



## Bank information system

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# Project identification

## Project name

Bank information system

## Current problem

The current banking system has a lot of problems related to the speed which a lot of clients and employees also noticed. There are problems also related to the security of data as the bank got attacked by hackers two weeks ago which damage the reputation of the bank.

## Description about the project

The new banking system will consist of three main parts the first one is the atm system. It makes it possible for the user to sign up or log in to his account and make operations such as depositing, withdrawing, transferring and enquiring. The second part is related to employees which can add customer update and delete them. The final part is related to admins which can add employees update and delete them.



## System Request

# Project Sponsor

This project was created on the request of the CEO of Al Ahly Bank by our group.

# Business needs

- Improved service making the transactions faster and make the dealing with data more efficient
- Boosting the privacy of data to the maximum level making unauthorized access to client account almost impossible.
- Preventing any errors that was in the last system like giving the client money than wanted.
- Give more loans for startups to flourish and boost the economy.
- Increase the annual profits of the bank and reduce costs.
- Provide easy way for contacting between the clients and the bank employees.
- Make the using of system easier for bank employees to deal with.



# System Request

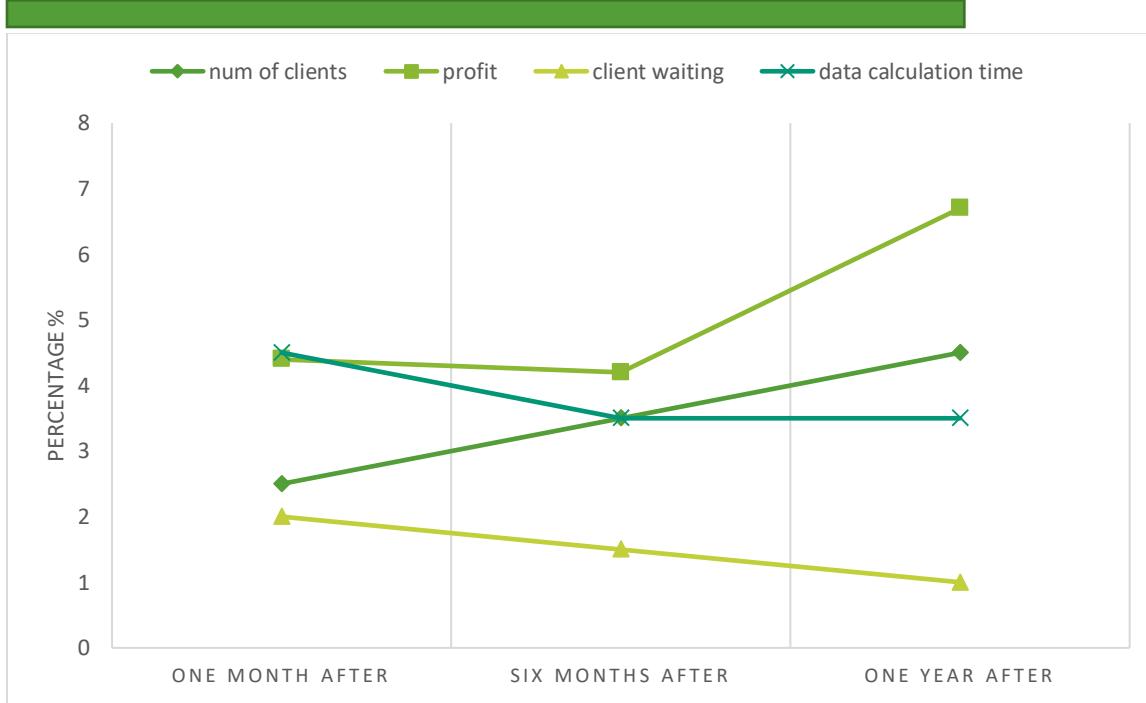
## Business Requirements

- Providing high end mobile application and web page for the client to contact with employees.
- Make it available for clients to pay with their mobiles.
- Providing better algorithm to deal with data queries that decreases the time complexity significantly.
- Offering solid antivirus with the help of the well know Russian company Kaspersky to prevent any possible hack threats.
- Improving the funding system of the startups and offering both short- and long-term loans with almost zero interest.
- Eliminate the previous problems of database failing by reviewing the SQL code.
- Providing new tools for the top management that show instant statistics about the financial state in order to improve the strategic decisions.
- Decrease the bureaucratic policies in order to save money and time for both the bank and the clients.



# System Request

## Business value



## Special issues

The deadline will be the 30<sup>th</sup> of June.



# Feasibility Study

## Technical feasibility

- Minimum System Requirements:
  - Processor: Intel Core i5 3470 @ 3.2GHZ (4 CPUs).
  - Memory: 8GB.
  - HDD Space: 65GB.
  - OS: Windows 7 64 Bit.
- At least 8 employees for every department with the next specifications:
  - A degree in accountant or any equivalent degree.
  - Familiarity with the basic desktop applications.
  - ICDL certificate.
- At least 2 IT technicians for every department with the next specifications:
  - A degree in computer science or any equivalent degree.
  - CCNA certificate.
  - CompTIA A+ certificate.
  - CISSP certificate.



# Feasibility Study

## Organizational feasibility



Full access  
(Head of sector)

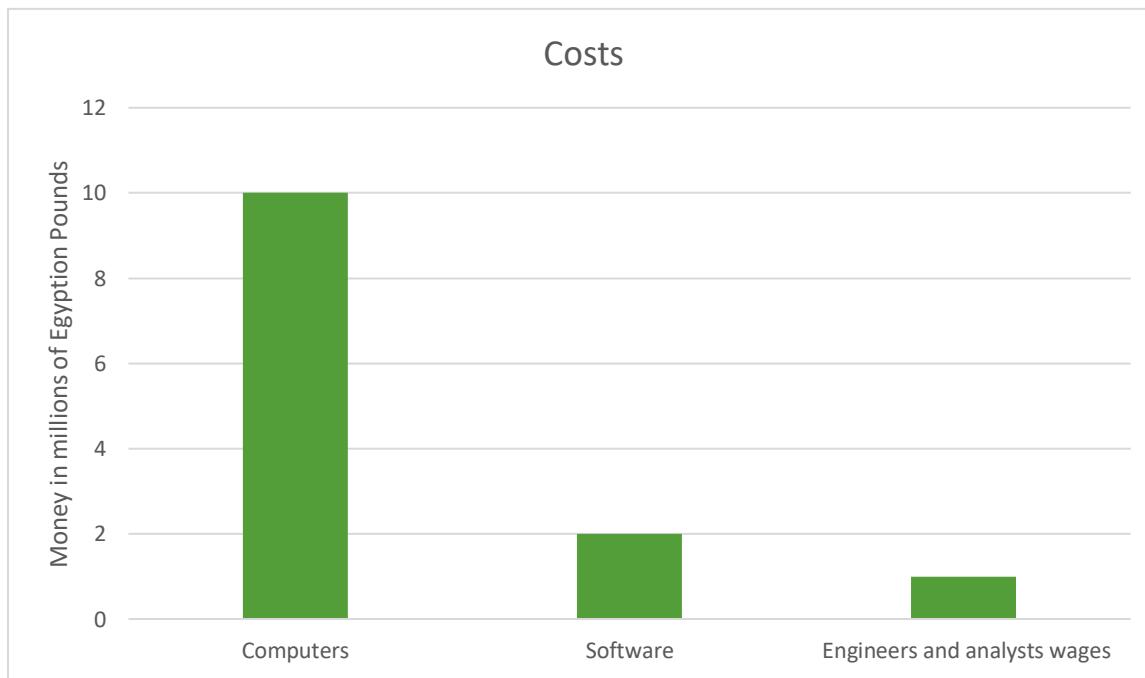


Limited access  
(employee)



access of his own  
adminstration  
(manager)

## Economic feasibility





# Feasibility Study

tangible  
benefits

- saving time.
- more clients.
- increase profit.
- minimize the cost.

intangible  
benefits

- Increase clients satisfaction.
- Improve the bank's reputation.
- Make the work easier

## Operational feasibility

- No difficulties for the users to use the application.
- No difficulties for the employees to use the system.



