Archon Bank of Cardassia

Banking System Software

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CST 3606

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Executive Summary

The Archon Bank of Cardassia (ABC) banking management software is a complete banking management system. It will help the user from different locations throughout the branches in the country. To do this job, we will be using one Bank case study. The project management system will be applied to complete each task, and everything will be documented accordingly.

Objectives

End of this exercise we would like to achieve some of our goals like:

- Create and maintain a project workbook.
- Choose and assign team roles.
- Start a glossary.
- Understand the business and system requirements from an informal problem statement.
- Work with customers to understand the business in detail.
- Identify and describe business actors.
- Identify and describe business use cases.
- Add detail to your use cases.

Team Roles

For this project, we will be using project management methodology, so we already planned for our roles. We have a two-man team and we will be doing all the steps together and for the business purpose we will be documented our roles into the workbook, so we can track and do our project efficiently. Here are the roles that we have assigned:

- **Raihan Hossain (Project Manager):** As a project manager, my role is to overview the project and make better decisions with my team member. In order to do this job, I will be assigning the team roles between me and my team member.
    - **Business Modelling**: My task will be identifying the use case lists and updating glossary descriptions.
    - **System Requirement**: For this section, I will be working the description of the use cases that I identified before and sketching the user interface diagram.
    - **Static Analysis**: In this section, my job will be to find out possible candidate classes list and sketch the class diagram.
    - **Dynamic Analysis**: In this section, my task will be to organize the previous use case lists and sketch the communication diagram.
    - **System Design**: In this section, my job will be to identify the topology for the system, select appropriate technology and system layers.

- **Mahim Pritom (Assistant Project Manager):** As an assistant project manager, my role will be to co-operate with the project manager Mr.Raihan.
    - **Business Modelling**: My task will be identifying the actors and updating glossary description.
    - **System Requirement**: In this section, I will be working on the description of the actors list that I identified before and sketching user interface for our banking system.
    - **Static Analysis**: In this section, my job will be to filter the possible candidate classes list and update the glossary description accordingly.
    - **Dynamic Analysis**: In this section, my task will be to identify the operation details of the actors and update the glossary accordingly.
    - **System Design**: In this section, my task will be to sketch the deployment diagram and update glossaries accordingly.

The Bank Case Study

The Archon Bank of Cardassia (ABC) would like to develop an information system for handling accounts. The following is a summary of interviews with employees and customers of the bank.

The bank has many different types of accounts. The basic type of account is called a savings account. Savings account customers do not get a monthly account statement. Instead, they have a passbook, which gets updated when they come in. Each passbook page has enough room to have up to ten transactions and, every time the book is updated, the next transaction is printed immediately after the last one in the book. The bank already has the passbook printers and printing software in place (we bought it from a third-party vendor).

Customers are able to open and close accounts. They can withdraw or deposit money or get the current balance. The current balance is displayed on an account update screen, which will be part of the teller's information system. This screen displays the account number, the customer's name, and the current balance of the account. An account is associated with a specific branch. Although we now support multi-branch banking, every account is still assumed to have a "home" branch.

A checking account is just like a savings account, except customers can also write checks on it. We sell checks for $30 for a box of 100. Once a customer uses 75 checks, or check #90 comes in, we send them a notice in the mail asking them if they want to purchase more checks. Account statements are sent out every month. Checking accounts do not have passbooks, and savings accounts do not have account statements.

We charge $1,200 a year for private banking accounts (PBAs). PBAs are just like checking accounts. PBAs entitle customers to investment counseling services, as well as to other services unavailable to other clients. A PBA account can be held by only one customer, although a customer may have more than one PBA account. This is exactly like savings accounts. Checking accounts, however, can be joint. This means a checking account can be accessed by one or more customers (perhaps a husband and a wife).
A current account is for our corporate customers. It works like a checking account, with a few extra features. For example, a quarterly account statement (which is exactly the same as a monthly account statement, except it is done for an entire quarter) is sent out, in addition to the regular monthly statements. The quarterly statement is sent in the same envelope as the statement for that month. Corporate customers also get to choose the number of checks they are sent (100, 250, 500, or 1,000) at a time. Current accounts are not joint, and they cannot be accessed through an ATM. Furthermore, because of the different service needs of our corporate customers, we deal with them at special branches called "corporate branches." Corporate branches serve only corporate customers. They do not serve our retail (normal) customers. Corporate customers can be served at "retail branches," although they rarely do because the tellers in a retail branch do not have the necessary background to meet their special needs.

