2018 Citi Financial Innovation Application Competition

Test Report

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1. Brief Introduction

1.1 Objective

Find and modify errors in site code writing, site function design defects and deficiencies, site interface design deficiencies, improve the usability of the site, make the interface more friendly, enhance user experience. Detect the risks that may occur in the operation of the website, and improve the stability and compatibility of the website.

1.2 Background

1.2.1 Project Introduction

The Li Jin Platform is a comprehensive service platform dedicated to broadening the financing channels of domestic housing rental enterprises, enriching and improving the real estate value chain, and providing individual investors with a new way to invest in the real estate market. The core operation of the platform is as follows：

1.   Enterprises submit applications: eligible housing rental enterprises submit REITs special program applications, and provide the required underlying assets and enterprise-related information.

2.   Platform Access Audit: SPV background to submit applications for enterprises to audit, online access to machine learning methods, offline use of audit institutions manual audit, the platform will establish a special plan for enterprises through the access audit, and organize investors to invest in it.

3.   Setting up Private Equity Fund: For the enterprises that meet the requirements, the platform cooperates with the partners of the private equity fund to set up the private equity fund invested in the enterprise, and organizes the enterprise to

subscribe for the private equity fund, and then the platform obtains the share of the fund from the enterprise and gains the right of return.

4.   Dynamic Risk Assessment and Control: For the enterprises that meet the requirements, the platform uses a three-dimensional and perfect wind control system to conduct dynamic risk monitoring, accurately and objectively grasp the investment risk. Once the enterprises with higher operational risk are found, the platform will negotiate with the enterprises and start corresponding upgrading measures.

5.   REITs Size Valuation: According to the international general REITS valuation method and the opinion of professional asset rating agencies, the size, length of issue and dividend standard of REITs should be established.

6.   Establish a special plan based on the earned income right of the enterprise, issue special plan shares of corresponding scale, and allow investors to make investment subscription.

7.   Implementation of Special Program: When the share of the issued Special Program is subscribed, the Special Program shall be carried out in accordance with the relevant provisions.

1.2.2 Project Module Partition

1. Investor side

1.   Project Module

The platform uses a three-dimensional perfect wind control system to calculate the financial risk index, default risk index and environmental analysis index of the enterprise. After the investors improve their personal information, they can check the risk measurement index of each enterprise in time on the platform, understand the operation of the enterprise in an all-round way, and forecast the profit and loss of the investment fund. We should adjust our investment decisions in time. At the same time, it can also obtain the product information of REITs fund and the detailed information of related enterprises, so as to facilitate its application for REITs fund.

2.   News Module

The platform updates the latest real estate information in real time. Investors can check the enterprise information, risk status, regional housing price trends and rental user evaluation at any time. They have a good understanding of the real estate trend.

3. Personal Center Module

The personal center module is divided into two parts: my reminding and personal setting. In my reminder, you can view announcements, purchasing and transaction reminders. And "personal settings" can view and modify the basic information of the account, account password and set the secret protection question, when individual investors forget the login password, they can answer the secret protection question to retrieve the password, which can improve the security of the account.

2. Enterprise side

1. Financing Application Module

Enterprises can submit their own financing applications at any time when they have financing needs after obtaining access permits, Complete the financing amount and financing deadline according to your own situation, and submit financial statements for timely processing and auditing by the backstage.

2. Financing Record Module

The quantitative index of risk, timely understanding of their own risks from various aspects, and adjust the business activities. Enterprises can check the details of the completed financing and the progress of the unfinished financing. The platform combines large data analysis technology and a variety of statistical methods to analyze the external environment, internal environment, financial statements and stock price fluctuations of listed companies, and fits out the financial risk index, default risk index and environmental analysis index. Enterprises can view their operational risks from the platform at any time。

3. Account Management Module

The account management module is mainly to facilitate the enterprise to add and modify the account information. When the financing status of enterprises is changed, the platform's backend will issue a reminder of financing information at the first time. At the same time, investors will send a series of possible credit enhancement trigger measures to enterprises according to the real-time risk index and credit enhancement trigger conditions. Enterprises can view them in message reminders. Enterprises may adjust their production and operation strategies and capital turnover arrangements accordingly to prevent default caused by insufficient liquidity of capital on the day of dividend payment, which may lead to a decline in their credit rating.