# Task Identification

		Task Mode	Task Name	Duration	Start	Finish	Predecessors
1			System request (A)	5 days	Sun 3/8/20	Thu 3/12/20	
2			Feasibility study (B)	15 days	Sun 3/15/20	Thu 4/2/20	1
3			Interview (c)	7 days	Sun 4/5/20	Mon 4/13/20	2
4			Questionnaire (D)	7 days	Tue 4/7/20	Wed 4/15/20	2
5			DFD (e)	10 days	Thu 4/16/20	Wed 4/29/20	4
6			Data dictionary (F)	5 days	Sun 5/3/20	Thu 5/7/20	5
7			Process specification (G)	10 days	Sun 5/3/20	Thu 5/14/20	5
8			Normalization (H)	7 days	Sun 5/10/20	Mon 5/18/20	6
9			ERD (I)	8 days	Tue 5/19/20	Thu 5/28/20	8
10			Implementation (J)	15 days	Sun 5/31/20	Thu 6/18/20	9
11			Code review (K)	5 days	Sun 6/21/20	Thu 6/25/20	10
12			Preparing new computers (L)	2 days	Sun 6/21/20	Mon 6/22/20	10
13			Installing software (M)	2 days	Sun 6/28/20	Mon 6/29/20	11,12
14			End	0 days	Tue 6/30/20	Tue 6/30/20	



# Task Identification

NAME OF TASK	<b>System request (A)</b>
START DATE	<b>8/3/2020</b>
END DATE	<b>12/3/2020</b>
PERSON ASSIGNED TO TASK	<b>Nour</b>
RESOURCES NEEDED	<b>Word</b>
ESTIMATED TIME	<b>5</b>
ACTUAL TIME	<b>4</b>

NAME OF TASK	<b>Feasibility study (B)</b>
START DATE	<b>15/3/2020</b>
END DATE	<b>2/4/2020</b>
PERSON ASSIGNED TO TASK	<b>Moemn</b>
RESOURCES NEEDED	<b>Excel</b>
ESTIMATED TIME	<b>15</b>
ACTUAL TIME	<b>13</b>



# Task Identification

NAME OF TASK	<b>Interview (C)</b>
START DATE	<b>5/4/2020</b>
END DATE	<b>13/4/2020</b>
PERSON ASSIGNED TO TASK	<b>Nour</b>
RESOURCES NEEDED	<b>Word</b>
ESTIMATED TIME	<b>7</b>
ACTUAL TIME	<b>7</b>

NAME OF TASK	<b>Questionnaire (D)</b>
START DATE	<b>7/4/2020</b>
END DATE	<b>15/4/2020</b>
PERSON ASSIGNED TO TASK	<b>Mohab</b>
RESOURCES NEEDED	<b>Google forms</b>
ESTIMATED TIME	<b>7</b>
ACTUAL TIME	<b>7</b>



# Task Identification

NAME OF TASK	<b>DFD (E)</b>
START DATE	<b>16/4/2020</b>
END DATE	<b>29/4/2020</b>
PERSON ASSIGNED TO TASK	<b>Mena</b>
RESOURCES NEEDED	<b>Lucidchart</b>
ESTIMATED TIME	<b>10</b>
ACTUAL TIME	<b>9</b>

NAME OF TASK	<b>Data Dictionary (F)</b>
START DATE	<b>3/5/2020</b>
END DATE	<b>7/5/2020</b>
PERSON ASSIGNED TO TASK	<b>Nour</b>
RESOURCES NEEDED	<b>Excel</b>
ESTIMATED TIME	<b>5</b>
ACTUAL TIME	<b>5</b>



# Task Identification

NAME OF TASK	<b>Process specification (G)</b>
START DATE	<b>3/5/2020</b>
END DATE	<b>14/5/2020</b>
PERSON ASSIGNED TO TASK	<b>Mena</b>
RESOURCES NEEDED	<b>Word</b>
ESTIMATED TIME	<b>10</b>
ACTUAL TIME	<b>10</b>

NAME OF TASK	<b>Normalization (H)</b>
START DATE	<b>10/5/2020</b>
END DATE	<b>18/5/2020</b>
PERSON ASSIGNED TO TASK	<b>Moemn</b>
RESOURCES NEEDED	<b>JMathNorm</b>
ESTIMATED TIME	<b>7</b>
ACTUAL TIME	<b>5</b>



# Task Identification

NAME OF TASK	<b>ERD (I)</b>
START DATE	<b>18/3/2020</b>
END DATE	<b>26/3/2020</b>
PERSON ASSIGNED TO TASK	<b>Nour</b>
RESOURCES NEEDED	<b>Lucidchart</b>
ESTIMATED TIME	<b>8</b>
ACTUAL TIME	<b>6</b>

NAME OF TASK	<b>Implementation (J)</b>
START DATE	<b>31/5/2020</b>
END DATE	<b>18/6/2020</b>
PERSON ASSIGNED TO TASK	<b>Moemn</b>
RESOURCES NEEDED	<b>JAVA / sql</b>
ESTIMATED TIME	<b>15</b>
ACTUAL TIME	<b>15</b>



# Task Identification

NAME OF TASK	<b>Code review (K)</b>
START DATE	<b>21/6/2020</b>
END DATE	<b>25/6/2020</b>
PERSON ASSIGNED TO TASK	<b>Mena</b>
RESOURCES NEEDED	
ESTIMATED TIME	<b>5</b>
ACTUAL TIME	<b>4</b>

NAME OF TASK	<b>Preparing new computers (L)</b>
START DATE	<b>21/6/2020</b>
END DATE	<b>22/6/2020</b>
PERSON ASSIGNED TO TASK	<b>Mohab</b>
RESOURCES NEEDED	
ESTIMATED TIME	<b>2</b>
ACTUAL TIME	<b>2</b>