More than one account can be accessed from a bank card. We currently give cards out to any customer who wants them. Customers access their accounts using two different methods: at an automated teller machine (ATM) or at a bank branch. ATMs enable customers to deposit to, withdraw from, and get balances from their accounts. They can also pay bills (this is basically a

withdrawal) and transfer money between accounts (this is basically withdrawing from one account and depositing into another).

Everything that can be done at a bank machine can also be done by a real live teller in a branch. The teller will have an information system that provides the screens to perform all of these functions. Additionally, tellers can also help customers to open and close their accounts, as well as print out account statements for the customer. The account statements are just like the monthly/quarterly statements, except they can be for any time period. For
For example, a customer could request a statement from the 15th of August to the 23rd of September, and we should be able to print that out on the spot.

Monthly and quarterly account statements are normally printed out on the first Saturday of the following month. This is done by an automated batch job.
Because we have started to put ATMs into various stores and restaurants (in the past, we only had ATMs in branches), we now consider every ATM, including those in our "brick and mortar" branches, to be a branch as well. This means ATMs have branch IDs and addresses, just like a normal branch does.

To manage the bank effectively, we split it up into collections of branches called "areas." An area is a group of between 10 and 30 branches. A branch is part of only one area, and all branches are in an area. Each area has a unique name and is managed by an "area manager." Area managers receive weekly transaction summary reports every Monday before 9 in the morning. This report summarizes the number and total amounts of all withdrawals, deposits, and bill payments performed at each branch (including ATMs) for the previous week. For brick and mortar branches, there is also an indication of how many
accounts in total were at that branch at the beginning of the week, how many accounts were opened during the week, how many accounts were closed during the week, and how many accounts there are now. Finally, all these figures are summarized and outputted for the entire area.

Actor List

- Customer
- Corporate Account Customer
- PBA Account Customer
- Checking Account Customer
- Teller

Use Case List

- UC1: Open an Account
- UC2: Bank Card
- UC3: Display
- UC4: Account Statement
- UC5: Close Account
- UC6: Withdraw
- UC7: Deposit
- UC8: Current Balance
- UC9: Customer Name
- UC10: Get Balance
- UC11: Account Number
- UC12: Transfer Money
- UC13: Pay Bill
- UC14: Log In
- UC15: Log Out

Glossary Description

- Team roles: Project Manager, Timekeeper, GURU, Glossary Keeper
- Bank Case Study:
- Actor List: Customer, Corporate Account Customer, PBA Account Customer, Checking Account Customer, Teller.
- Use Cases: Open account, Bank Card, Display, Account Statement, Close account, Withdraw, Deposit, Current Balance, Customer Name, get balance, account number, transfer money, pay the bill, login, log out.

System Requirements

Objectives

End of this exercise we would like to achieve some of our goals like:

- Identify system actors.
- Identify system use cases.
- Compose a use case diagram.
- Write system use case details.
- Record supplementary requirements.
- Produce user interface sketches.
- Prioritize use cases.

Actors List

Based on the Bank Case Study we have found these actors:

- **CUSTOMER**: A person, who open the bank account.
- **CORPORATE ACCOUNT CUSTOMER**: Corporate Account Customer who can open the account but can't have access through the ATM machine and can't have access to the account statement.
- **PBA ACCOUNT CUSTOMER**: PBA Account Customer who can open the account but can't have access through the ATM machine and can't have access to the account statement.
- **CHECKING ACCOUNT CUSTOMER**: Checking Account Customer can open an account, can have access to the account through Bank Card, and have access to the Account Statement.
- **TELLER**: Teller can have access to the Display screen and ATM.

Use Case List

Based on the Bank Case Study we have found these Use Cases:

- OPEN ACCOUNT: A Customer open bank account (Extends **UC14**)
- LOG IN: A customer can Log In if he/she has a valid account and valid bank card (Extended by **UC1** and Include **UC3**)
- BANK CARD: A Customer can use the card to access the account and Display screen (Extends **UC14**)
- DISPLAY: Corporate, PBA, Saving and Checking account customers can have access to the Display screen through Account but only Checking account customers get access through Bank Card (Extends **UC6, UC7, UC8, UC9, UC10, UC11, UC12, UC13, UC15**. **Include UC14**)
- ACCOUNT STATEMENT: Checking account customer can have access to the statement through regular account and Bank Card (**Extended by UC3**)

Details of The Use Cases

Name: OPEN ACCOUNT. (Extends **UC14)**

ID: **UC1**

Preconditions: Customer has to create an account to get access to the banking system

Postconditions: Customer gets access.

