Future Credit——Requirements Specification Document

Document number	Author	Document name	Date
RS	Li Xiaodong, Hui Hantao	Requirements Specification Document	2017-8-30

I. Overview

1. Background

With the rapid development of China's economy in recent years, the concept of college students' consumption has undergone tremendous changes. The awareness of advance consumption has been enhanced, and the demand for credit consumption keeps ballooning sharply.

However, as the chaotic phenomena occur in campus loaning, Chinese government has issued a ban. According to the latest Notice on Further Strengthening the Management of Campus Credit, the Ministry of Education, the Ministry of Education and the Ministry of Human Resources and Social Security on June 28, 2017 (No. 20 [2017] No. 26), any network lending institutions do not allow loans to college students. At this stage, all network loan institutions are suspended from carrying out college student network loan business, and gradually end their business.

At the same time, there’s a blank in the demand of college student credit market, while regular bank petty loan is encouraged.

However, in addition to P2P network loan, the current loan category college students can reach are mainly student acid loans, bank credit cards and installment loans. Among them, the student loans for policy factors to help students, cannot meet the needs of college students loan consumption;

the same time, due to bank credit card business halfway and the current bank's cautious attitude, temporarily unable to college students credit market have too much impact.

Banks, as traditional financial services institutions, should gain a place in the credit market of college students, shoulder the responsibility of standardizing the credit market of college students and strive to build a good credit market for college students. Traditional commercial banks have significant advantages, and higher social recognition in terms of standard management. They are more likely to be accepted by college students, parents, schools and supervisors. Banks can cooperate directly with universities. Commercial banks have a more standardized and effective risk assessment and control means.

However, college students still have the problem of high default rate, mainly because the credit record of college students has not yet formed, the credit consciousness of college students is weak, even if the default will not affect the individual credit, but also lack of reasonable credit rating system for college students.

Therefore, in order to better manage the credit risk and speed up the lending rate, commercial banks need to develop the credit rating system of college students.

2. Business Requirements

BR1: We provide the specific credit assessment scores for commercial banks. Then commercial banks can achieve investment profits with our platform.

BR2: The company can reach an income of 4,500,000 RMB in 5 years in virtue of the software.

3. Functional Requirements

1. Open the system：

When the user opens the system, the system displays the initial interface. Then the initial interface provides information authentication, query credit assessment report, investment and borrowing entry and landing registration channel.

1.1 The user can enter the main interface that contains the information authentication, credit evaluation report query, the investment and the loaning in the unregistered situation. But when the related function is used, the system prompts the user to login first.

1.2 Register an account: When the user logs in for the first time, the system prompts the user to register, fill in password and verify the phone number. Then use the phone number as the user name.

1.3 User logs in. Then the system prompts the user to enter the phone number and password.

2. Information authentication：

2.1 List display：Users verify the information, then the system displays information to verify the various aspects of the list, including: basic information verification, economic level entry, ICBC account binding, school educational network certification, credit network certification and sesame credit certification.

2.2 Basic information authentication：The system prompts the user to enter the ID card photo and face, parents' names and telephone numbers. then do the authentication.

2.3 Economic level entry：The system prompts the user to enter the average scholarship, the average monthly part-time job income, the average monthly living expenses and places of origin, then do the authentication.

2.4 ICBC Account Binding：The system prompts to enter the bank card number, cardholder name and password, then do the authentication.

2.5 Educational network certification：System prompts the user to enter the educational network account and password, then do the authentication.

2.6 Academic information network authentication：The system prompts the user to enter the academic information network account and password, then do the authentication.

2.7 Sesame credit certification：The system prompts the user to enter the sesame credit account number and password, then do the authentication.

3. Credit assessment report：

3.1 List display：Users view the credit assessment report, and then the system displays a list of various aspects of credit assessment, including data records and data analysis.

3.2 Data record：System display basic information, school information, scholarship award records, volunteer records, bank card consumption records.

3.3 Data analysis：The system displays the user's consumption data analysis and visualizes the data.

4. Investment and loaning:

The system provides investment, loan, repayment channel. As the current software is mainly located in the credit information analysis and provision, we temporarily do not provide this feature.

4. User Characteristics

The main target of the project is college students and banks. Undergraduates' social credit is not sufficient and repayment ability is not strong, but they have strong borrowing needs. So banks need to expand college students' reception business. Taking the bank does not have a data source that can assess the credit of college students, this software acts as a third party for credit.

5. Restrictions

a) System running platform: Allowing PC, mobile to access site.

b) The system can be accessed directly through the domain name.

6. Assumptions and Dependencies

a) Assuming that college students are students of Nanjing University, and the bank is ICBC.

b) Assume that all certification information entered by college students is true.

c) Assume that third-party data are available.

II. Functional Requirements

1. System use case

2. Use Case Description

1. User registration

1.1 Description

Offer user registration function with high priority.

1.2 The corresponding sequence

User：Request registration

System：Provide registration interface.

User：User input phone number, verification code, password

System：The system detects whether the data entered by the user is valid, if legal prompts the registration is successful, if not legitimate prompts the error message.

1.3 Related functional requirements

Register.Input	The system allows users to register, enter the phone number, verification code, set the password, and submit information.
Register.VertificationCode	The system returns the corresponding verification code according to the phone number input by the user.
Register.Error	When the user enters the illegal phone number, verification code or password, the system should prompt the corresponding error message.
Register.Success	When the user registers successfully, the system should prompt the registration is successful and go to the login screen.