# Task Identification

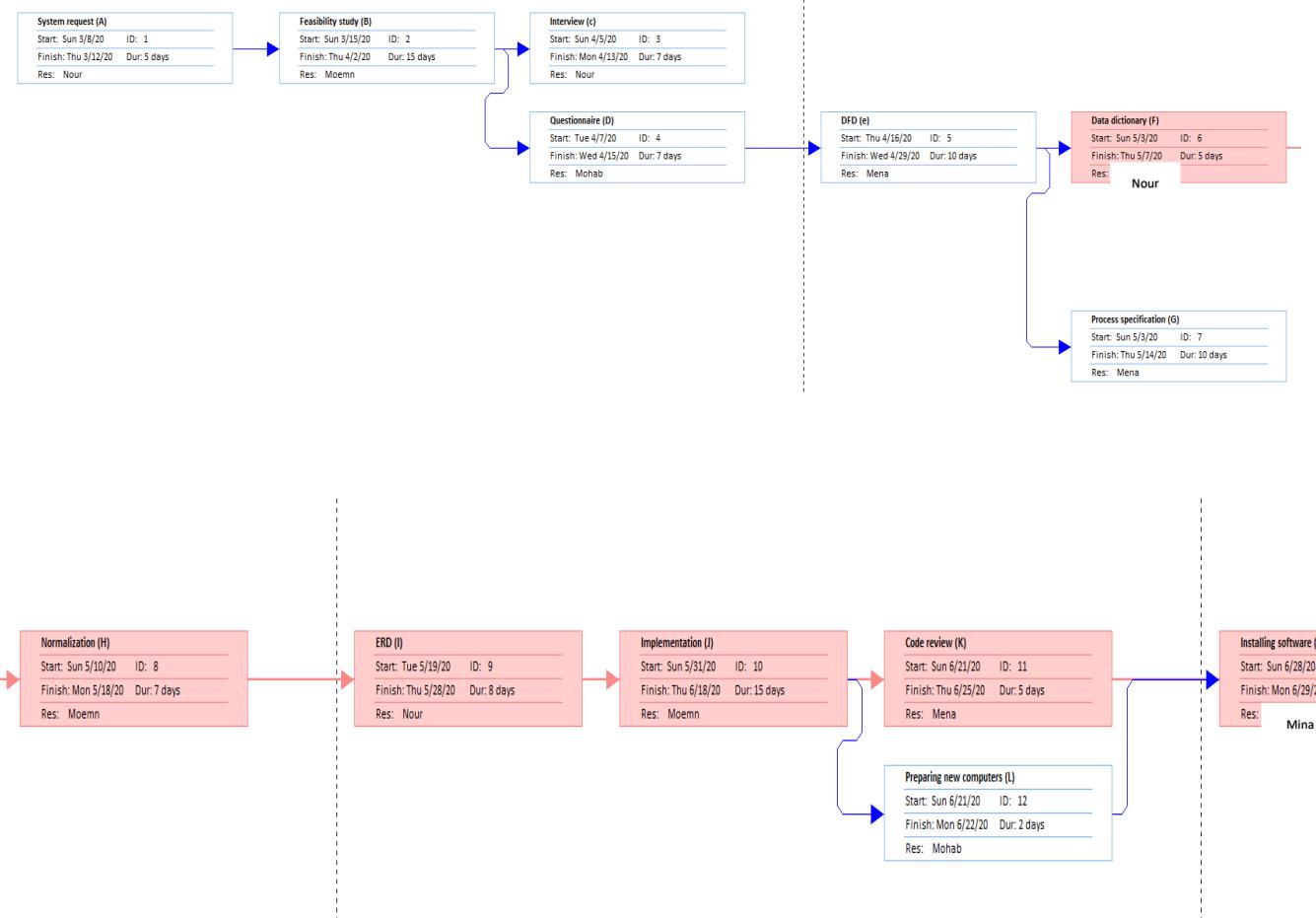
NAME OF TASK	<b>Installing software (M)</b>
START DATE	<b>3/4/2020</b>
END DATE	<b>5/4/2020</b>
PERSON ASSIGNED TO TASK	<b>Mina</b>
RESOURCES NEEDED	
ESTIMATED TIME	<b>2</b>
ACTUAL TIME	<b>2</b>



# PERT chart

Task name	Activity	Duration	predecessor
System request	A	5	-
Feasibility study	B	15	A
Interview	C	7	B
Questionnaire	D	7	B
DFD	E	10	D
Data dictionary	F	5	E
Process specification	G	10	E
Normalization	H	7	F
ERD	I	8	H
Implementation	J	15	I
Code review	K	5	J
Preparing new computers	L	2	J
Installing new Software	M	2	K,L

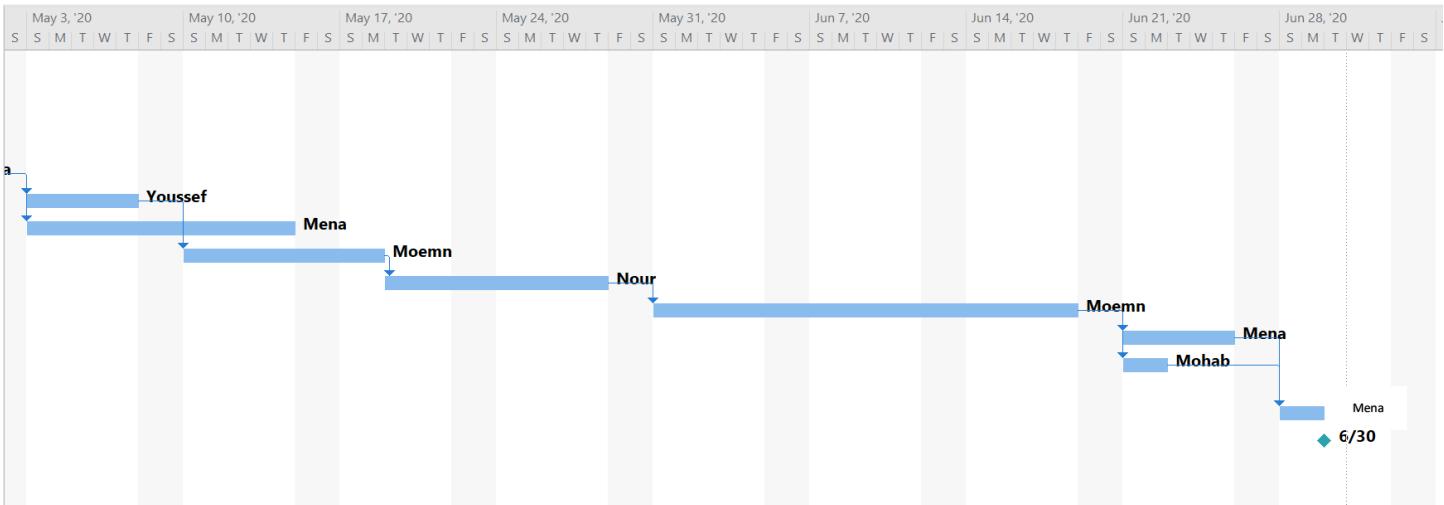
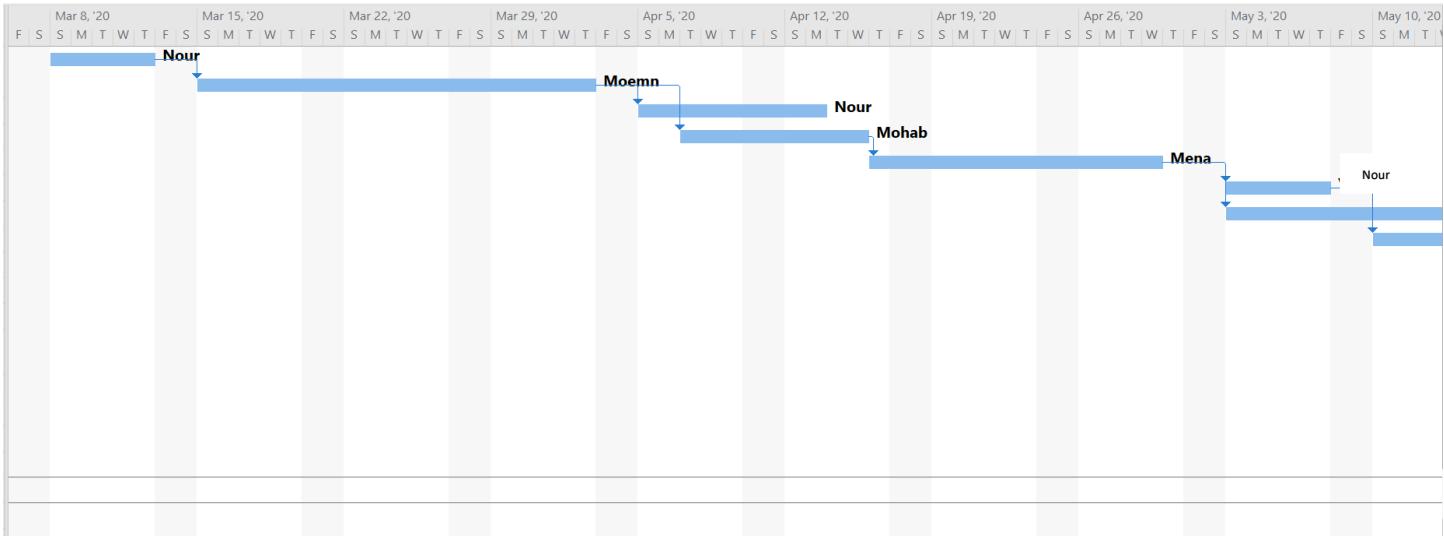
# PERT chart



