Homework 1

Group 10
Class: CS-361

Creating mobile software that improves the user's financial situation.

Vision Statement: Check Please is a program that enables people to make better financial decisions for themselves and their families. The variation from other programs like Mint or YNAB is that it gives options/recommendations based on how fast/aggressively someone wants to pay off debts by providing options (bank loan/credit transfer card with lower rate than current card, refinancing options for loans, etc.)not just showing sponsored ads for cards and showing the pros and cons of each choice and what those choices mean for the user in the long and short term.

Requirements Definition:

Problem Description

People from all walks of life can find themselves in problematic financial situations. Debt is an easy thing to incur, and challenging to pay off in full. High interest rates and minimum payments lead to greater debt load, which can ultimately result in a default, which leads to a whole host of long-term negative credit repercussions.

Our Solution

Check Please will help users pay off high-interest debt, and do it as quickly as possible given the user's particular income and expenses. Our tool does this by finding and analyzing available credit options that are most appropriate for a individual user's needs.

Functional Overview

Users will each be required to create a profile (username and password, along with verified email address) which will be used for a secured login.
Users will enter data regarding their regular expenses and income.
Bank and credit information will be necessary for accurate and reliable data to be used - users could either enter this data manually, or the application could connect to the financial institution (with the user's login credentials) and pull the data directly.

Spending data will first be broken down into discretionary and non-discretionary categories, and then further divided into common spending categories.
Income data will be broken down into direct and indirect income streams.
The result of the above analysis will be a budget profile, which includes (ideally) a surplus between the total net income and the total expenses each month.
This surplus will be a base-line suggestion that the application will offer the user as a monthly payment amount for applying to the debt in question.
The tool will also (likely) need to establish an estimated credit score for the user. If desired, this could be pulled directly, entered manually, or estimated with a series of questions.
The user provides his/her financial goals based on that criteria credit card offers and personal loans option is provided to user. The app also provides reminders for upcoming bills. Every month as per the spending report if spending goes up drastically in any of the categories the user is provided notifications for the same to keep a check on their spending habits.In addition, the user is able to check the status and balances of all the accounts with one application rather than checking individual accounts.

Requirements Specification:

Specific Requirements

Once the user's income and spending profile is established, the application will query available credit offer information (NerdWallet, Bankrate, or similar) to find appropriate products to suggest. The tools will locate between one and six reasonable product offerings (with information including introductory APR, regular APR, annual fee, and required credit score). Each of these six offerings will be analyzed given the user's current debt load, the user's available monthly surplus, and the attributes of each credit offer to determine the end-cost of paying off the full debt (if it were transferred immediately to each of the possible products. These will then be sorted and ranked.

The user will have the option to fundamentally adjust the input data (Income information, regular expenses, and how much of the monthly surplus to apply to this debt). This will result in repeating the analysis and query phase noted above.

When the user has identified the product that is desired, the tool will direct the user on how to apply for that particular product.

Functional Requirements:

- A secure user-based login
- User's income and Expense data collection (manual or automatic)
- User's financial data along with transactions stored in the database (manual or automatic)
- User's credit score number collection / calculation (manual, automatic, or estimated)
- Spending analysis
- Calculation of user's potential surplus that can be applied to debt payment
- Querying external tools for current credit product offers, and gathering accurate data for each
- Calculations, analysis, and ranking of pay-off profile for each product offering
- User must be able to adjustment initial inputs (manual or automatic) and re-run calculation phase
- Direct user to application site of selected credit offering
- User's data must be store securely for future reference and update
- User's data integrity must be maintained over time
- Tool must be robust: not crash if external site (NerdWallet, etc.) changes interface slightly
- Tool must be portable: available for use in various countries, with local currency
- Tool must be stable - especially must be able to repeat the user-input, calculate, and suggest loop many times (memory management may be an issue)