1. Customer selects an account they want to open and get specific service that accounts provide.

3. Extends **UC14**.

Name: LOG IN. (Extended by **UC1** and Include **UC3)**

ID: **UC14**

Preconditions: Customer needs a valid account and valid Bank Card

Postconditions: Customer get access or not based on their account validation

1. Customer can use Bank Card to access the Display screen and continue their banking activities

3. Extends **UC3**.

Name: BANK CARD (Extends **UC14**.).

ID: **UC2**

Preconditions: The customer has to have a Saving or Checking account. It's not required to have Bank Card but it can help customers to use the ATM.

Postconditions: The customer gets access to the ATM through Bank Card and uses that to withdraw, deposit, transfer, and pay the bill through that without going to the Teller.

1. Customer inserts Bank Card to the ATM and uses the required password to get access

2. The customer completes their truncation and takes out the Bank Card.

Alt a:

A1: If a customer has a Bank Card but doesn't have the password then he/she won't be able to access her/his account.

Extends **UU14**

Name: DISPLAY. (Extends **UC6, UC7, UC8, UC9, UC10, UC11, UC12, UC13, UC15**. **Include UC14)**

ID: **UC3**

Preconditions: Customer has to have a valid active account.

Postconditions: Customers will be able to see their account info.

1. Customer gets access to the display screen through bank and also Special customer get that through Bank Card

2. Customer log off from their account and season end

Alt a:

A1: Regular customer has to have a valid account and the special customer has to have Bank Card and password

A2: Use case end

Name: ACCOUNT STATEMENT. (Extended by **UC3**)

ID: **UC4**

Preconditions: Customer has to be Checking the account holder.

Postconditions: None.