**Critical path: A,B,D,E,F,H,I,J,K,d,M**



# Gantt chart



Project: Project1 Date: Fri 3/6/20	<table border="1"> <tr><td>Task</td><td></td><td>Inactive Summary</td></tr> <tr><td>Split</td><td></td><td>Manual Task</td></tr> <tr><td>Milestone</td><td></td><td>Duration-only</td></tr> <tr><td>Summary</td><td></td><td>Manual Summary Rollup</td></tr> <tr><td>Project Summary</td><td></td><td>Manual Summary</td></tr> <tr><td>Inactive Task</td><td></td><td>Start-only</td></tr> <tr><td>Inactive Milestone</td><td></td><td>Finish-only</td></tr> <tr><td></td><td></td><td>External Tasks</td></tr> <tr><td></td><td></td><td>External Milestone</td></tr> <tr><td></td><td></td><td>Deadline</td></tr> <tr><td></td><td></td><td>Progress</td></tr> <tr><td></td><td></td><td>Manual Progress</td></tr> </table>	Task		Inactive Summary	Split		Manual Task	Milestone		Duration-only	Summary		Manual Summary Rollup	Project Summary		Manual Summary	Inactive Task		Start-only	Inactive Milestone		Finish-only			External Tasks			External Milestone			Deadline			Progress			Manual Progress
Task		Inactive Summary																																			
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Project Summary		Manual Summary																																			
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Inactive Milestone		Finish-only																																			
		External Tasks																																			
		External Milestone																																			
		Deadline																																			
		Progress																																			
		Manual Progress																																			



# Interview

1-What is your opinion about current system ?

It seems good but we need to upgrade it and make it easier to use and fix current problems.

2-what are the problems that the bank suffer from because of the system ?

problems are :

- Database sometimes fail and this is a disaster.
- Time to calculate profit is too long and sometimes take hours .

3-Does all employees have computer skills ?

Yes, We don't employ any one without ensuring That he has ICDL certification.



## Interview

4-Are computers in Bank up to date ?

No, We need to upgrade it .

5-What are the types of your clients ?

- Ordinary clients.
- VIP clients.

6-What is the differences between these types ?

VIP differ from ordinary on :

- Don't stand on queue.
- More Bank Services.



## Interview

7-Are there any profit sources for bank than the Clients ?

Yes, There is a lot. Like bank services and loans.

8-Does the bank deal with foreign clients or with Local clients only ?

Bank deal with both local and foreign clients.

9-Does the bank give foreign clients loans ?

Yes , but with more constraints than the local client.



## Interview

10-Is bank system attached with other Banks ?

No , but the central bank is a mediator between all banks.

11-Can client withdraw money from ATM doesn't belong to your bank ?

Yes , but small money is subtracted like :

- CIB bank subtract 20 pounds.
- Egypt bank subtract 3 pounds.

12-Does bank deal with all foreign currencies ?

It depends on the relation with this country but we deal with most of the currencies.



## Interview

13-What are the constraints to give someone loan ?

Constraints :

- His monthly salary.
- His properties like (house,car).
- Signing up on cheque.

14-How the bank determines bank interest ?

The central bank determines it.

15-What happens if client doesn't pay loan ?

- Send a warning to him.
- Increase interest by 2% for 6 months.
- Deactivate account.
- Transfer him to legal affairs.



## Interview

16-What are the departments on bank ?

- Treasure department.
- Banking operation department.
- Client service department.
- Credit department.

And all of them are connected together.

17-Do you want to add anything ?

No , thanks.



## Interview report

Nour was sent to the bank as the interviewer. The person that was interviewed was the bank manager. Nour mostly used open-ended questions in order to listen more to the manager and make the manager free to tell more about the bank. Because the interview was with the manager the purpose of the interview was not to know too much details but to know the bigger picture. The interview was about things like the opinions of the clients, the overall performance of the current system, the qualifications of the employees, details about the bank transactions and operations, the loaning system of the bank and finally the departments of the bank. The interview was pretty well and we will take benefits of it trying to minimize the errors of the previous system and make a better one.



