实时调度）属性。

功能要求：用户可以访问嵌入式系统的构件信息

# REQ14: An embedded system

一个嵌入式系统由构件集合构成，构件类型包括子系统、进程和线程。每个子系统可以包含其他子系统、若干进程或若干线程，每个进程可以包含若干线程。每类构件都有构件名称、功能描述，其中，子系统，进程还有状态（3种状态：就绪、运行、阻塞）、地址空间等属性，线程还有调度（调度分为分时调度和实时调度2种）属性。

功能要求：用户可以访问嵌入式系统的构件信息

# REQ15: Computer Management System

计算机管理系统管理五种类型的计算机：

1. 超级计算机，其信息包括名称、型号和组成该超级计算机的处理器集合等
2. 工业控制计算机，其信息包括名称、型号和工业控制的类别
3. 个人计算机，其信息包括名称、型号和显示器类型等
4. 嵌入式计算机，其信息包括名称、型号、微处理器类型等
5. 网络计算机，其信息包括名称、型号和类型等。例如，网络计算机的类型包括服务器，路由器，交换机、工作站和集线器

# REQ16: Document Management System

文献管理系统管理三种类型的文献：

（1）会议论文（信息包括会议ID，论文标题，论文作者姓名）；

（2）期刊论文（信息包括期刊名称，论文作者姓名，论文标题）；

（3）图书（信息包括书籍名称，书籍作者姓名，书籍标题）。

论文ID和书籍编号都是惟一的，并且不会被修改。

系统拥有下面功能：

* 通过论文ID或者书籍编号查找编辑文献。
* 添加文献到系统中。
* 从系统中删除指定的文献。
* 查找某个单位（出版社）的文献。
* 查找某个姓名的文献。
* 在系统中查找是否与当前内容相似的文献（查重）。

# REQ17: A Hard Disk Selling System

一个硬盘售卖系统销售3种类型的硬盘，固态硬盘（SSD）、机械硬盘（HDD）、混合硬盘（SSHD），各类硬盘都具有容量、缓存（缓存包括大小和速度）等属性，其中，固态硬盘还包括闪存颗粒、主控芯片等，机械硬盘(HDD)还包括盘片、控制电机等属性，混合硬盘还包括盘片和NAND闪存颗粒等属性。

硬盘售卖系统功能要求：用户可以访问各类硬盘的信息。

# REQ18: Software College Management System

The software college management system tracks the faculty of the software college. The system contains a faculty database to keep track of the information about faculty members. There are three kinds of faculty members: teaching staff, administrative teachers and experimental teachers. The information about faculty members includes identification, name, contact telephone and the job position. The dean of administrative teachers is top manager of the software college. For each kind of faculty members, the system stores its “little leader” which is led by the dean.

The system provides the following 3 functions:

1. Read the information of the file data.txt\data1.txt\data2.txt to initialize all objects.

* If the job position of a faculty member is A to E, then he is the experimental teacher; If the job position of a faculty member is A, then he is the dean; B denotes that he is the “little leader”.
* If the job position of a faculty member is F to G, then he is the teaching staff; F denotes that he is the “little leader”.
* If the job position of a faculty member is H to I, then he is the administrative teacher; H denotes that he is the “little leader”.

When you initialize the objects, the information about ID and the job position of a faculty member is assumed to be correct. The following input data with error need to handle：

* If the information about a faculty member contains more than four values, an error message is displayed.
* If the information about a faculty member fewer than four values, an error message is displayed.
* If the telephone number does not contain 11 digits, an error message is displayed.
* If the telephone number is not a number , then [java.lang.NumberFormatException](http://java.sun.com/j2se/1.4/docs/api/java/lang/NumberFormatException.html" \t "externalWindow) is caught and output.

1. Write the information about five kinds of faults to five files (namely “faults1.txt”, “faults 2.txt” “faults3.txt” and“faults4.txt”) by listing the information about the fault by applying the strategy pattern or factory pattern.
2. Add / loop up / remove a faculty member from the system given an ID.
3. According to the user’s choice (ID), display the information about a faculty member through graphical user interface from the system.

REQ19：

文献管理系统维护了一个文献目录和文献作者目录，文献的类型分为如下3种：

（1）会议论文（信息包括会议名称，作者，论文标题，会议日期）；

（2）期刊论文（信息包括期刊名称，作者，论文标题，期刊影响因子）；

（3）图书（信息包括出版社名称，作者，图书标题，发行量）。

文献标题是惟一的，并且不允许被修改。作者信息包括作者的姓名、联系电话和工作单位，作者的姓名是唯一的，并且不允许被修改。系统可以实现的功能包括：

* 通过文献标题查找文献信息。
* 添加、删除文献。
* 从系统中删除指定的文献。
* 查找某个单位（出版社）的文献。
* 查找指定作者发表的文献。
* 通过姓名查找系统维护的作者信息