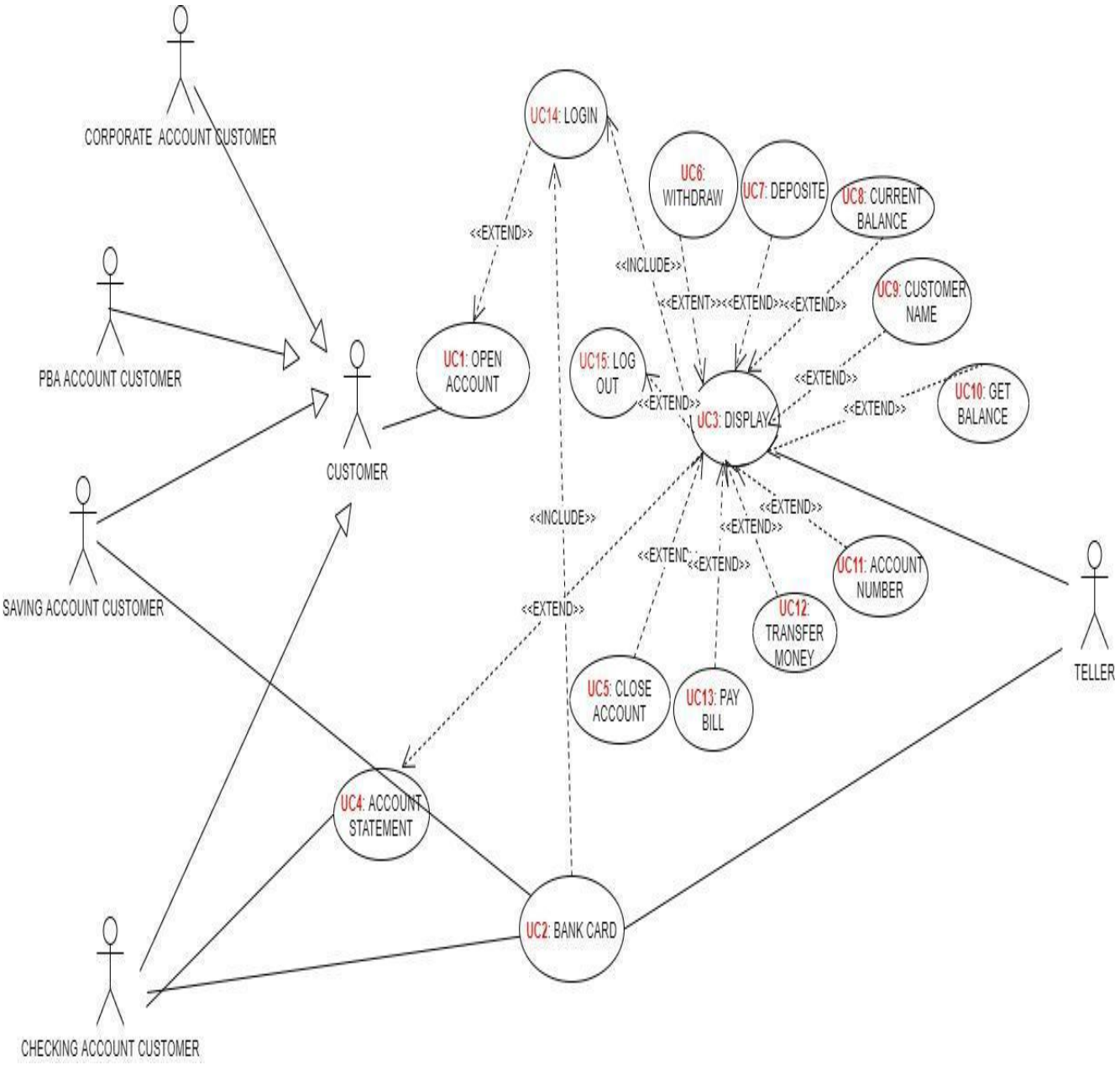
1. Customer gets bank statements

ALT: A

