智产智融
Smart P&L

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Outline Design Specification

by Sparklefish

Directory

1. Summarization

1.1 Writing purpose

This outline design specification is writing for “Smart p&l” Platform. The purpose of it is to do the system design of the project, to divide of the system function module of the system based on the understanding of requirement of the system, to divide the work of the development work. To explicit the API among the modules, and do some preparation for latter detailed design and development. The readers we expected include the programmers for the system’s design and development, the test controllers, the personnel for latter expand and maintenance of the system and anyone who is interested in.

This document is aimed at providing a high-quality architecture in which can build trading system with strong property and high-quality in transportability, reusability and scalability. According to this document, the system analyst or programmers can design the system in detail.

1.2 Project overview

With the rapid development of China's economy, the number of small and medium-sized enterprises is also growing rapidly, and they are playing more and more important roles in the country’s economic aspect. According to the statistics data from the National Administration for Industry and Commerce of China, in 2013 the total amount of China's small and medium enterprises and individual industrial and commercial households registered has more than 15 million. By the end of 2016 the number will be more than 70

million. With the annual growth rate of more than 10%, it is estimated that by 2020, China's small and medium enterprises and individual industrial and commercial households will be more than 90 million. SMEs have accounted for more than 99% of the total number of enterprises. According to the guiding spirit of the 18th National People 's Congress, it is important to “promote public entrepreneurship innovation, and constantly cultivate new, new kinetic energy to promote sustained and healthy development of small and medium enterprises". With the implement of the next 5 year plan and the in-depth development of China's market economy, the number and size of small and medium enterprises will continue to develop.

While small and medium enterprises are booming, the financing environment for small and medium-sized enterprises is very bad. According to the data from Bank of China released in 2014, we found that by June 2013, the total number of small and medium enterprises has reached 56.51 million yet less than 10% of them could obtain credit support from the bank. China's SME is currently facing problems in difficult financing processes, limited financing channels, high financing costs, and the problem is becoming increasing hard.

Based on this development background, “Smart p&l” SME financing platform firmly grasp the market development opportunities and access to SME financing market. We are committed to improving the financing of small and medium enterprises, reducing the financing costs of small and medium enterprises, and to provide convenient and standardized services in credit audit and risk assessment for SMEs financing.

1.3 Definition and Abbreviation

Abbreviation	Definition
SRS	Software Requirement State
UC	Use case
DAL	Data Access Layer
BLL	Business Logic Layer
Model	Business Model

1.4Reference

Resource name	Publisher	Author	Publication date
Software Engineering - Practitioners' Research Methods	Mechanical Industry Press	[US]Roger S.Pressman	April, 2007
UML and schema applications	Mechanical Industry Press	[US]Craig Larman	September, 2010
Java programming thinking	Mechanical Industry Press	[US] Bruce Eckel	June, 2007
Case Study - Java Web Integration Development	Electronic Industry Press	Lei Zhiyu, Zheng Shengpu, Sun Hao,etc.	April, 2009
Proficient in struct2-based MVC-based Java Web application development combat	People Post Press	Chen Yunfang	July, 2008
Database management system - principle and design	Tsinghua University Press	[US]Raghu Ramakrishnan Johannes Gehrke	March, 2004
JavaScript Advanced Programming(third edition)	People Post Press	[US]Nicholas C.Zakas Li Songfeng,Cao Liyi	March, 2012
Proficient in CSS + DIV page style and layout	People Post Press	Zeng Shun	August, 2007

Software Testing(Second Edition)	Mechanical Industry Press	[US]Ron Patton Zhang Xiaosong, Wang Yu, Cao Yue	October, 2011
vue.js authoritative guide	Electronic Industry Press	Zhang Yaochun, Huang Tie, Wang Jing, Su Wei, Wang Jin, Yin Xianyong	September, 2016

2. Overall Design

2.1 Demand Overview

2.2 Operation Environment

Server: Node.js 8.0.0 or above

2.3 Development Environment Support

2.3.1 Hardware Configuration

- network: the router, more than 10 m bandwidth of Ethernet
- Machine configuration: CPU 2.0 GHz or above, 512 m memory or above
- hard disk: 80 gb hard disk and backup hard disk