# Questionnaire

**Questionnaire**

Questionnaire about the previous system

\*مطلوب

* Ease of Installation -1
5      4      3      2      1
Poor <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Excellent

* Quality of Documentation -2
5      4      3      2      1
Poor <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Excellent

* Quality of Product Support -3
5      4      3      2      1
Poor <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Excellent

* Overall Performance -4
5      4      3      2      1
Poor <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Excellent

* Value Relative to Cost -5
5      4      3      2      1
Poor <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Excellent



# Questionnaire

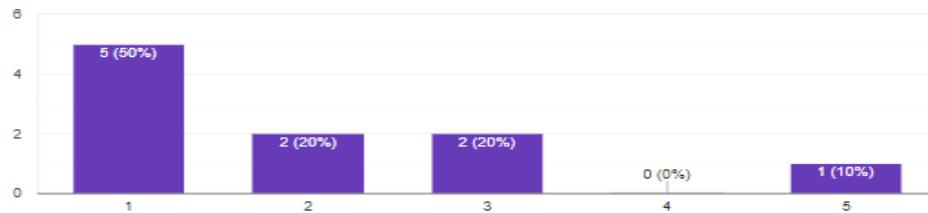
* Hardware Compatibility -6				
5	4	3	2	1
Poor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excellent				
* Operating System Compatibility -7				
5	4	3	2	1
Poor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excellent				
* Consistency with Interface -8				
5	4	3	2	1
Poor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excellent				
* System speed -9				
5	4	3	2	1
Poor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excellent				
* System security -10				
5	4	3	2	1
Poor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excellent				