Register.Cancel	The user deregisters, and then the system exits the registration channel.

2. User Login

2.1 Description

Provide user registration function with high priority.

2.2 The corresponding sequence

User：User request registration.

System：System displays registration interface.

User：User input phone number, password, and request login.

System：The system detects whether the information inputted by the user is valid, if legal prompts the registration is successful, if not legitimate prompts the error message.

2.3 Related functional requirements

Login.Input	The system allows the user to log in, enter the phone number and password, and submit the information.
Login.Error	When the user input information is not legal, the system returns an error message, prompting the user is not legitimate information.
Login.Success	When the user input information which is valid and the authentication is successful, the system

	prompts the login to be successful and displays the login status.
Login.Cancel	The user logs out and the system exits the login channel.

3. Identity Authentication

3.1 Description

The system provides the authentication function. The authentication information includes ID card, face photo, parent name and mobile phone number with high priority.

3.2 The corresponding sequence

User：User upload ID card front view and face photo.

System：The system displays the uploaded photos.

User：The user enters the name of the father or mother and the phone.

System：The system front end makes preliminary judgment based on the input data.

User：The user submits all authentication information.

System：The system returns the verification result.

3.3 Related functional requirements

IdentityVertify.Input	The system allows the user to enter the name and password of the parent or mother and submit it.
IdentityVertify.Image.Input	The system allows users to upload images and display photo previews.

IndentityVertify.Phone.Invalid	User input parent phone number is not legal, prompting illegal information.
IndentityVertify.Error	Verification of user data fails, the system prompts the authentication to fail, and prompts the corresponding cause of the failure.
IndentityVertify.Success	User data verification is successful, the system prompts the user authentication success, and the identity information update.
IndentityVertify.Wait	The system allows the user to enter the name and password of the parent or mother and submit it.

4. Income entry

4.1 Description

The system provides the function of entering the user's income, including the average annual scholarship, the average monthly part-time income, the average monthly living expenses, students with high priority.

4.2 Related functional requirements

User： The user enters the annual scholarship, the average monthly part-time income, the average monthly living expenses, choose the source.

System：The system displays the corresponding information on

the interface.

User：The user confirms the information and submits it.

System：Verify the information and return the verification result.

4.3 Related function requirements

IncomeLogging.Input	The system allows users to enter annual scholarships, average monthly part-time income, average monthly living expenses.
IncomeLogging.ChooseLocation	The system allows the user to select the source.
IncomeLogging.Success	The system successfully enters the user's income, prompting the user to succeed and update the information.
IncomeLogging.Error	The system failed to enter the user's revenue, prompting the user to fail and provide the cause of the failure.

5. ICBC Account Binding

5.1 Description

The system provides the function of binding users to industrial and commercial bank cards with high priority.

5.2 The corresponding sequence

System：The system provides industrial and commercial bank card interface

User： The user enters the ICBC bank card number, the cardholder's name and password, and submits the information

System：The system verifies the correctness of the information, returns the authentication information, and updates the bank if successful card information.

5.3 Related functional requirements

CardBinding.Input	The system allows the user to enter the bank card number, cardholder name, password and submit the information.
CardBinding.Success	The system successfully binds the bank card, the system prompts the success information, and carries on the function CardBinding.Update
CardBinding.Update	Bank card binding is successful, the system updates the user bank card information.
CardBinding.Error	Bank card binding failed, the system prompts for failure information and failure reasons.

6. Platform Authentication

6.1 Description

The system provides the platform authentication function, and obtains the user's credit data from the third party platform, the third

party platform includes the school educational website, China higher education student information website, the sesame credit with high priority.

6.2 The corresponding sequence

User：The user requests a third party platform including school educational network, China higher education student information website, sesame credit to verify.

System： The system displays the corresponding platform authentication interface.

User：User input platform account, password, and submit.

System：System authentication, the success returns the success information, and obtains the corresponding credit information from the platform, updates to the user information. If failure return a failure message.

6.3 Related functional requirements

BoardVertify.Input	The system allows the user to input the platform account and password.
BoardVertify.Success	Third-party platform password account is available, the system prompts success, and obtain third-party data, update the user credit information, go to BoardVertify.Update
BoardVertify.Update	The system obtains the third party platform data and updates the user credit

	information.
BoardVertify.Error	The system failed to obtain third-party data, prompting the user for failure information and failure reasons.

7. Data Record

7.1 Description

The system provides the function of data recording. The recorded data includes basic user information, school information, scholarship winning record, volunteer record, bankcard consumption record. The data is provided for all third-party platforms except for basic information with high priority.

7.2 The corresponding sequence

User：The user requests to view the data record.

System ： The system displays the corresponding records, including the user basic information, school information, scholarship award records, volunteer records, bank card consumption records.

7.3 Related functional requirements

Records.Input	The system allows users to view data records.
Records.Show	The system displays the user's data records.

8. Loaning

8.1 Description

The system provides the function of user borrowing, and set the

corresponding amount according to the user credit status with low priority.

8.2 The corresponding sequence

User：The user requests a loan

System：The system displays the corresponding borrow interface and sets the amount based on credit

User： The user inputs the number of borrowings and the borrowing time.