2.3.2 Software Technology Support

- Implementation language：HTML, CSS, Javascript；
- System support：Windows 10, Chrome, Atom, Webstorm
- System architecture and implementation：B/S mode
- Document management and version control：Git, GitHub
- Interface design tools：Chrome + SCSS
- Other software support：Adobe Photoshop, Sketch

2.4 System Organization

2.4.1 Client

Here, the client mainly refers to the browser used to access the platform of intellectual intelligence platform. This end mainly to complete the two tasks: First, to interact with the user to provide a good interface to interact with the user, and the user needs to show the information to the user; Second, with the server for data exchange, the user operation The results are passed over the network to the server and the corresponding results are obtained and presented on the web page.

The client interacts with only the interface provided by the server. This has the advantage of isolating the user's behavior from the specific data operation, improving the security while reducing the coupling degree of the various parts of the system structure, and facilitating the independent development of the common test.

2.4.2 Server

The server is the core part of the system architecture. It is directly associated with the client and the database, in the middle of the two layers, played a role in the exchange of data. Its focus is on the development of business rules, the realization of business processes and other business needs related to the system design.

2.4.3 Database

The database isolates the data from the underlying operations and the specific business logic. The main function is to maintain the atomicity, consistency, isolation and persistence of data and data operations.

2.5 Restrict and Constraint

1) Performance

Can finish task which people expect.

2) Reliability

System in front of the application or error, in the case of accident or mistake before using to maintain the basic capabilities of software system features.

3) Availability

System can run normally, the percentage of time can be used twice the length of time between failure or failure of the system can be restored to normal speed.

4) Robustness

Module should be able to withstand the pressure, to guarantee the trouble-free running 24 hours a day.

5) Security

Domain in the form of cipher key data transmission of the message, can be divided into the confidentiality, integrity, non-repudiation and controllability.

6) Modifiability

Able to change system at higher prices than in the performance quickly, usually also called maintainability.

7) Variability

The system structure can expand or change to the new system structure.

8) Usability

Interface popular easy to operate.

9) Expansibility

Should fully consider the deal to modify or increase in the future, to avoid mass modify the program requirements change.

10) Interoperability

System or between system and system can interact with the outside world.

3. Interface Design

3.1 User Interface

A. The Internet

Through the Internet, interact with the server. In query and record function

B. mobile phone GPRS

Through mobile phone GPRS connection to the Internet or in local query and record.

3.2 Peripheral Interface

Telecom operators, Mobile, Unicom, the Internet.

3.3 Internal Interface

In different layer and different mainly through entity object to realize communication between modules. All attributes of each entity object encapsulation to different entity class, through the entity class communication between business layer and presentation layer. Between the business layer and data layer by calling a stored procedure.

Within each module of each entity are realized through class attribute. By reducing the use of global variables to improve the reusability of the program, reduce the coupling of the program.

4. Database Design

See the “Database Design Specification” for details.

5. System Structure Design

5.1 System Overall Structure

System function structure drawing：

5.2 The Logical Structure Design Points

Business Entity

A business entity is an object that represents business data. In the application code, the business entity behaves as something. These objects in the implementation process, the definition of the different field attributes and object methods. These structures are the main members of a typical business entity class.

- Field attribute

It refers to the data used to cache the local business entity. When retrieving data from a database through a data access component, these fields retain a snapshot of the data in the database for accessing the entity state. The developer can select the attribute name as needed.

- Methods

It is a complex operation of the business data package that reduces code duplication.

The business entity has the following characteristics:

- The business entity provides stateful programming access to business data and related functions.
- Business entities can be built using data with complex architectures.
- The business entity data can be passed as input / output parameters in the business logic component method.

6. System Error Manage Design

6.1 Error Message

1. Database operation failed message;
2. User login authentication failure message;
3. Input data validation does not pass the message;
4. Cross-border access to tips;
5 . Users can not undo their own trading.

6.2 Remedy

1. Database rollback operation fails;
2. Let the user login authentication failure retry three times;
3. Input data validation fails to allow users to re-enter data;
4. Cross-border access to guide the user returns the current interface;
5. Non-primary file is lost can prompt the user.

6.3 System Maintenance Design

Relatively independent of each module, the user can modify it as needed; has a good database interface, the user can switch to a different database.