Submit

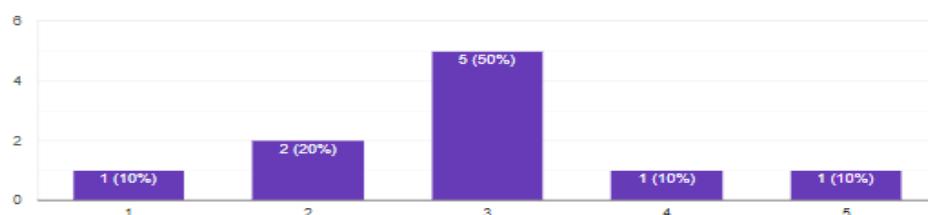


# Questionnaire stats

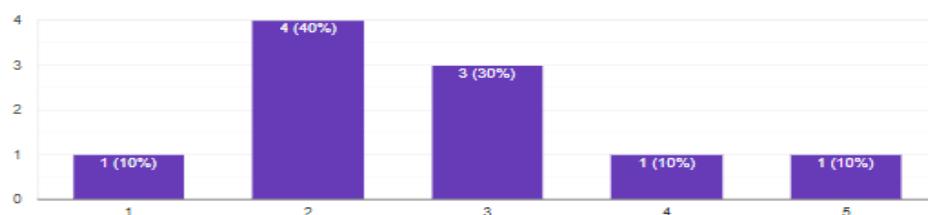
Ease of Installation -1



Quality of Documentation -2



Quality of Product Support -3



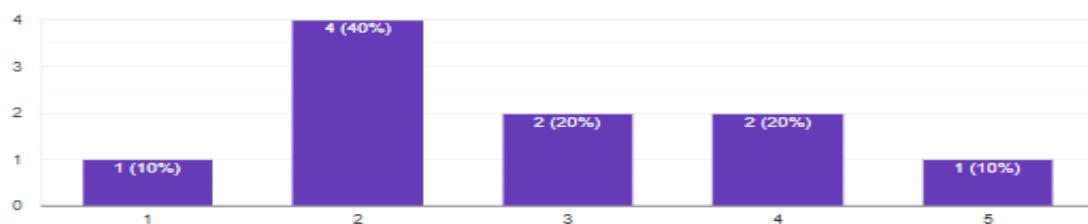


# Questionnaire stats



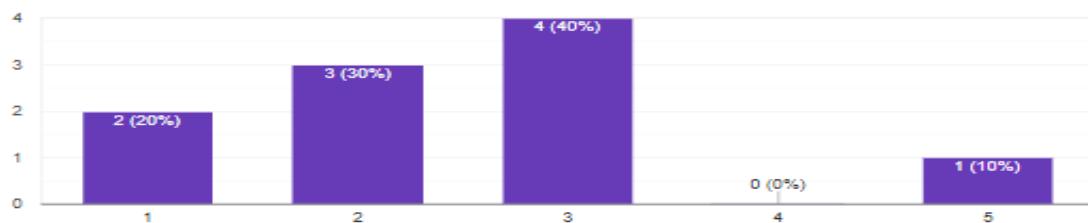
Overall Performance -4

نحو ١٠



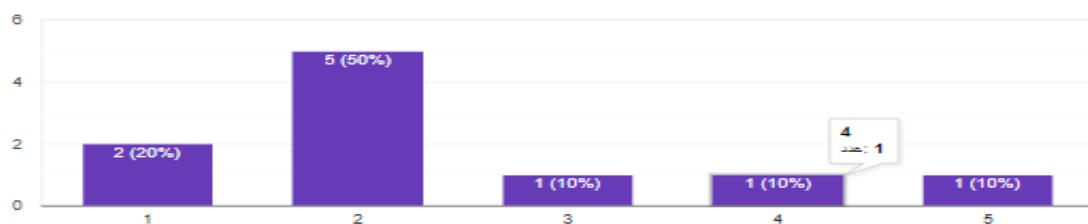
Value Relative to Cost -5

نحو ١٠



Hardware Compatibility -6

نحو ١٠



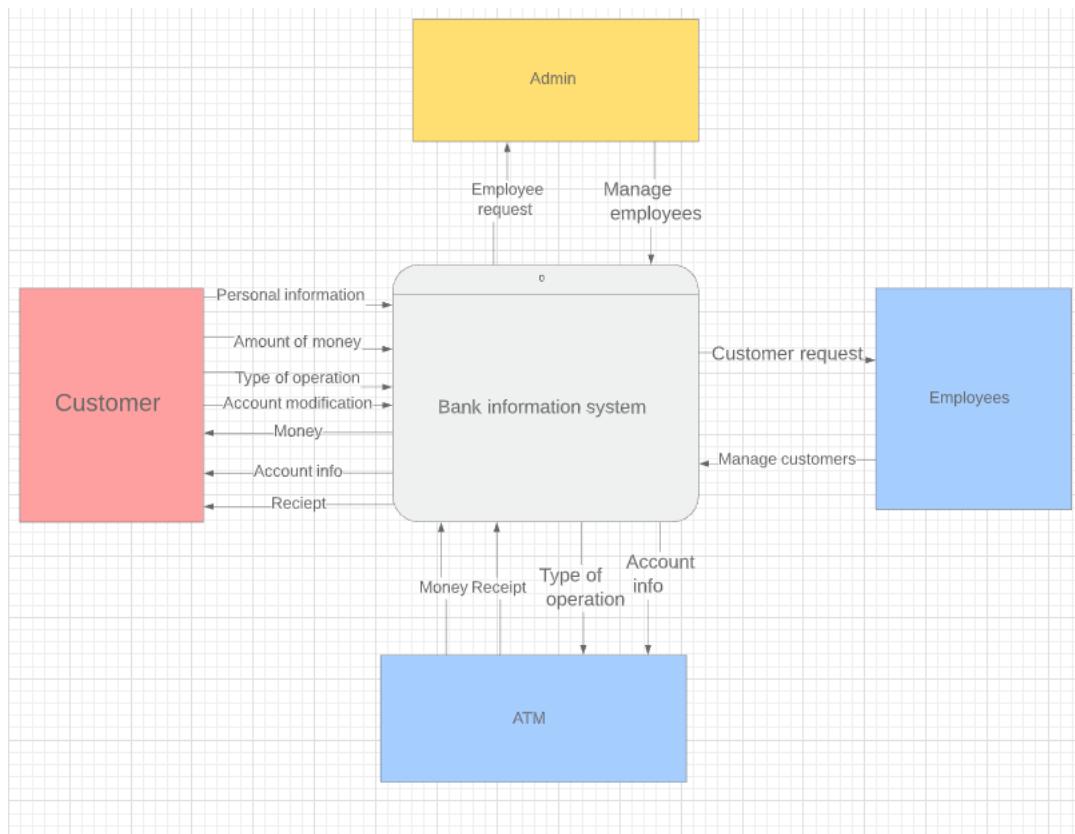


# Questionnaire stats

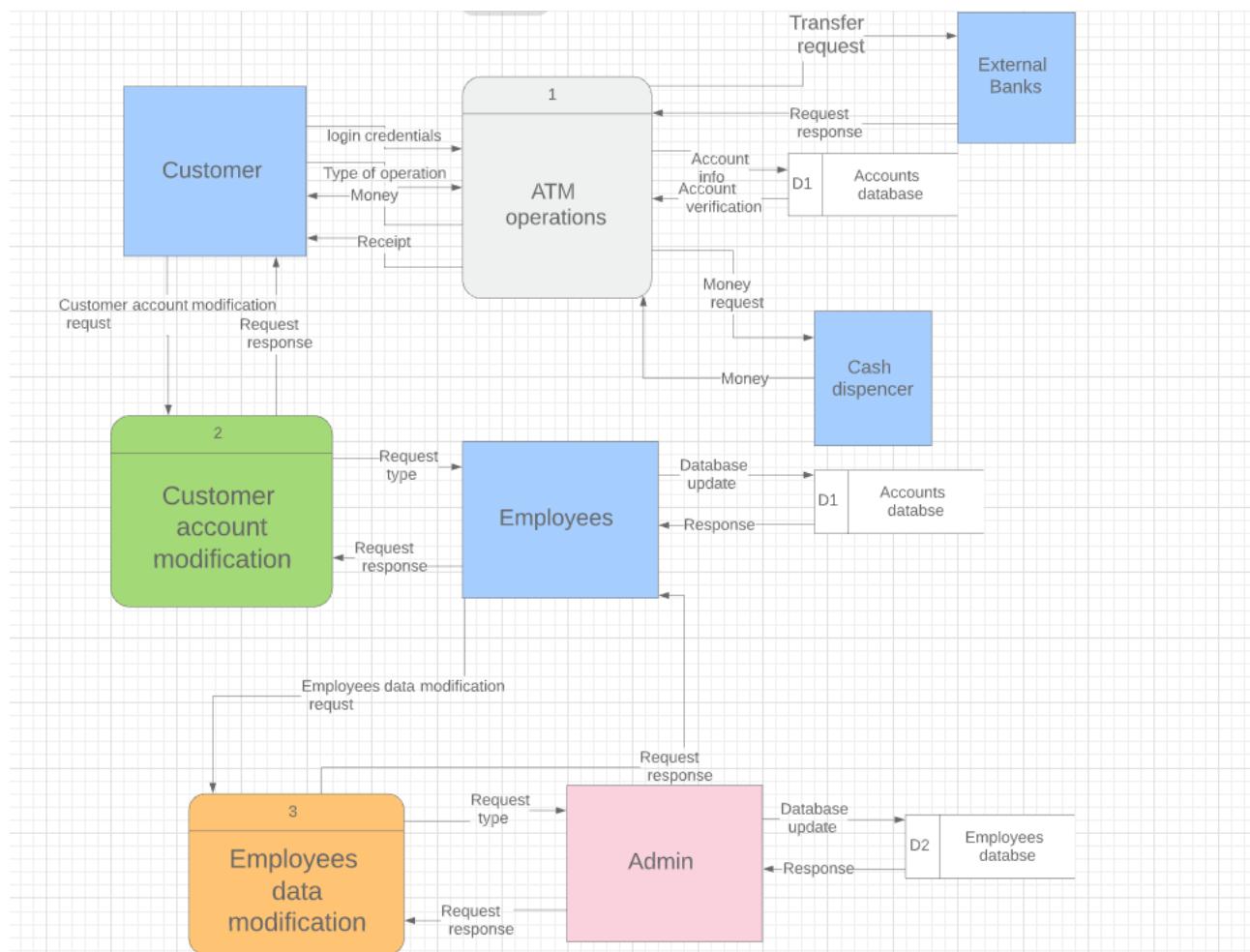




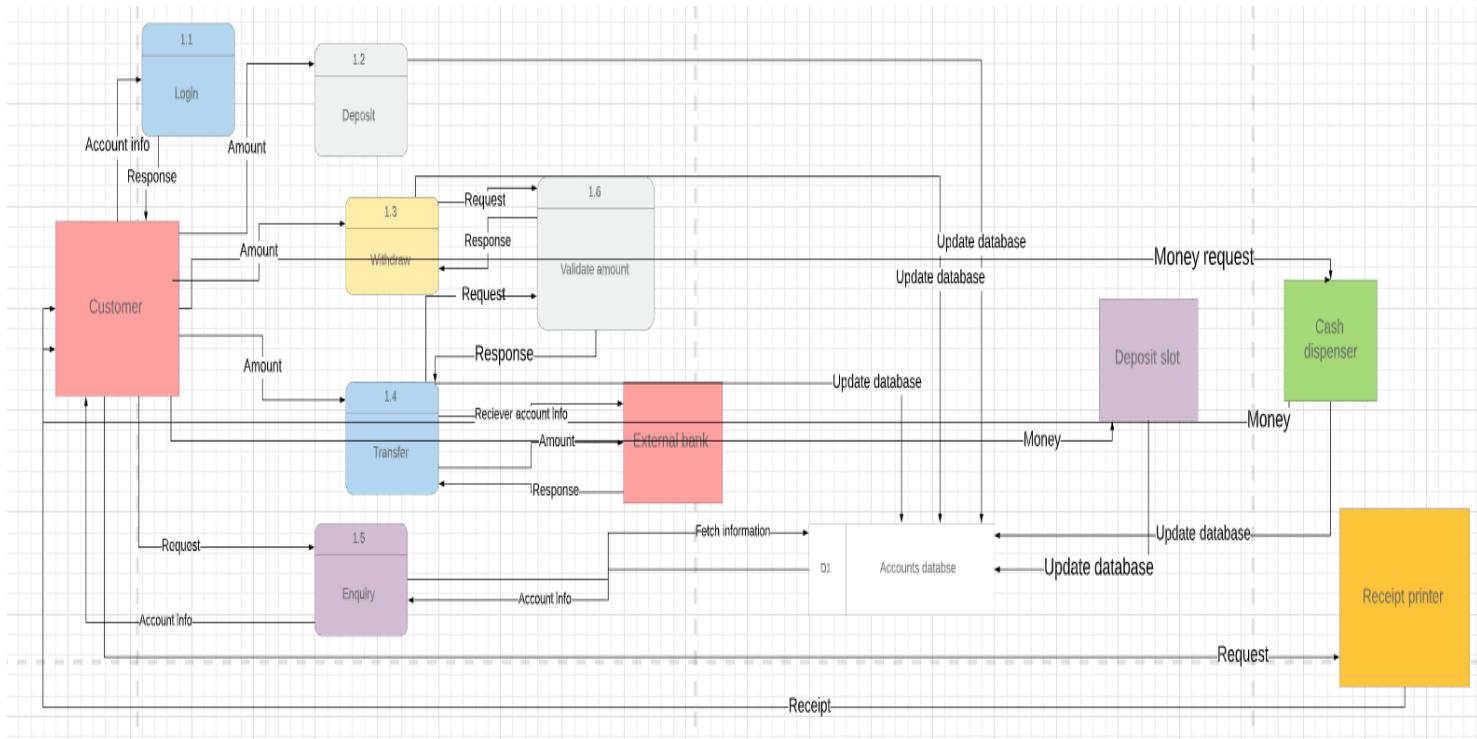