System：The system audits user borrowing requests. If successful, then the system transfers the corresponding money into the user account through transaction. If it fails, it prompts for failure information and reason.

8.3 Related functional requirements

Loan.Input	The system provides a borrowing channel that allows the user to enter the amount of the loan and the borrowing time.
Loan.Input.Invalid	If the amount and time entered by the user exceeds the user's quota, the system tells the user the input data is beyond the limit.
Loan.Success	User borrowing request approval, the system prompts the success of the loan.
Loan.Wait	During the user's loan request review process, the system

	prompts the audit wait state.
Loan.Error	The loan request is not approved, the system prompts the user for failure information and the reason.
Loan.Success.Update	User borrowing succeeds, the system updates the user loan information.

9. Investment

9.1 Description

The system provides the investment function, and gives the user the investment channel with low priority.

9.2 The corresponding sequence

User：The user requests the investment.

System： The system displays the corresponding investment interface.

User：User input investment amount and investment time.

System：The system verifies the investor identity information and provides a payment channel.

User：The user chooses the payment method to pay the money.

System：The system prompts the result information, success; failure, information and reason.

9.3 Related functional requirements

Invest.Input	The system should provide a user investment channel that allows the user to input the amount and time of the

	investment.
Invest.Input.Invalid	User input investment information is illegal, the system prompts illegal information, including too low or too large investment amount, too short or too long investment time.
Invest.Pay	The user chooses the payment method and pays the investment amount.
Invest.Success	The investment is successful, the system prompts for success, and updates the data.
Invest.Update	System update data, including account balance data, investment records.
Invest.Error	The system verifies that the investment failed, prompting the user for failure information and the cause of the failure.

10. Repayment

10.1 Description

The system provides users with repayment function to remind users to repay the loan items, and provide repayment channels with low priority.

10.2 The corresponding sequence

System： The system prompts the user to repay the demand.

User： The user initiates a repayment request.

System： System shows repayment interface.

User： The user enters the repayment amount and chooses the repayment method.

System：The system prompts the repayment success information and updates the information.

10.3 Related functional requirements

Repay.Input	The system should provide a repayment interface that allows the user to enter the repayment amount and choose a repayment method.
Repay.Success	The system prompts the repayment successfully.
Repay.Error	Account balance is insufficient, not enough to pay the amount of repayment, the system prompts repayment failed.
Repay.Update	Repayment success, and then system to update the user account information, repayment information, loan information, credit information.

11. Data Analysis

11.1 Description

The system provides the user with the analysis of the personal information with medium priority.

11.2 The corresponding sequence

User：The user requests to view the personal information statistics.

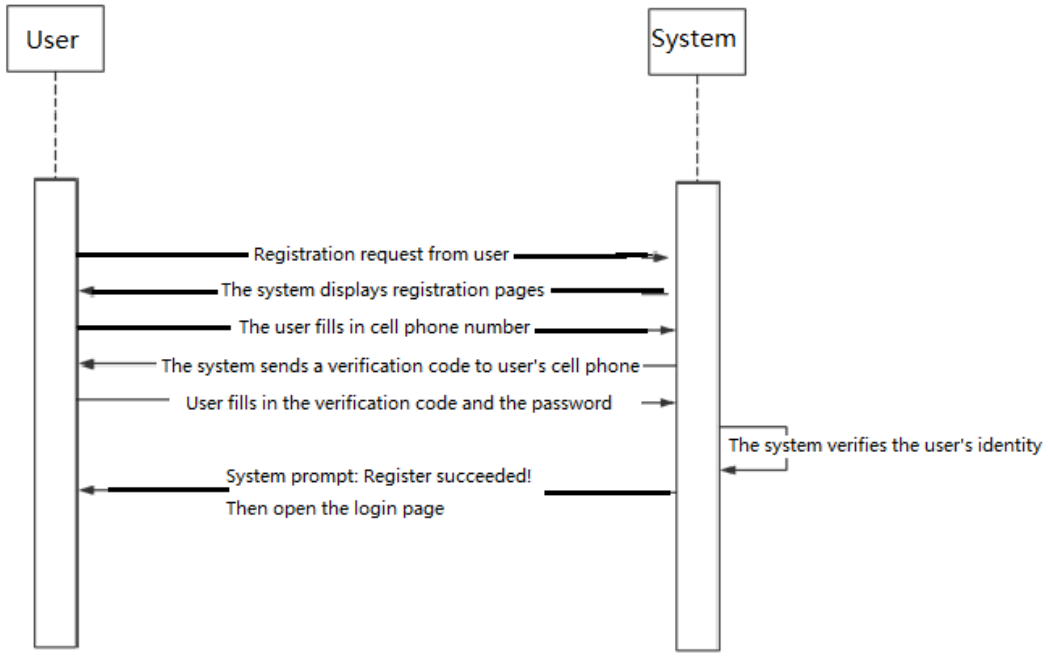
System：The system displays the user information statistics.