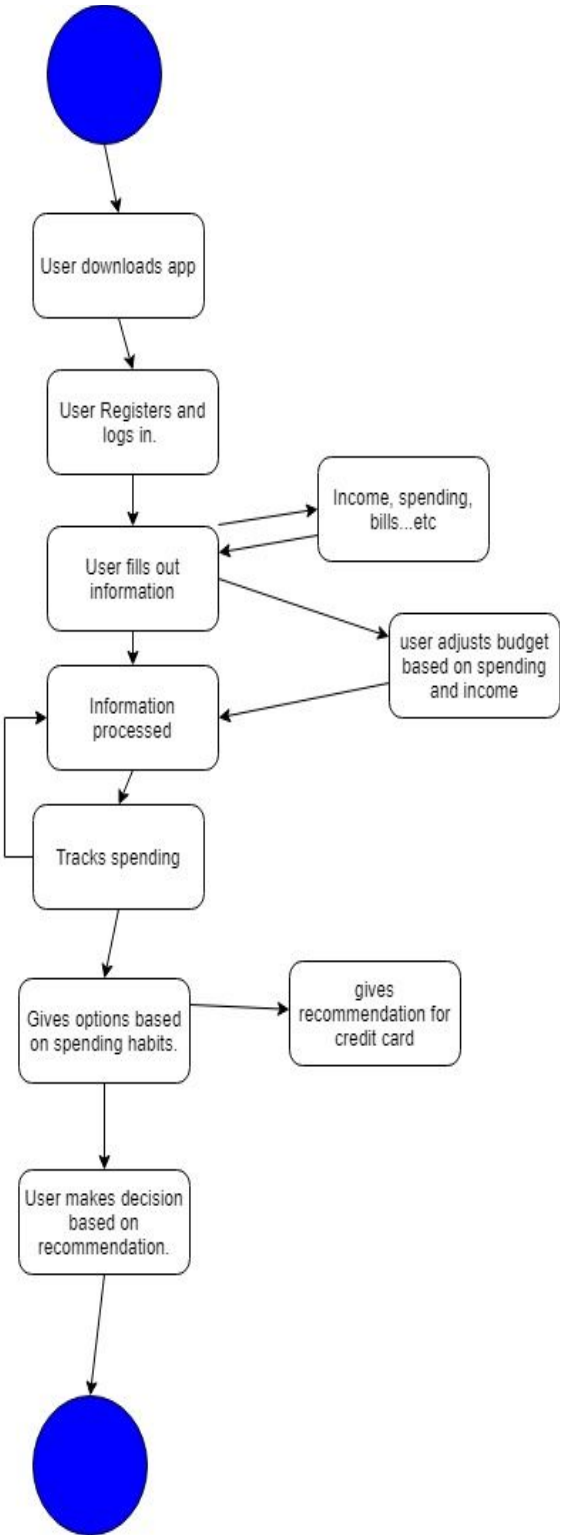
Use Cases

Use Case #1: First year college student first credit card

Actor: "traditional" first year college student meaning that they are fresh out of high school heading to university.
Pre-Conditions: We assume that the user has a smartphone. More than 80% of college undergraduates have a smartphone. They have a part-time job to help pay for expenses like: car insurance, phone bill, books, and food…..etc which they would like to put on the credit card. This student has also taken out loans for tuition and has never owned a credit card.
Post-Conditions: The student is able to set a monthly budget in order to balance cost of living and fun expenses based on how much they work. They are able to obtain a credit card and begin to build good credit while also having the option to find the best card for them.
Flow of events: The student wants to get a strong start on their finances so they hear that there is a mobile app that will aid them in better budgeting. **(1)**They download the app onto their phone and are prompted to sign up with a username and password. **(2)**They register and login. Once logged in they begin to **(3)** enter their information such as name, age, bank they use, and expenses each month. **(4)** The information is sent to the software and processed. **(5)**The app asks further questions to get a better idea of what the user wants as a credit card. The user decides that they want cash back as money is tight for them while in school so they **(6)** follow the prompts so it can be sent back to the app.**(7)** The app gives them a list of cards with the pros and cons of each one. **(8)**The user selects the card based on these recommendations. Because the app is linked to their bank account, it can track the spending over time. **(9)**The app gives them a recommended amount each month that they should use to payoff the their card based on the following data: Expenses, income, minimum payment, and interest rate. In the app it shows if the amount to pay off every month is greater or less than the balance on the card If the amount to be paid is less than the recommended amount the software will adjust it so it equals zero. In the event that the user needs to adjust their expenses, **(9a)** the app will give them the option to add or remove items. The student needed tires and put them on the card. The app adjusts the amount needed and the time frame to pay off the balance.