# DFD – context diagram



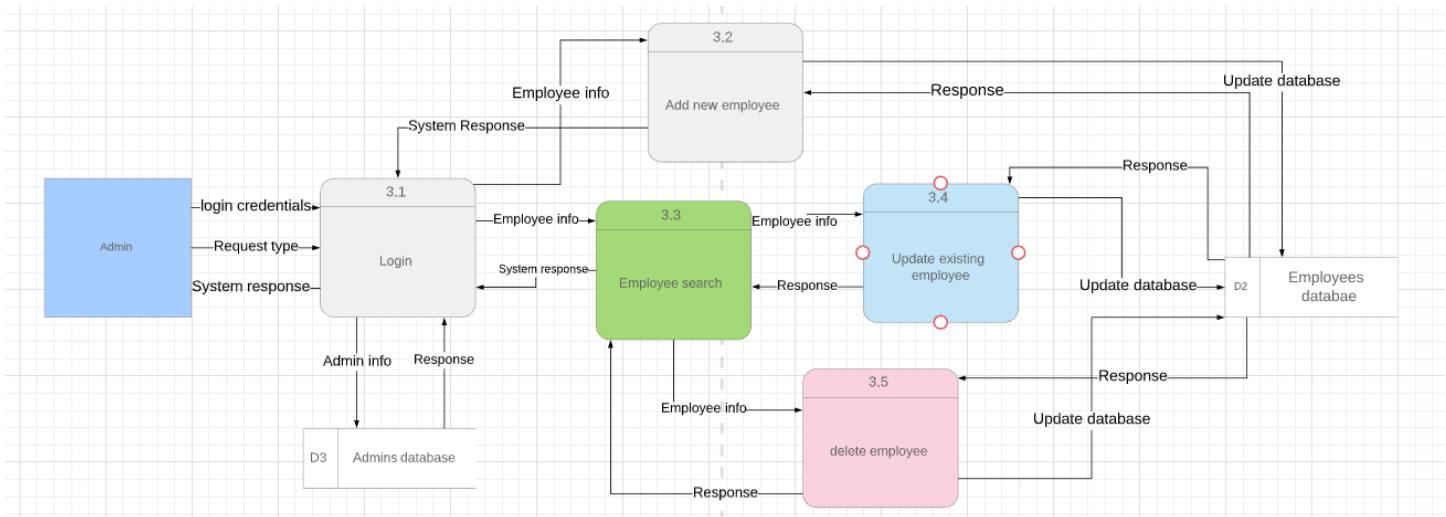
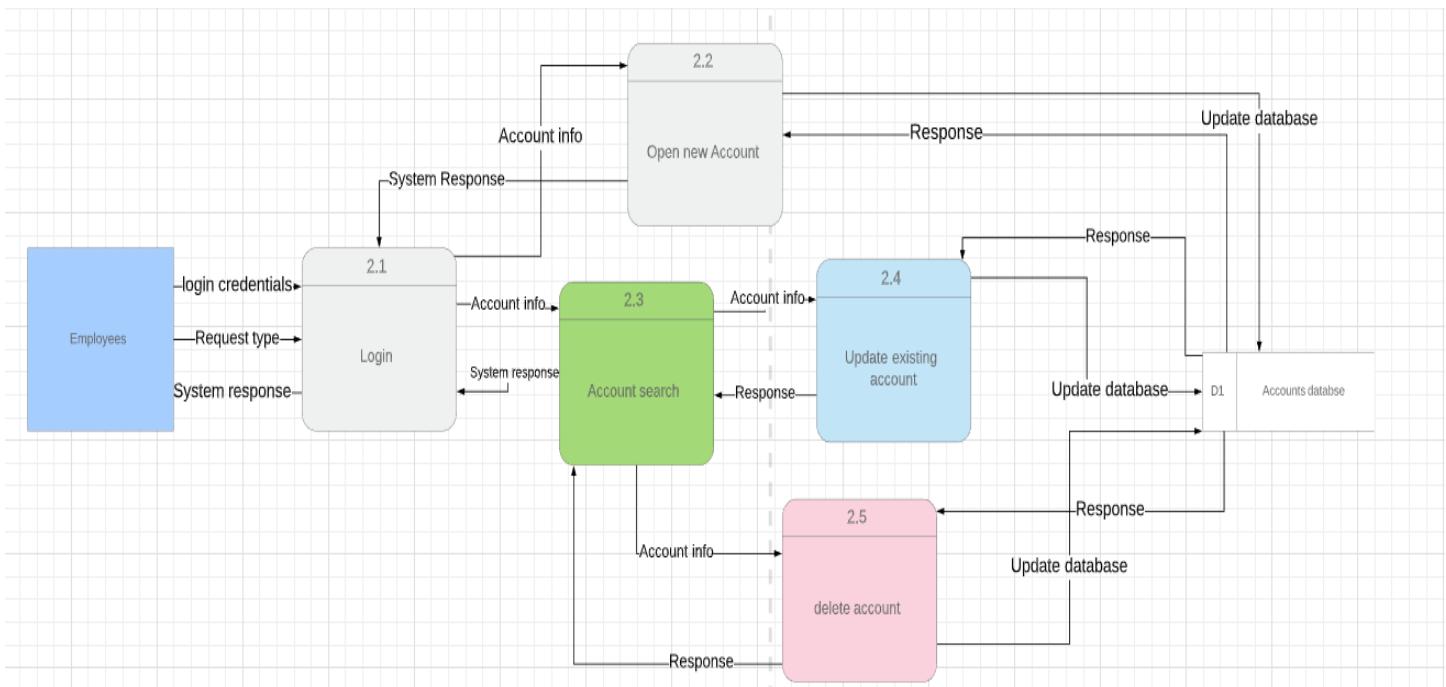
# DFD – Level 0



# DFD – Level 1



# DFD – Level 1





# Data dictionary

## Data Flow Description Form

ID: 1

Name (label): Personal Information

Description: The customer gives his information to the bank

Source: External Entity -> customer	Destination: Process->ATM system
Type of Data Flow	
<input type="checkbox"/> File	<input type="checkbox"/> Screen
<input type="checkbox"/> Report	<input checked="" type="checkbox"/> Form
<input type="checkbox"/> Internal	
Data structure: Account data	Volume/time: 1 minute
comments:	