3. SPV

1. Asset Audit Module

It includes information about financing application and information that has been audited. According to the relevant financial statements submitted by the enterprises, the platform designs a machine learning admission model, and evaluates the enterprises' solvency, operating ability, profitability, growth ability and other indicators by means of online auditing and off-line auditing. The enterprises that meet the standards are screened out which ensure the stability of REITs funds.

2. Asset Management Module

Through monitoring the operation of enterprises and real-time environmental monitoring, the back-end establishes a three-dimensional and perfect wind control system, and introduces priority liquidity support, margin mechanism, priority special plan share termination and exit arrangements, balance payment commitments, etc. The platform will carry out credit enhancement notification and account monitoring according to the corresponding circumstances. The financial model is embedded into the background operation to estimate the value of REITs fund of the corresponding enterprise, and based on this, the investors are investigated on the basis of combining

the asset rating agencies and the company's intention of financing, and the issuance scale of REITs fund is determined.

3. Information Disclosure Module

Read the basic information of investors and financing enterprises at any time, and lock the user information to prevent the administrator from carelessly operating the database of customer groups. The back-end also has the function of information management. It can not only check the previous announcements in time, but also send the edited announcements to the designated customer groups, including the announcements of fund opening, dividend payment and so on.

1.2.3 Test Content

According to the principle and method of website testing, and combined with the actual situation of the development of the Li Jin platform project, the testing content of the project is: database testing, functional testing.

1.2.4 Test Method

The test is carried out according to the progress of project development, and each module is completed for one test.

1.2.5 Test Tools

The corresponding parts are tested through Tomcat, Eclipse, My SQL 5.7, IE browser and so on.

1.3 Test Content Introduction

The testing content and introduction of Li Jin platform project are as follows：

Data and Database Integrity Testing: Check whether the database conforms to the database design rules by checking the table structure and field contact; Call database access and process to ensure normal operation, data will not be destroyed.

Functional testing: Using data to perform functions, verify results and expectations, and properly apply business rules.

User Interface Testing: First of all, it tests whether the business functions and requirements are correctly reflected by browsing test objects; secondly, it verifies the browsing between windows and fields, and the use of various access modes; thirdly, it tests whether the user interface style meets customer requirements, whether the page is correct and beautiful, and whether the operation is correct or not. The goal is to ensure that the user interface provides access or browsing capabilities to users through the functionality of the test object. Ensure user interface is in line with company or industry standards.

2. Test Reference Documents and Test Submission Documents

2.1 Test Reference Document

Document (version / date)	Remarks
Mid-term report	Brief introduction to information about project objectives, project contents and technology realization
Final report	The objectives, contents and technical implementation of the whole project are introduced in detail
Requirement analysis report	Requirement analysis of the whole project function

2.2 Test submit document

Test paper to be submitted: "Li Jin platform test report".

3. Test Resources

3.1 Human Resources

The various assumptions for staffing of the project are listed below:

role	Number of people	Duty
Customer	3	By using this project, the shortage of the project is raised
Developer	5	Analyze and collate customer opinions, improve software architecture, program and test, design user interfaces and beautify interfaces.

3.2 Testing Environment

testing environment
jdk1.8.0_91
apache-tomcat-8.0.9
Spring 4
Hibernate4
SpringMVC4
Windows 10 64 bits
MySQL 5.7
Navicat
JMeter 3.0
Hardware environment (network, equipment, etc.)
100Mbps Ethernet
1 Lenovo laptop computers

4. Test Strategy

4.1 Database Testing

4.1.1 Database Testing Purposes

Ensure that database access methods and processes are running normally, and data will not be damaged.