11.3 Related functional requirements

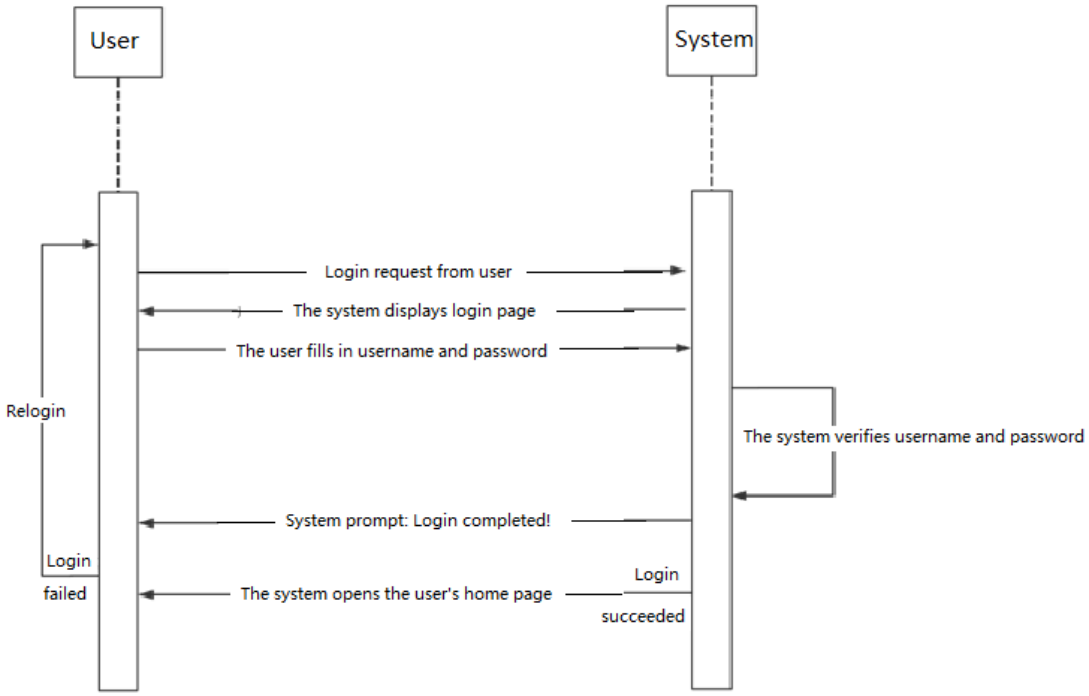
Analyze.Input	The system allows users to view data analysis.
Analyze.Show	The system displays visualization of user information.

