Software Requirements Specification

For

< Economy Fueler >

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Grading Rubric - Requirements Specification

This rubric outlines the grading criteria for this document. Note that the criteria represent a plan for grading. Change is possible, especially given the dynamic nature of this course. Any change will be applied consistently for the entire class.

Achievement	**Minimal**	**Exemplary**	**Pts**	**Score**
Content (80)	Section(s) missing, not useful, inconsistent, or wrong.	Provides all relevant information correctly and with appropriate detail		
Introduction Scope Definitions			10	
User Profile			20	
Functional Requirements			30	
Performance & Design Requirements			10	
Data Requirements			10	
Writing (20)				
Grammar and Spelling	Many serious mistakes in grammar or spelling	Grammar, punctuation, and spelling all correct	10	
Expression Tone	Hard to follow or poor word choices Tone not appropriate for technical writing	Clear and concise. A pleasure to read Tone is consistently professional	5	
Organization Layout	Information difficult to locate Layout is inconsistent, visually distracting, or hinders use	All information is easy to find and important points stand out Layout is attractive, consistent, and helps guide the reader	5	
Late Submission			-10 -25	
Total			100	

1 Introduction

1.1 Scope

This project aims to provide a preliminary evaluation function of loan capacity for small enterprises (mainly in manufacturing industry) who are inclined to have a financial support through the platform. The platform will provide different functions from a brief analysis to the preliminary evaluation of the loan possibility, the platform also provides more advanced analysis based on the financial status the company. The platform is aimed at helping small enterprises aware of their financial status better and reduce the possible time of searching for loans as much as possible. At the same time, it also has the potential to collect some operation data of enterprises, simplify the process of customer discovery of banks, remind the potential financial risk and explore the potential of the credit market of small enterprises for banks.

1.2 Definitions, Acronyms, and Abbreviations

- **SE:** Small enterprise
- **Django:** An open-source Web application framework written in Python.
- **Fixed asset**: A fixed asset is a long-term tangible piece of property or equipment that a firm owns and uses in its operations to generate income.
- **Guarantee company:** When an individual or enterprise borrows money from a bank, in order to reduce the risk, the bank does not directly lend money to an individual but to require the borrower to find a third party (guarantee company or qualified individual) to guarantee it. The guarantee company will, according to the requirements of the bank, ask the borrower to issue relevant qualification certificates for audit, and then submit the audited data to the bank. After the bank reviews, the loan will be released, and the guarantee company will charge the corresponding service fees.
- **CNRDS:** Chinese Research Data Services, a high-quality, open and platform integrated data platform for China's economic, financial and business research.
- **CNKI:** China National Knowledge Infrastructure.
- **TDE:** Transparent Data Encryption - a method to encrypt the data in a database including in the MySQL.

Tag Abbreviations:

- UP: User Profile
- UI: User Interface
- DV: Data Visualization
- AR: Analysis Report
- DB: Database

- PR: Performance Requirement

1.3 User Profile

<UP>-<Small Enterprises which needs the guidance for their own>

X company is a start-up manufacturing industry, due to less start-up capital, the company does not have high-value equipment. The scale of the enterprise is small, the working capital may not support the expansion of the company, and the existing financial personnel of the company may not give accurate financial evaluation report that conforms to the exact situation of the company and has enough macro and forward-looking. Because of insufficient fixed assets and higher risk, the bank requires the guarantee company to undertake a certain amount of guarantee when the enterprise loans. Before docking with several guarantee companies, the enterprise finance department needs to evaluate the enterprise's own financial situation, but it can't make a judgment according to the lack of personnel and the confusion of financial data. By providing the enterprise financial data to this platform, X company can a preliminary evaluation based on its financial situation, gives it appropriate scheme recommendation, shows the qualified enterprise operation, and points out the shortcomings of enterprise finance.

2 External Interfaces

This section identifies ways in which <Economy Fueler> interacts with people and other systems.

2.1 User Interface

The platform provides services through the user interface. This interface shows the services that users can choose for the users of small enterprises. Users can input part of the company's accurate data (the data will be kept confidentially), and the system will screen out the financing analysis of the company according to the data it provided. The platform will obtain data from various authoritative financial or bond trading websites to compare and screen financing schemes. The user interface will be presented with certain consistency and readability.

2.2 Data Interface

Our product has the collection of authoritative data from official databases such as CNRDS and CNKI and store them in our back-end’s database as foundation. When the users want to use our product, some data of the users’ companies is required, which will be compared with the data in the database to make the suitable recommendation and make the comparison visible. Therefore, the user can clearly get the advantages and disadvantages of its company.

3 Specific Requirements

3.1 Functional Requirements

The statements below define the functional requirements for the system.

<<UI-1> - <Login & Authentication > - <High Priority>

The system will provide SMEs with login or authentication options, so as to carry out a series of functional requirements such as the comparison and selection of follow-up financing schemes.

<UI-2> - <Get the Data of Users> - <High Priority>

Users like the enterprises need to upload the data of a key part of their financial report data including all of data in the balance sheet, cash flow schedule and profit flow chart. These charts or table shall be uploaded in a fixed format —— *.xls so that the back end can identify, process and store the data to the database. Surely, the *.xls shall be formatted by the clerks in the company into the same header of the sheet before they upload.