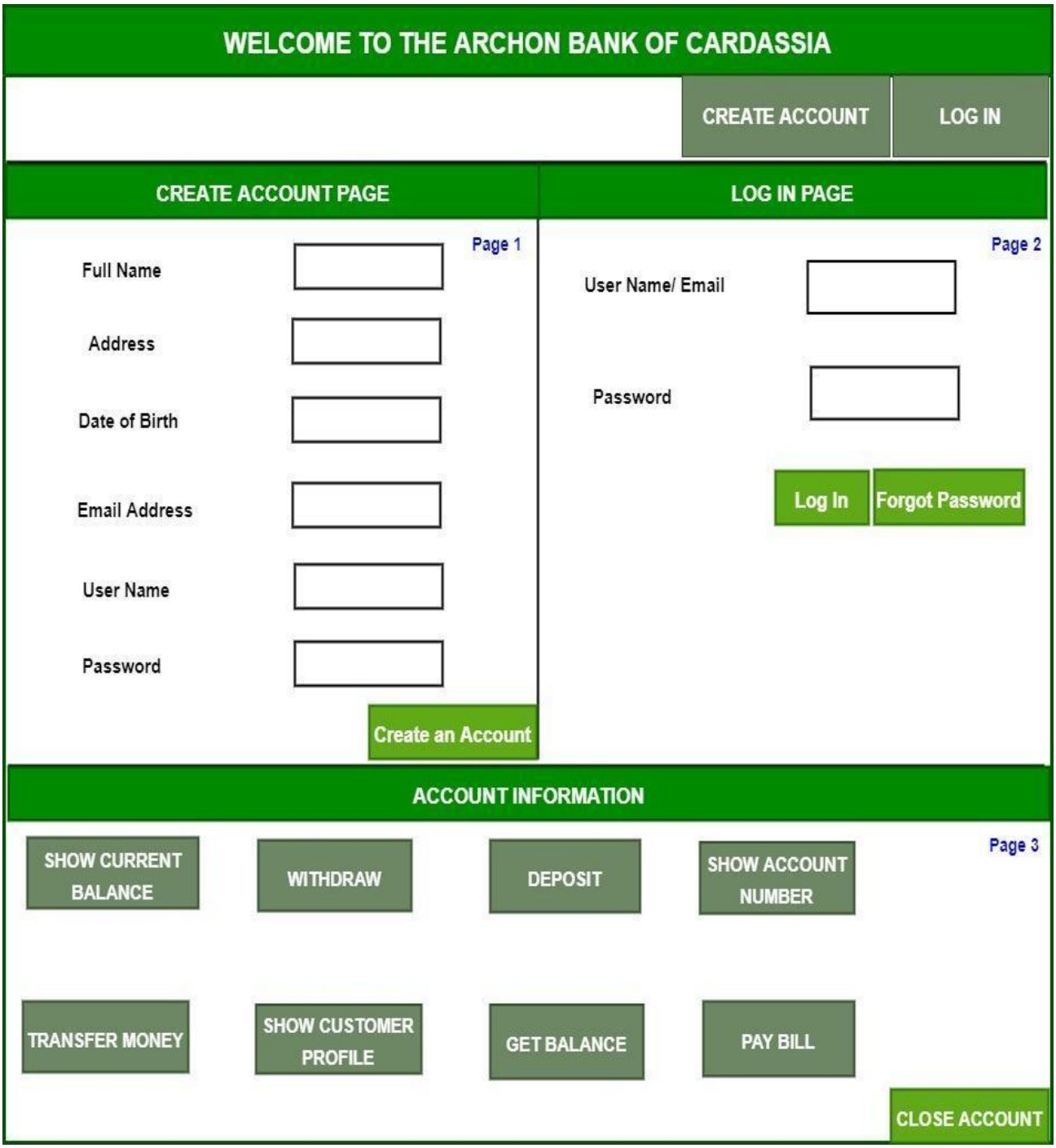
A1: Only checking account holder get a statement through systems