III. Sequence Diagram

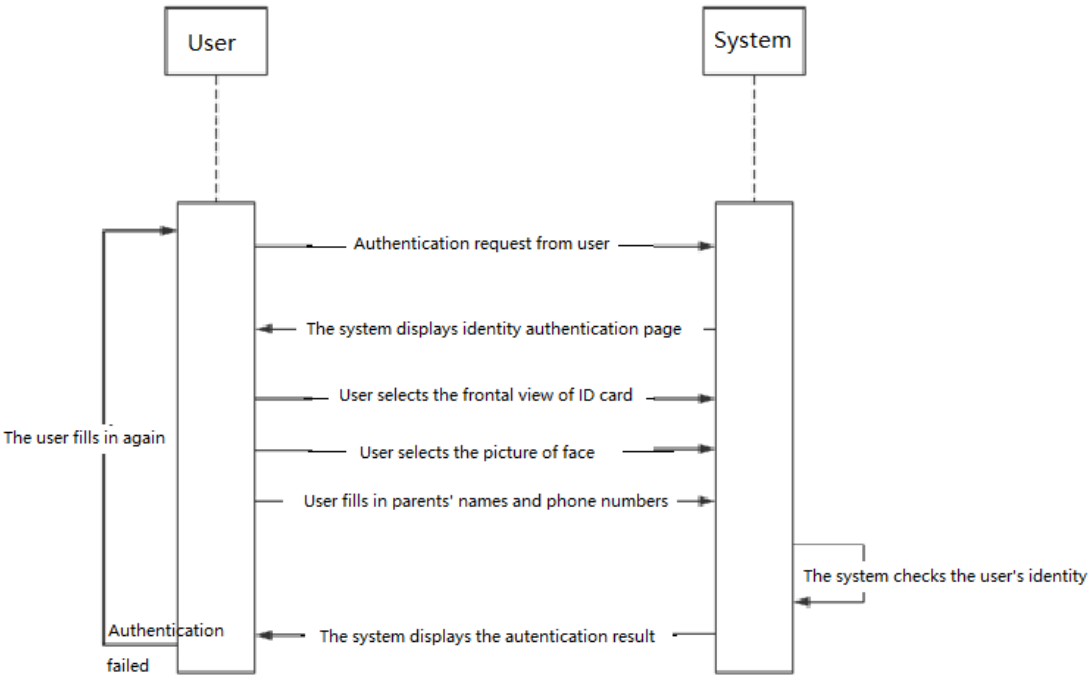
1. User Register



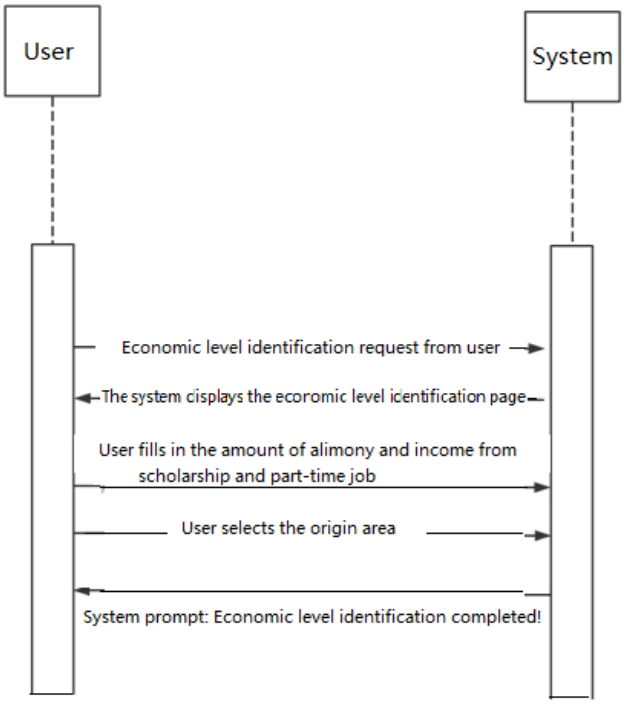
2. User Login



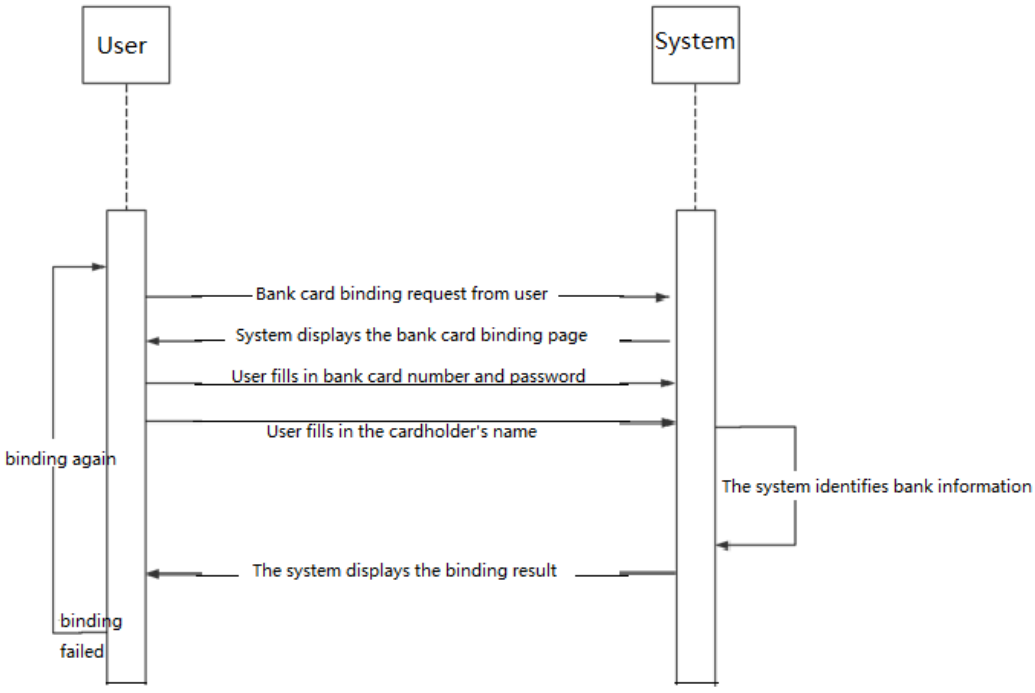
3. Identity Authentication



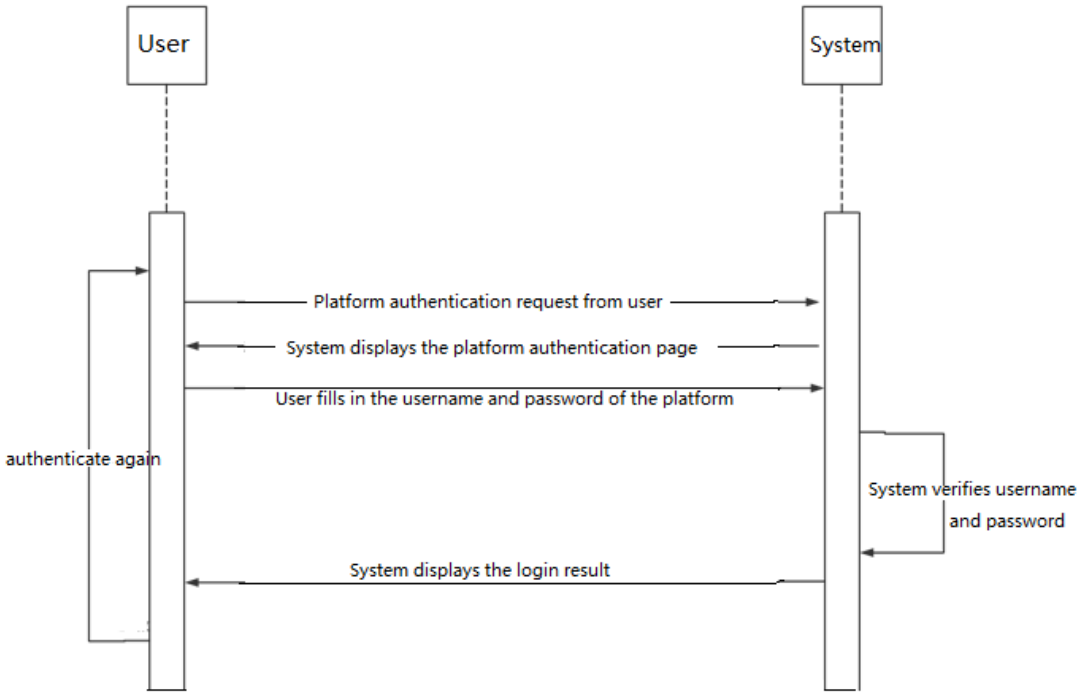
4. Input the Income



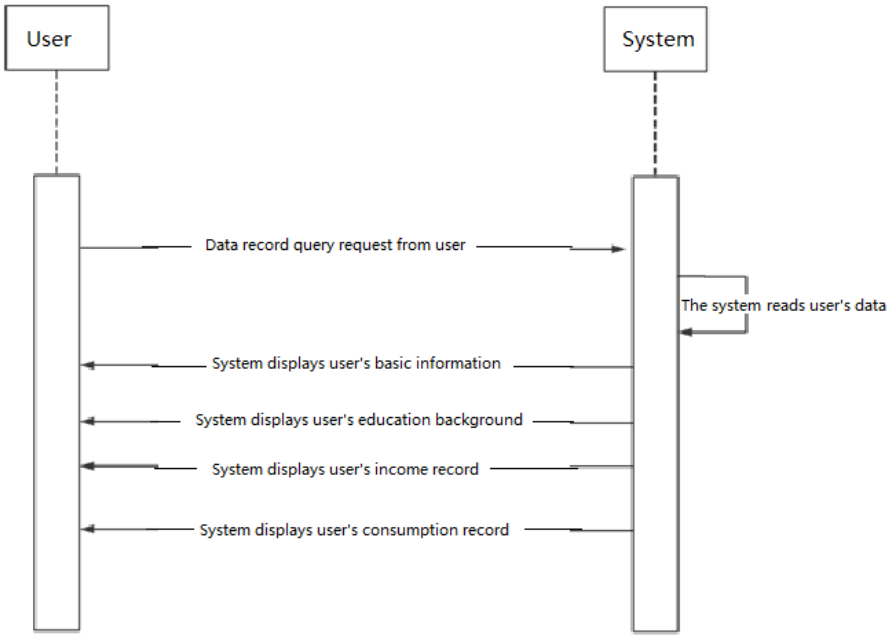
5. Bank account binding



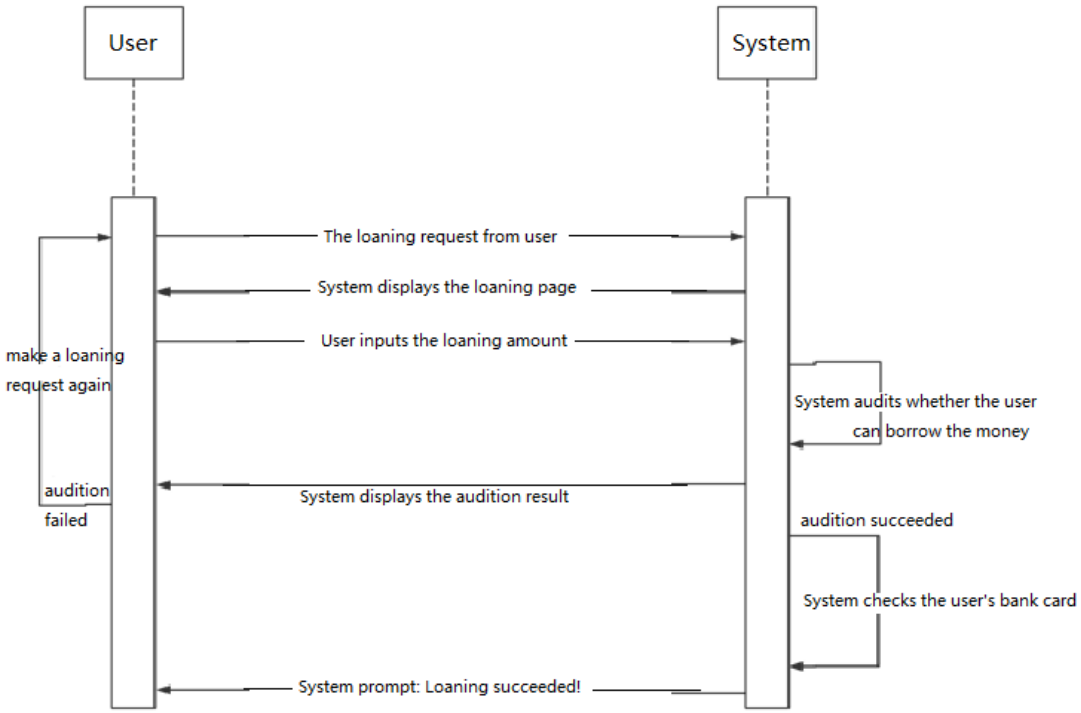
6. Platform Authentication



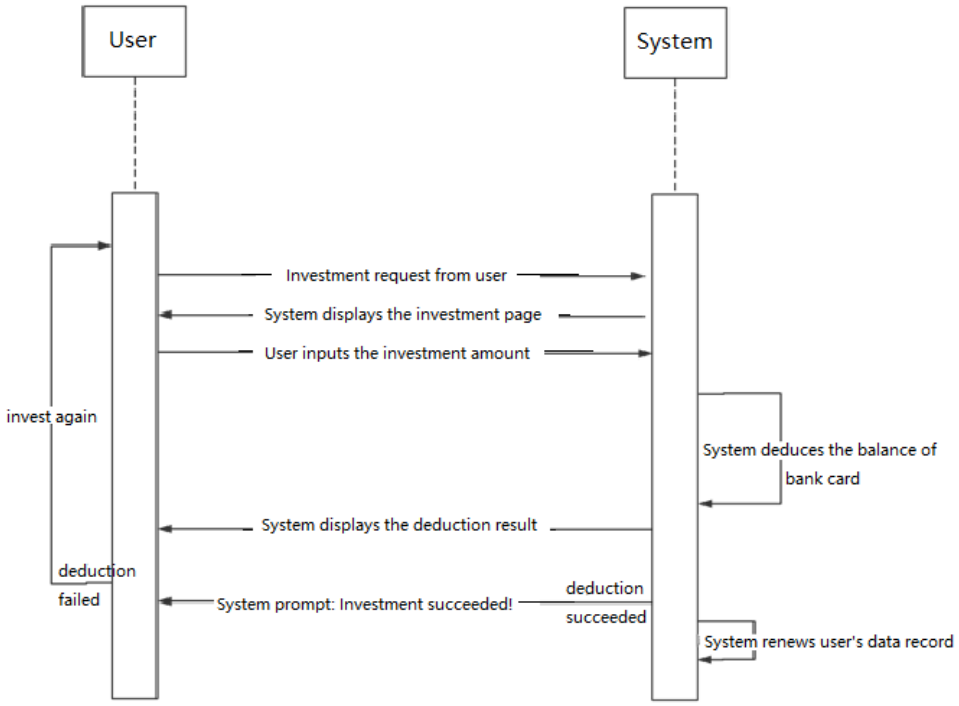
7. Data Recording



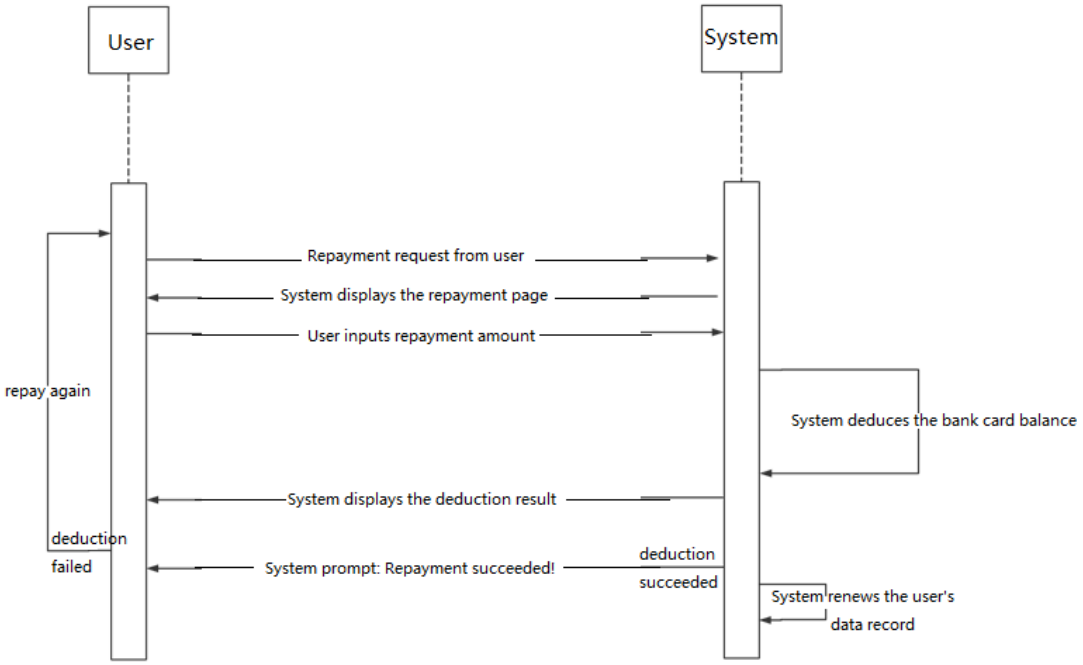
8. Loaning



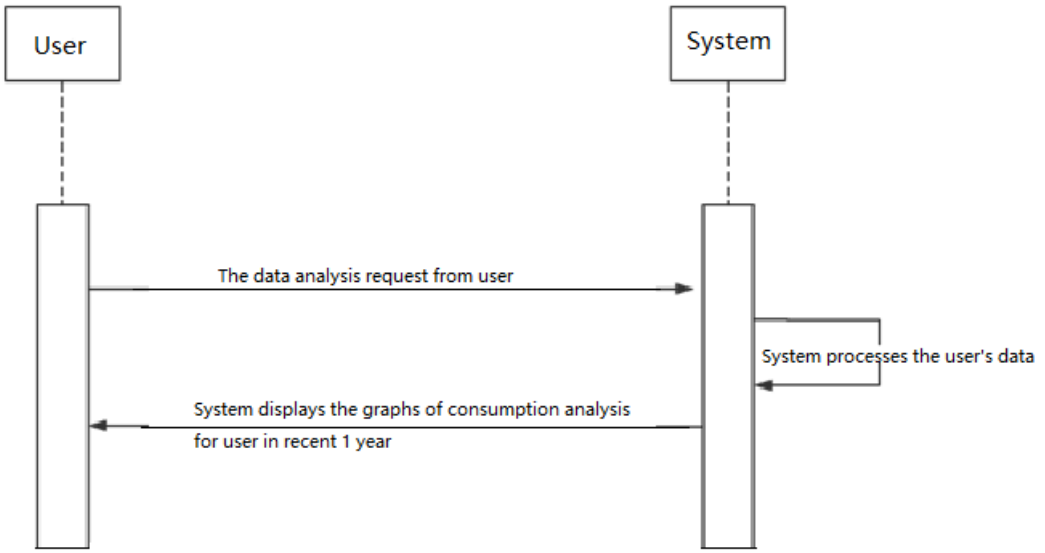
9. Investment



10. Repayment



11. Data Analysis



IV. Non-functional requirements

1. Safety

Safety1: No system function can be used without the user's login.

Safety2: The authentication of identity and mobile phone insures the authenticity of user's identity.

Safety3: All the private information will be encrypted before transmission. The password will be encrypted before storage.

2. Maintainability

Indexes:

WMC (Weighted methods per class); DIT (Depth of Inheritance Tree); NOC (Number of children); CBO (Coupling Between Object Classes); RFC (Response for a class); LCOM (Lack of cohesion in Methods). There's a proposed value from NASA: WMC>100, CBO>5, RFC>100, RFC>5*NOM (Number of methods in per class), NOM>40. We should pay more attention if 2 or more indexes reach the threshold value.