<UI-3> - <Customize the final consequences> - <Low Priority>

The product can represent the recommendation and visual charts to the users. However, the final consequences are represented in the default type. If the users want the result to be different and suitable for them, they can customize the way of the presentation. The customization includes different sorts of diagrams to show the data about their company finance and deep analysis. If enterprise use the deep analysis, platform will put more calculation resources to calculate the relevant data to analyze and use the professionals to join. However, this part may take extra payment.

<DV> - <Display the Visual Charts> - <Medium Priority>

Users input the required data according to the prompt, and the system will analyze the input data to present a visual chart in a more intuitive way. The visual chart will show the comparison between the data input by the user and the data related to the industry, so as to select a more suitable financing scheme.

<AR-1> - <Simplified Financial Analysis> - <High Priority>

Users input the company's simple financial situation and index data, compare with the industry data in the database, get a brief analysis of the company's financial situation, and then form a more intuitive visual chart (see specifications in <DV>). This function will be open to users free of charge with less data demanded, and it is the main function of the foreshadowing.

<AR-2> - <Loan Feasibility Analysis> - <High Priority>

After getting data from <AR-1>, we may use algorithm and data visible analysis to make a draft and then make an analysis (may include natural language process and machine learning). The basis of our functions is to provide the possibility of loan. With the knowledge of finance, we may show the advantages and disadvantages of this company compared to the average data of companies in our database. We will also show some recommendations of improving the loan feasibility.

<AR-3-1> - <Detailed Analysis> - <Medium Priority>

The data that the users (which requires more than <AR-1>) submitted will be delivered to the database to make a comparison, and the result will be transferred back to the frontend which will be represented in the way of which is described in <DV>. With a more

complexed algorithm, a more specific and detailed than <AR-1> analysis report will be conveyed to the users.

<AR-3-2> - <Machine learning and Intelligent customer service> - <Low Priority>

There is an intelligent service system in the web, the Backend has the machine learning model to learn the answer according to the data from user. The intelligence can provide the function of say hello, business answer and the problem in the app. This function can also provide users with more professional and comprehensive analysis of its overall financial status according to the national database and the industry developing perspective.

<DB-1> - <Store the Data of Users> - <High Priority>

The users' data should be stored in the MySQL database and encrypted by the salt hash algorithm (An encryption method to keep the safety of passwords) to avoid the easy passwords that are set by the user. And the database needs enough space (at lease 4GB) to store the users.

<DB-2> - <Make Analysis with Database> - <High Priority>

As long as the users enter the information which is required, the frontend will deliver it to the backend, comparing it with the stored data in the database, and return the analysis back to the frontend and represent it to the users.

<DB-3> - <Keep the Security of Database> - <Medium Priority>

The application needs to administrate the user account. When the visitors load their account and access the database, the management system should identify it. If it is not the superuser, the visitor can only use the limited authority. When users register the account , they shall get the power of adding to add their load information to the database. The database should be encrypted in a TDE. It will have the function of data recovery. The data in the database shall be updated to the cloud or stored in different devices to backup so that the customer information safety can be guaranteed.

3.2 Performance Requirements

The statements below define the performance requirements for the system.

<PR-1> - <Server Capacity>

The server can hold 100 users online at the same time.

<PR-2> - <Response Time>

Website response time at peak time <2s

<PR-3> - <Calculate Time>

The time of calculating the result of recommendation in high at peak time <= 4s

3.3 Design Constraints

3.3.1 Constraint 1: The users may not be willing to give their data.

Reason: The financial data of the company is quite important and privacy, so it is natural for them to doubt the security of our product. Besides, to make the analysis required much data, which may contribute to their antipathy.

3.3.2 Constraint 2: The project will be a web application.

Reason: For our project is focused on companies, in the consideration of usability and the users' preference, we choose to develop the web application instead of the mobile application.

3.3.3 Constraint 3: The data may be invalid.

Reason: The users may enter wrong data which will lead to a wrong result, even invalid data that have no meaning.

3.3.4 Constraint 4: Some companies may be unable to provide some of the data.

Reason: For some small or new companies, their financial situation can't support them with enough data that we required.

3.4 Data Requirements

Name	Type	Size	Comment
Enterprise scale	Large-sized, medium-sized, small-sized	Length:11(small -sized)	It is to search for primary users. We will judge it by its information.
Enterprise type	0 Agriculture 1 Manufacturing 2 Real Estate ….	0-999(This is decided by the final storage of our database)	This is a tag like 0,1 Since this kind of data is very large and can be concluded.
Policy relevance	Accurately relevant, Partially relevant, Irrelevant	Length:19	We will read and collect all the policies of financing. And judge them.

The ability of paying off debts	Debt to asset ratio (percents)： 65% Grades: 10		The result is calculated by the financial formula . Debt to asset ratio is an example.
The ability of obeying principles	Time of repayment of credit assets： 3 months good Grades: 6		We may assess how many contracts they have and if they have failed to obeserve the principles
Profitable index	ROI: 35 Grades: 20		We may assess the ability of making profits by profit margin of main business, and ROI.
Industry indicators: agreement, contracts (all the judgement of company.)	0 financial Partially relevant 1A...	Decided by the database outside	We choose the public companies since their results are visible.