4.1.2 Database Test Content

1. Basic test: check whether the naming of the database table and the fields in the table conform to the naming criteria, whether the fields in the table are complete, whether the field description in the database table correctly includes the type, length and null of the fields, and whether the relations, indexes, primary keys and constraints in the database table are correct.

2. Security testing: The security management model of MySQL (including MySQL login, database user, role, architecture and authority) is tested and perfected, such as authentication and valid login, and whether there are strict check constraints.

4.1.3 Database Testing Method

1. Basic test: The Basic test of the database is carried out mainly through the review of the database design phase and the unit test of the application program.

2. Security Testing: Perfect the MySQL security management model (including MySQL login, database users, roles, architecture and permissions), such as authenticating and valid login, whether there are strict checking constraints, etc.

4.2 Functional Testing

4.2.1 Functional Testing Purposes

In order to make the functions of the website can be realized normally, users can operate more conveniently, improve the user experience of the website, and carry out functional testing.

4.2.2 Link Test

Linking is a major feature of Web applications, and it is the primary means of switching between pages and directing users to pages with unknown addresses. Link testing can be divided into three aspects:

1. Test whether all links are linked to the link page as indicated.

2. Does the linked page of the test exist?

3. Ensure that there are no isolated pages on a Web application. An isolated page is one that has no links to it and can only be accessed if you know the correct URL address.

4.2.3 Navigation Test

Navigation describes how a user operates within a page, between different user interface controls, such as buttons, dialogs, lists, windows, etc., or between different connection pages. By considering the following questions, you can decide whether a Web application is easy to navigate: Is navigation intuitive? Can the main parts of the Web system be accessed through the home page? Does Web system require sitemap, search engine or other navigation help?

Putting too much information on a page often has the opposite effect as expected. Users of Web applications tend to be goal-driven, scanning a Web application quickly to see if there is information they need, and if not, they leave quickly. Few users are

willing to take the time to familiarize themselves with the structure of Web applications, so Web application navigation help should be as accurate as possible. Another important aspect of navigation is whether the page structure, navigation, menus, and connection styles of Web applications are consistent. Ensure that users know intuitively whether there is any content or content in the Web application system.

Once the hierarchy of a Web application is determined, it is time to start testing user navigation capabilities, and the effect will be even more obvious if the end user is involved in the testing.

4.2.4 Graphic Test

In the Web application system, appropriate pictures and animations can not only play the role of advertising, but also play the role of beautifying the page. A Web application's graphics can include pictures, animations, borders, colors, fonts, backgrounds, buttons, etc. The content of graphic test is:

1. Make sure the graphics have a definite purpose. Don't pile up the pictures or animations in a mess to avoid wasting transmission time. The image size of a Web application should be as small as possible, and it should be clear that something is usually linked to a specific page.

2. Verify that the style of all page fonts is consistent.

3. The background color should match the font color and foreground color.

4. Picture size and quality is also an important factor, generally using JPG or GIF compression, it is best to reduce the size of the picture to less than 30 K.

5. Finally, it is necessary to verify whether the text is correct. If the text points to the picture on the right, it should be ensured that the image appears on the right. Don't make windows and paragraphs weird or orphaned by using pictures.

Generally speaking, it is a good choice to use a little or try not to use the background. If you want to use the background, you should use the monochrome and the

navigation bar together on the left side of the page. In addition, patterns and pictures may divert users' attention.

4.2.5 Interface and Usability Testing

1. the style, style and color are in harmony.

2. the layout of the interface is neat and coordinated (to ensure that all displayed, try not to use scroll bars.

3. interface operation, title description is appropriate (description is ambiguous, pay attention to whether there are wrong words).

4. the operation conform to people's usual habits.

5. the prompt interface conforms to the specifications. (cancel, OK in English should not be displayed, Chinese should be displayed, etc.)

6. the controls in the interface are aligned.

7. the date control can be edited.

8. the length of the date control is reasonable or not, so that all the time can be displayed when modifying.

9. the column width of the query result table and the label description is reasonable.

10. The query results list is too wide without horizontal scroll hints.