Use Case Diagram based on Use Cases

Based on the Bank Case Study (Actors, Use Cases) here is our Use Case Diagram:



User Interface Sketches:



Glossary Description

- Use Case Diagram: Explained how the use cases work.
- User Interface Sketch: Demonstration of how a user can interact with the banking system.

Static Analysis

Objectives

End of this exercise we would like to achieve some of our goals like:

- Identify analysis classes representing business entities.
- Identify relationships and multiplicities between analysis classes.
- Show analysis classes, relationships, and multiplicities on a class diagram.
- Find analysis class attributes.
- Update the project glossary and non-functional requirements.

Candidate Classes List

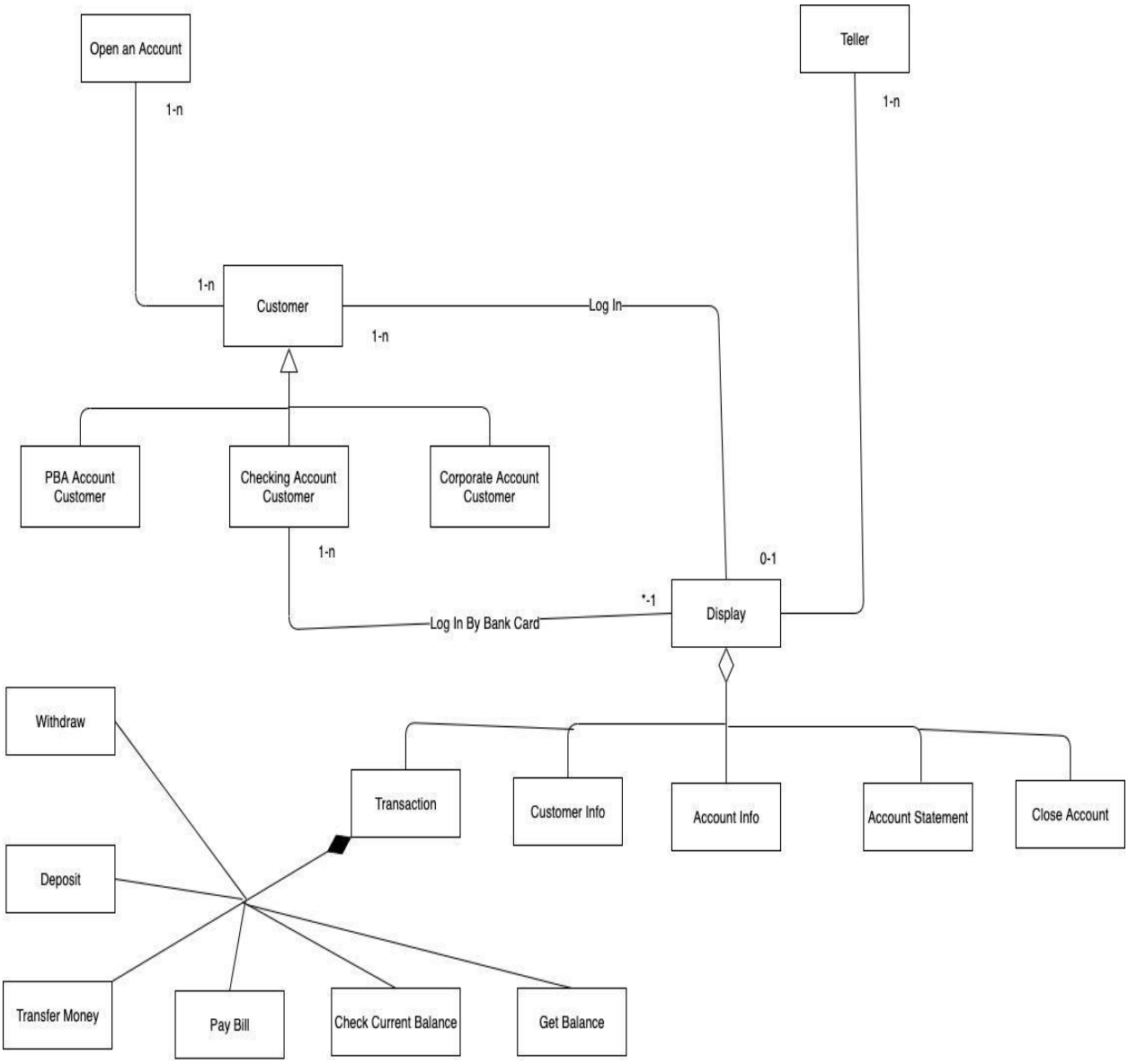
- Open an Account
- Bank Card*
- Display
- Account Statement*
- Close Account
- Withdraw
- Deposit
- Current Balance
- Customer Name
- Get Balance
- Account Number
- Transfer Money
- Pay Bill
- Log In
- Log Out
- Customer
- Corporate Account Customer
- PBA Account Customer
- Checking Account Customer
- Teller