The user has now used the app for a few months and **(10)** Check Please has discovered that they user is not spending enough to get the cash rewards they need. Although the cash back is great, they do not spend enough to make it worth it. Their interest rate is also close to 20%, nearly 3% higher than the national average. However, the user has been very good about paying off their debt and has a strong credit score which the app give them for free. **(11)**The app gives them options for different cards with lower interest rates and no cash rewards based on the credit score they have. The user decides on one and is linked to the site where they can apply for the card.

Use Case #1 State Chart:



Use Case #2: First year out of college.

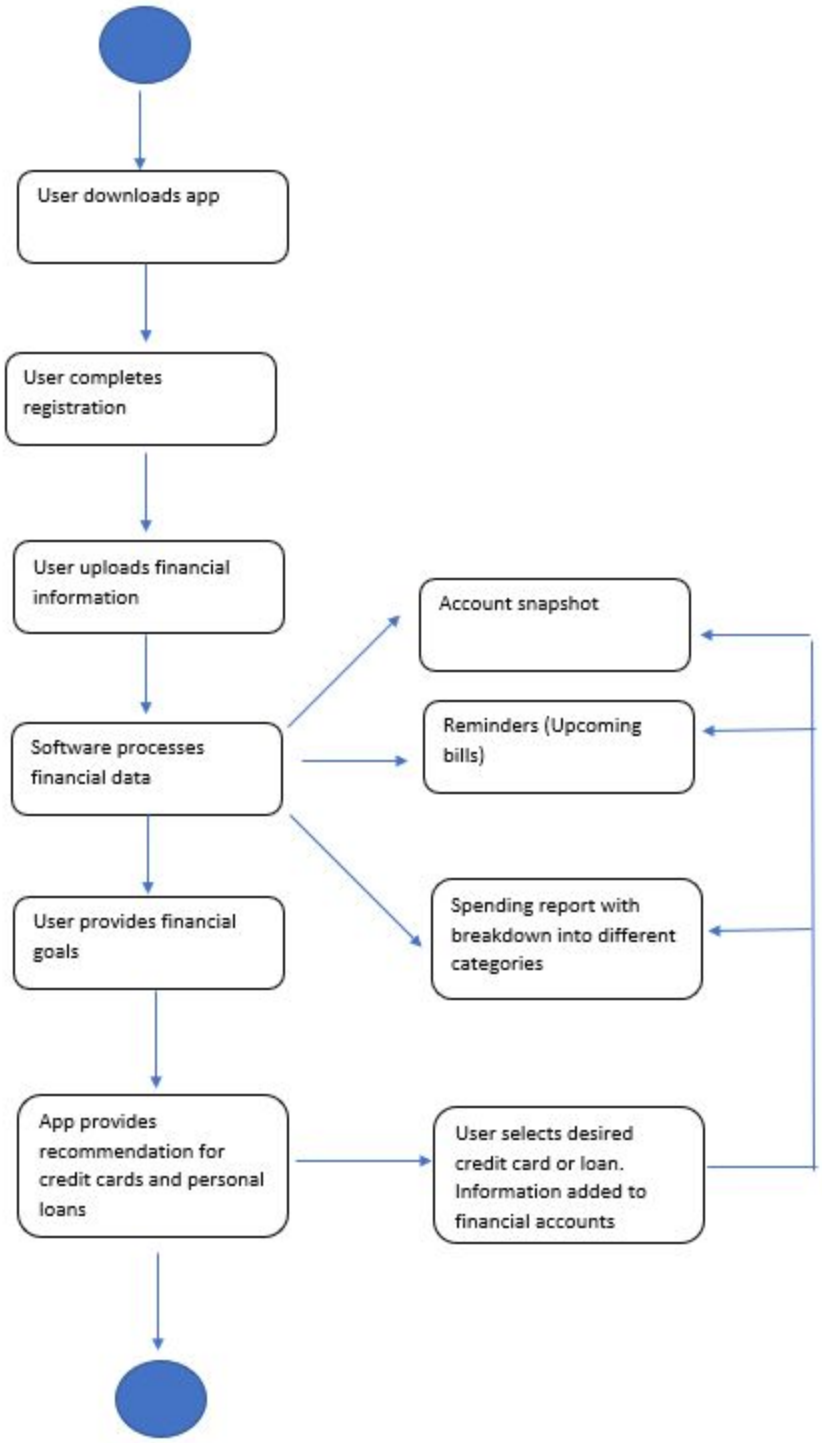
Actor: A young professional working in an MNC . He is starting his professional career and wants a comfortable lifestyle.