Maintainability1: The upgrade cost for adding a new user requirement is 1 person/month.

Maintainability2: The upgrade cost for modifying a user requirement is 0.5 person/month.

Maintainability3: The upgrade cost for adding a new interaction method is 0.5 person/month.

3. Usability

Usability1: Users can do the register and login job without guidance.

Usability2: Users can do the information authentication and check the collected information without guidance.

Usability3: Users can do the investment, loaning and repayment without guidance.

4. Reliability

Reliability1: The website won't be moldered immediately under the non-internet condition.

Reliability2: If internet or electricity breaks off, the transaction in progress can be interrupted and the system returns to the original status.

V. Data Requirements

1. Data Definition

Entity name	User		
Entity description	Registered college student user		
Attribute name	**Type**	**Precision**	**Explanation (The business rules and business meanings for attributes)**
Phone number	string	11	User's registered cell phone number
ID-card number	string	18	User's ID card number
Student number	string	30	User's student number
Name	string	30	User's real name
College	string	30	The college name of user
Major	string	30	User's major in college
Grade	int	1	The present grade in college
GPA	Float	0.00	The present total GPA for core classes
Origin of student	string	100	Birthplace

Mother's name	string	30	
Mother's income	int	Ten thousand	Annual income
Mother's occupation	string	30	Standardized *Classification and codes of occupations* for PRC
Father's name	string	30	
Father's income	int	Ten thousand	Annual income
Father's oppupation	string	30	Standardized *Classification and codes of occupations* for PRC
Sesame credit score	int	0.1	

Entity name	Volunteer		
Entity description	User's record of volunteer work		
Attribute name	**Type**	**Precision**	**Explanation (The business rules and business meanings for attributes)**
Volunteer work code	int	1	Progressive increase
Student number	string	30	User's student number
Start time	date		

Duration	int	0.5	Working hours
Activity name	string	30	

Entity name	BankCard		
Entity description	Bank card records		
Attribute name	**Type**	**Precision**	**Explanation (The business rules and business meanings for attributes)**
Phone number	string	20	Phone number of cardholder
Bank card number	string	30	

Entity name	ConsumeRecord		
Entity description	Consumption record		
Attribute name	**Type**	**Precision**	**Explanation (The business rules and business meanings for attributes)**
Record number	int	1	Progressive increase
Bank card number	string	30	Number of bank card for consumption
Record time	date		Consumption time

Amount	float	0.01	Consumption amount