Filtered Candidate List

- Customer
- Corporate Account Customer
- PBA Account Customer
- Checking Account Customer
- Teller
- Open an account
- Display

Class Diagram

Based on our filtered candidate list, here is our class diagram:



Glossary Description

- Candidate Classes List: Possible classes listed for the class diagram.
- Filtered Candidate List: Final classes list for the class diagram.
- Class Diagram: How the classes work and their relations.

Dynamic Analysis

Objectives

End of this exercise we would like to achieve some of our goals like:

- Verify an analysis class model
- Realize use cases.
- Draw communication diagrams.
- Identify and describe operations.
- Build and draw a state model.

Use Case List

- UC1: Open an Account
- UC2: Bank Card
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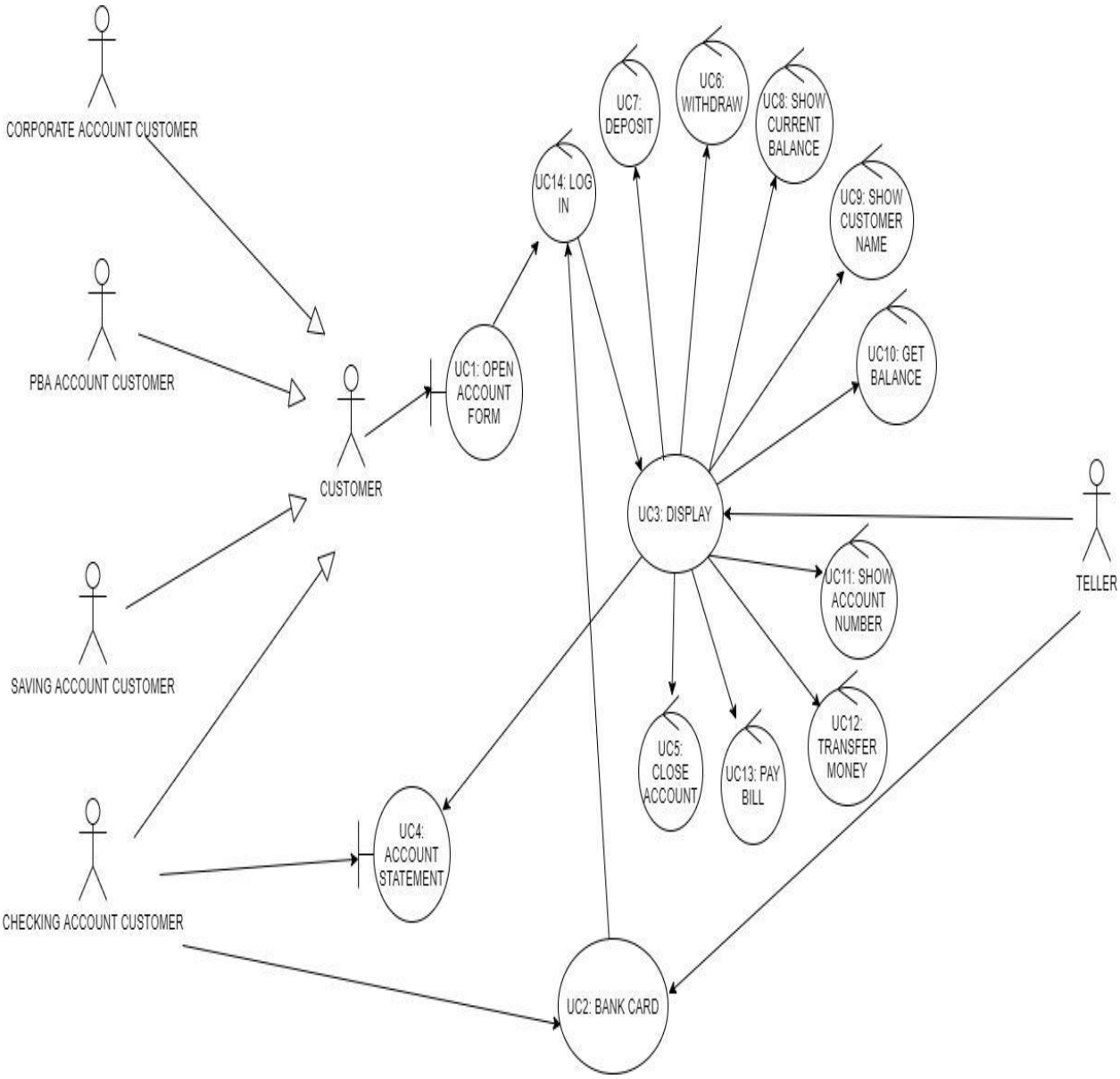
- UC10: Get Balance
- UC11: Account Number
- UC12: Transfer Money
- UC13: Pay Bill
- UC14: Log In
- UC15: Log Out

Communication Diagram

Based on the use case list, here is our communication diagram:



Operation Details

- OPEN ACCOUNT: A Customer open bank account (Extends **UC14**)
- LOG IN: A customer can Log In if he/she has a valid account and valid bank card (Extended by **UC1** and Include **UC3**)
- BANK CARD: A Customer can use the card to access the account and Display screen (Extends **UC14**)
- DISPLAY: Corporate, PBA, Saving and Checking account customers can have access to the Display screen through Account but only Checking account customers get access through Bank Card (Extends **UC6, UC7, UC8, UC9, UC10, UC11, UC12, UC13, UC15**. **Include UC14**)
- ACCOUNT STATEMENT: Checking account customer can have access to the statement through regular account and Bank Card (**Extended by UC3**)

Glossary Description

- Communication Diagram: Explained how the user communicates with the system.
- Operation details: Explained how each part of this communication diagram works.

System Design

Objectives

End of this exercise we would like to achieve some of our goals like:

- Design a system topology.
- Select appropriate technologies.
- Plan the judicious use of processes and threads.
- Model processes as sub-nodes.
- Decompose a system into layers.
- Group related classes into packages.
- Design for security.
- Design for concurrency.
- Draw a UML deployment diagram.

System topology

The application uses a Three-Tiered Web-based Client/Server – for customers to manage the daily activities in the bank online via a browser.

Two-Tiered Windows-Client Client/Server – Front line workers such as teller at the bank.

Database Tier – both the Three-tiered Web and Two-tiered Windows client/server will SHARE the same Database tier.

It will also support dozens of major cities around the world. In addition, it provides a great user experience in the banking system.