Pre-Conditions: In this scenario user has a smartphone, a full-time job, bought a new car (monthly car payments), rent, student debt,credit card bills. As any other professional luxurious lifestyle is taking a toll on his expenses and he is finding it difficult to keep credit card debt under check and keep up with car payments and student debt. He is has accumulated significant debt on his credit cards.

Post-Conditions:
Our protagonist is able to analyze which how to optimize the payments to keep the debt levels to minimum. The student loans have interest rate of 4% , car payments are at 5.6%p.a and credit cards payments are much higher at 14.99%. The suggested track is to keep credit balance at minimum to avoid high interest rate while balancing other payments. The user is able to optimize his budget to minimize unnecessary expenses.

Flow of events: Our user is looking for ways to improve his financial wellbeing.Besides, keeping a tab on debt he wants to start investing his income as well.1) Our user downloads the application onto his smartphone.2) User is prompted with registration screen.Once registration is complete user logs in using username and password.3)The user updates his profile which includes his personal information like social security number, financial accounts information, job and annual income etc. 4) The financial information is processed by the software.5) The app further assesses user requirements regarding his financial goals. 6) The app tracks his expenses and provides him an analysis on how much he is spending each month in various categories like gas, groceries, supermarket, restaurants etc.7) The user is then provided information on bank personal loans and credit cards with 0 balance transfer apr for longer periods. 8) The user looks through the recommendation and based on user selection the application takes the user to the desired credit card or bank website link.9) The user applies for the credit card or the personal loan and gets accepted.10) He keeps track of his monthly progress with debt management through notifications as his credit score goes up the user's financial well being is in much better shape. The user is notified if during any month his credit card bill is higher than normal and apps help him track where he is spending more money. He is able to track his progress with car payments and student debt and making payments in timely fashion to improve his overall credit score.11) The user utilizes the apps financial tool tracker to better manage his spending and avoid unnecessary debt.

Use Case 2 State Chart:



Use Case #3: Single Mother, Family of four

Actor: A single mother with three children struggles to make ends meet each month. After a layoff (and a short stint of unemployment between jobs) she has accumulated $2200 in credit card debt. She wants to pay this debt down, but needs help keeping the interest rate to a minimum. Her current credit card interest rate is 19.95%

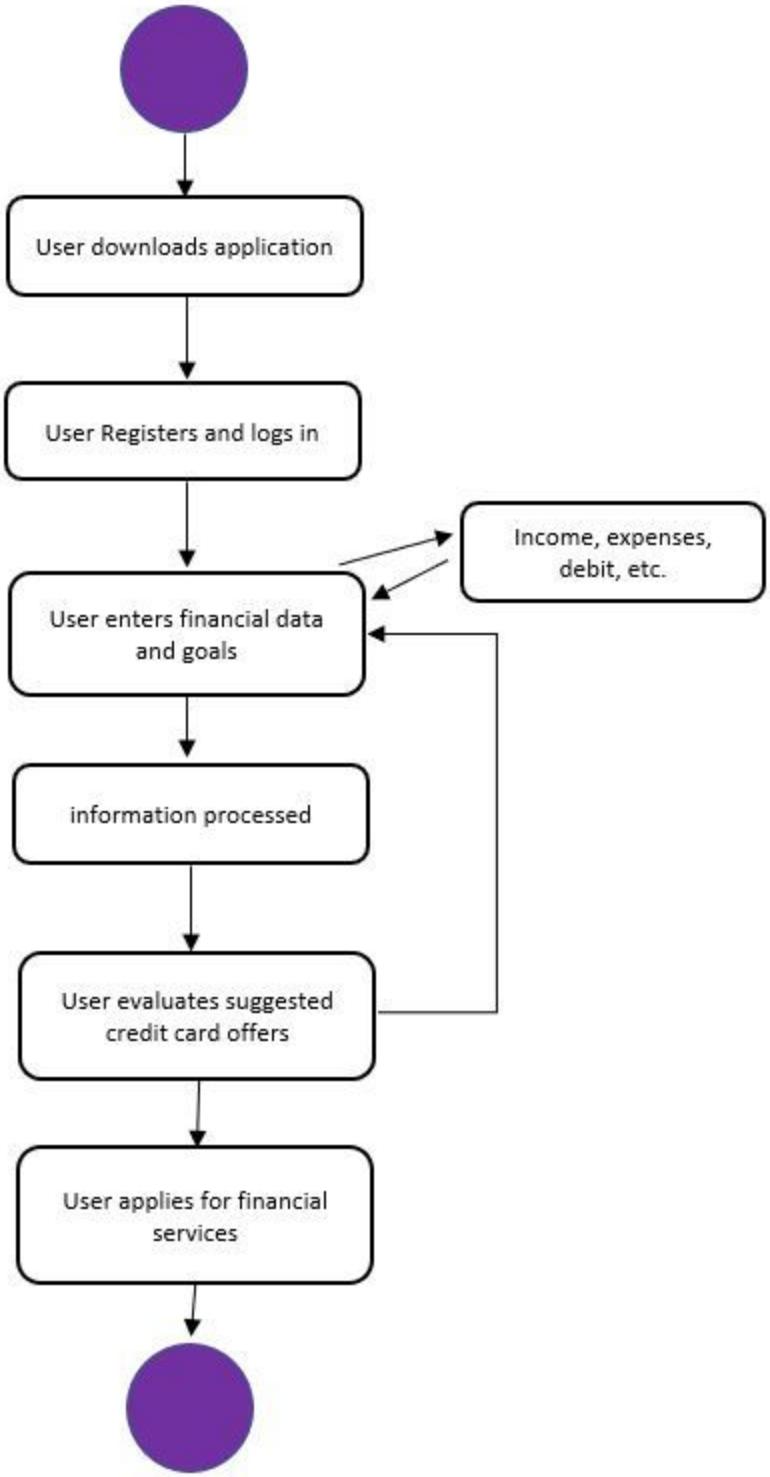
Pre-Conditions: Our user has a smartphone, a full-time job (paying a living wage), a car payment, monthly rent, utilities, phone bill, and a credit card debt after a period of unemployment