Transaction type	int		0: Entry 1: Consumption 2: Campus card recharge

Entity name	Scholarship		
Entity description	Scholarship record		
Attribute name	**Type**	**Precision**	**Explanation (The business rules and business meanings for attributes)**
Scholarship number	int	1	Progressive increase
Student number	string	30	
Date	date		Awarding time
Amount	float	0.00	Awarding amount
Type	int		0: National scholarship 1: Meritorious 2 : Honorable 3: Successful 4: Subsidies

Entity name	Progress		
Entity description	Authentication progress		
Attribute name	**Type**	**Precision**	**Explanation (The business rules and business meanings for attributes)**
Basic	int		0: unverified 1: verified

information authentication			
College authentication	int		0: unverified 1: verified
Bank card binding	int		0: unverified 1: verified
Sesame credit authentication	int		0: unverified 1: verified
All authentications completed	int		0: unverified 1: verified

2. Default Data

Default1: The college name defaults to Nanjing University.

Default2: The time for volunteer work defaults to half an hour.

3. Data Format Requirements

Format1: The format of date has to be *yyyy-mm-dd.*

Format2: The unit of income is tens of thousands.

VI. Other requirements

1. Installation Requirements

For front-end：Input the URL directly in the browser such as Chrome，FireFox，Safari and IE.

For back-end: Deploy to cloud server.