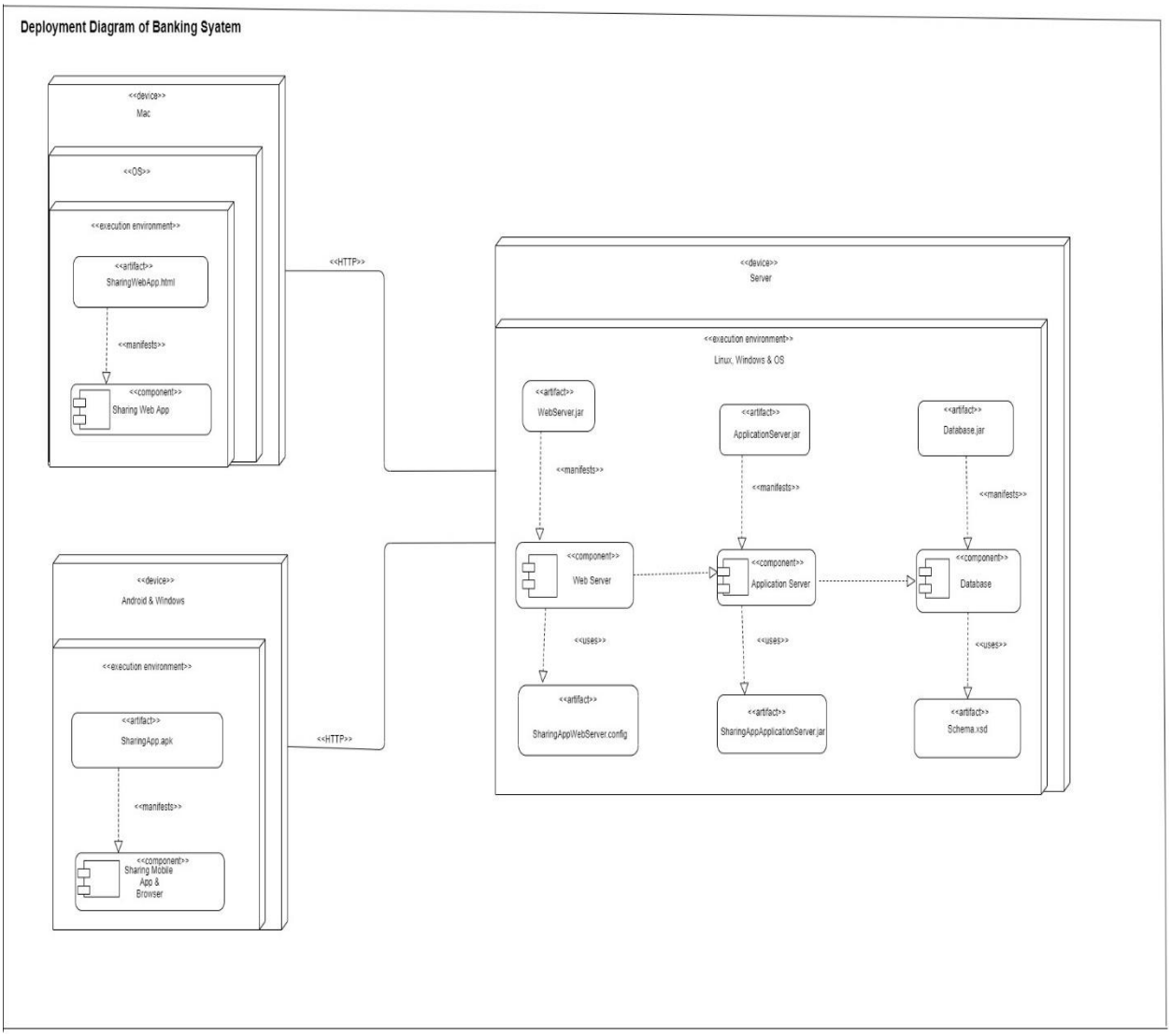
There are multiple requirements in order to complete the whole process. The Project must need planning analyzing, designing, and implementing phases to successfully complete the projects.

Selecting Technologies and System Layers

The system is a combination of 1) a Three-Tiered Web Database Application with a web-based browser front-end for the users that want to use the banking service through the web. In addition, we have an additional architecture: 2) Two-Tiered Windows Database Application, with a custom client front-end for the customer and teller at the bank. Note that both these architecture (Web & Custom client) share the same DBMS back-end data store.

Deployment Diagram

Below is our deployment diagram for our banking system:



Glossary Description

- System Topology: Database Tier used for this system.
- Selected Technology: Database used for the system.
- Deployment Diagram: Shows whole deployment process

Conclusion

Archon Bank of Cardassia.com is a convenient and user-friendly Application for the Banking system. It will automate the managing of Customer and banking system transition activities the fastest and easiest way. It will store the data and track all transition from major cities. To do this job all the project management methodology like planning, analyzing, designing is applied and documented properly.