Post-Conditions: This user is able to identify a new credit opportunity that has a three-month introductory interest rate of 0% (with debt transfer). After that introductory period, the interest rate will be 12.99% - which is nearly 7 points lower than the rate she was paying originally.

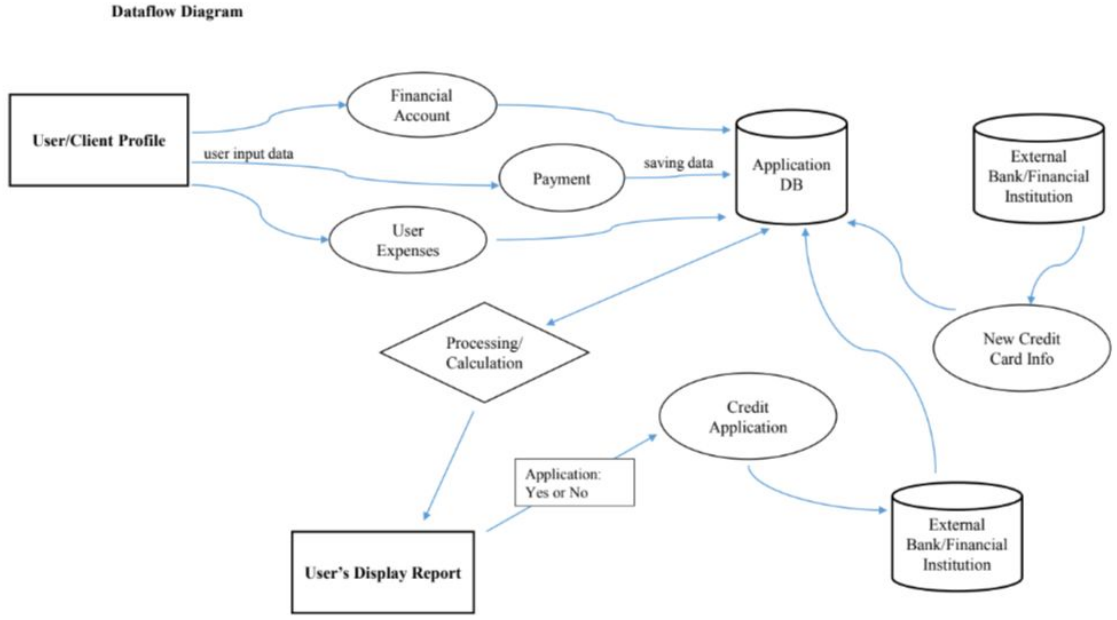
Flow of events: The single-mother is motivated to pay down her debt as much as possible. She researches modern debt-management tools, and learns that there is a hot new mobile application that can help guide people in paying down credit card debt. (1)She downloads and installs the application onto her smartphone; she is prompted to sign up with a username and password. (2)She registers, confirms her email address, and logs into the tool. Once logged in she proceeds to (3) enter her personal information such as name, age, financial institutions, monthly income and expenses. (4) The entered information is forwarded to the software and processed. (5) The application prompts the user for for information to get a better idea of the user requirements: amount of debt owed, desired time-frame for paying the debt to a zero balance. The user enters her current credit card debt, and selects that she wishes to pay the debt off as quickly as possible, and submits the information. (6) The application displays a list of possible credit cards, the terms of each, including a quick summary of the benefits of each (both pros and cons). Included is an estimate of how long it will take to pay of the debt, given the card option is selected, and that all credit card debt is transferred to the new account. (7) The use selects the offer that meets their needs, and seems most desirable financially. (8) The application then directs the user to the credit card application site (external), and saves all the user's current data and selections for future reference. (9) From the credit card's site, the user applies for the account and is accepted.

After a few months, the user returns to the application to check on progress, the application will (10) link directly to these accounts to refresh the current balance and adjust the expected payoff amount given the same (original) target date. (11) The tool reminds the user that she only has one more month of introductory 0.0% interest rate, and reminds the user that she should pay off as much as possible to get the maximum benefit.

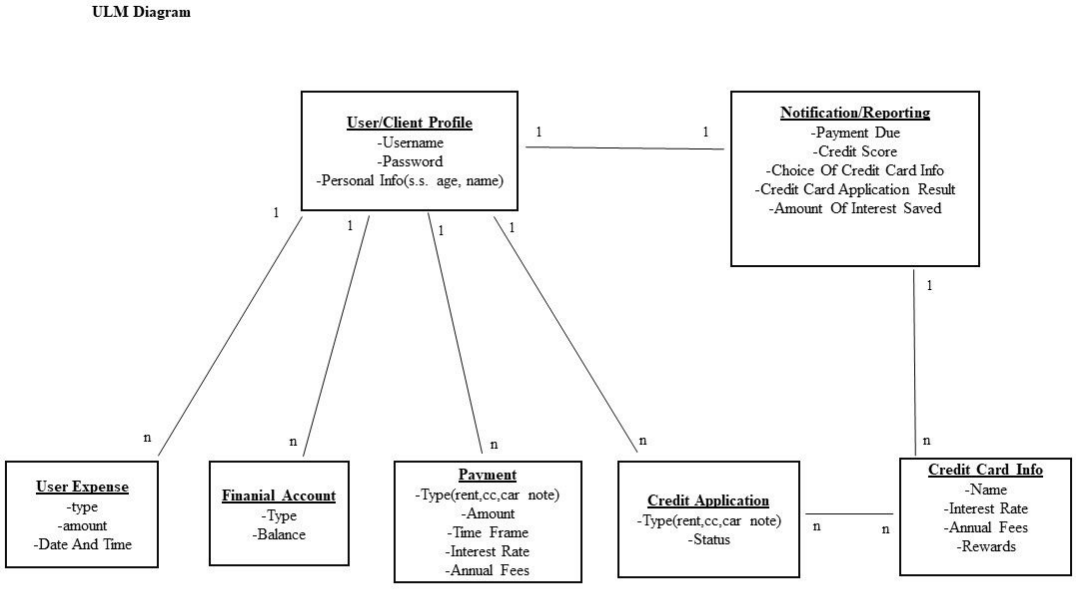
Use Case #3 State Chart:



Dataflow Diagram



ULM Diagram



Customer Meeting:

Our customer was willing and able to meet with us for approx. 30 minutes on Wednesday, October 10th; the meeting was both productive and helpful for us.

Team Member Contributions:

Aseem Prashar: Use case#3 and state chart

Forrest Allen: Use case #1 and state chart for that use case

Thach Vo: ULM Diagram and Data Flow Diagram

Khoa Phan: A paragraph on requirements.

Michael Volz: Created use-case #3 and state chart. Requirements definition and requirements specification