- **Data Structure:**

**Account data = user ID +**

**username +**

**password +**

**First name+**

**Last name +**

**Phone +**

**[Account type] +**

**Balance +**



# Data dictionary

## Data Element: userID

Name	userID
Alias	User identification
Description	<b>Unique number given to every customer</b>
Length	14
Input Format	9(14)
Output Format	9(14)
Default Value	
Continuous / Discrete	continuous
Type	number
Base / Derived	Base
Upper Limit	99999999999999
Lower Limit	00000000000000
Discrete	
Comments	



# Data dictionary

## Data Element: username

Name	username
Alias	Nick name for the user
Description	Unique name the customer provides it.
Length	20
Input Format	X(20)
Output Format	X(20)
Default Value	
Continuous / Discrete	Discrete
Type	Alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	The user is able to change it through bank employee



# Data dictionary

## Data Element: password

Name	password
Alias	password
Description	User provides it in order to open his account
Length	4
Input Format	9(4)
Output Format	9(4)
Default Value	
Continuous / Discrete	Continuous
Type	Number
Base / Derived	Base
Upper Limit	9999
Lower Limit	0000
Discrete	
Comments	The user is able to change it through bank employee



# Data dictionary

## Data Element: First name

Name	First name
Alias	Customer first name
Description	Contains customer first name
Length	20
Input Format	X(20)
Output Format	X(20)
Default Value	
Continuous / Discrete	Discrete
Type	Alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	



# Data dictionary

## Data Element: Last name

Name	Last name
Alias	Customer or employee last name
Description	Contains customer or employee last name
Length	20
Input Format	X(20)
Output Format	X(20)
Default Value	
Continuous / Discrete	Discrete
Type	Alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	



# Data dictionary

## Data Element: Phone

Name	Phone
Alias	Customer phone number
Description	Contains customer phone number
Length	20
Input Format	9(11)
Output Format	9(11)
Default Value	
Continuous / Discrete	Continuous
Type	Number
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	Only mobile phone numbers allowed



# Data dictionary

## Data Element: Account Type

Name	Account Type
Alias	Account type
Description	Contains the type of account of the customer
Length	6
Input Format	X(6)
Output Format	X(6)
Default Value	
Continuous / Discrete	Discrete
Type	Alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	The bank provides only two types: normal and VIP



# Data dictionary

## Data Element: Balance

Name	Balance
Alias	Account balance
Description	Contains the amount of money with the customer
Length	9
Input Format	9(9)
Output Format	9(9)
Default Value	0
Continuous / Discrete	Continuous
Type	number
Base / Derived	Base
Upper Limit	999999999
Lower Limit	0
Discrete	
Comments	The balance can be changed using withdraw, deposit and transferring from account to another



# Data dictionary

## Data Flow Description Form

ID: 2

Name (label): Amount of money

Description: The customer gives the amount of money he wants to withdraw/deposit.

Source: External Entity -> customer

Destination: Process->ATM system

Type of Data Flow

File     Screen     Report     Form     Internal

Data structure: Amount of money

Volume/time: 5 seconds

comments:

- **Data Structure:**

**Amount of money = money**



# Data dictionary

## Data Element: Money

Name	Money
Alias	Amount of money
Description	Amount of money that will be put or taken in the operation
Length	6
Input Format	9(6)
Output Format	9(6)
Default Value	
Continuous / Discrete	continuous
Type	number
Base / Derived	Base
Upper Limit	999999
Lower Limit	000000
Discrete	
Comments	There is a daily limit to the amount of money that can be deposited or withdrawn or transferred.



# Data dictionary

## Data Flow Description Form

ID: 3

Name (label): Type of customer operation

Description: The customer gives the operation type he wants to perform.

Source: External Entity -> customer	Destination: Process->ATM system
Type of Data Flow	
<input type="checkbox"/> File	<input checked="" type="checkbox"/> Screen
<input type="checkbox"/> Report	<input type="checkbox"/> Form
<input type="checkbox"/> Internal	
Data structure: Type of customer operation	Volume/time: 5 seconds
comments:	

- **Data Structure:**

Type of customer operation = [ATM operation]



# Data dictionary

## Data Element: ATM operation

Name	ATM operation
Alias	ATM operation
Description	The operation that the customer wants to make
Length	10
Input Format	X(10)
Output Format	X(10)
Default Value	
Continuous / Discrete	Discrete
Type	alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	There are four operations: withdraw, deposit, enquiry or transfer



# Data dictionary

## Data Flow Description Form

ID: 4

Name (label): Account info

Description: Gives the customer the account information

Source: Process->ATM system	Destination: External Entity -> customer
-----------------------------	--

Type of Data Flow

<input type="checkbox"/> File	<input checked="" type="checkbox"/> Screen	<input type="checkbox"/> Report	<input type="checkbox"/> Form	<input type="checkbox"/> Internal
-------------------------------	--	---------------------------------	-------------------------------	-----------------------------------

Data structure: Account data	Volume/time: 5 seconds
------------------------------	------------------------

comments:

## Data Flow Description Form

ID: 5

Name (label): Receipt

Description: Gives the customer paper with information

Source: Entity->Receipt printer	Destination: External Entity -> customer
---------------------------------	--

Type of Data Flow

<input type="checkbox"/> File	<input type="checkbox"/> Screen	<input checked="" type="checkbox"/> Report	<input type="checkbox"/> Form	<input type="checkbox"/> Internal
-------------------------------	---------------------------------	--	-------------------------------	-----------------------------------

Data structure: Receipt data	Volume/time: 5 seconds
------------------------------	------------------------

comments:



# Data dictionary

- **Data Structure:**

Receipt data = Receipt serial number +  
Address +  
Date and Time +  
Amount of money +  
Card number

## Data Element: Receipt serial number

Name	Receipt serial number
Alias	Receipt ID
Description	Special number to identify every receipt
Length	15
Input Format	9(15)
Output Format	9(15)
Default Value	
Continuous / Discrete	Continuous
Type	Number
Base / Derived	Base
Upper Limit	999999999999999
Lower Limit	000000000000000
Discrete	
Comments	



# Data dictionary

## Data Element: Address

Name	Address
Alias	Address
Description	The place where the transaction occurred
Length	40
Input Format	X(40)
Output Format	X(40)
Default Value	
Continuous / Discrete	Discrete
Type	alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	



# Data dictionary

## Data Element: Date and time

Name	Date and time
Alias	Date and time
Description	The data and time when the transaction occurred
Length	40
Input Format	X(40)
Output Format	X(40)
Default Value	
Continuous / Discrete	Discrete
Type	alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	



# Data dictionary

## Data Element: Amount of money

Name	Amount of money
Alias	Amount of money
Description	Amount of money in transaction
Length	6
Input Format	9(6)
Output Format	9(6)
Default Value	
Continuous / Discrete	continuous
Type	number
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	



# Data dictionary

## Data Element: Card number

Name	Card number
Alias	Card Id
Description	Special number that identify the card
Length	15
Input Format	9(15)
Output Format	9(15)
Default Value	
Continuous / Discrete	continuous
Type	number
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	



# Data dictionary

## Data Flow Description Form

ID: 6

Name (label): System response

Description: Gives the customer paper with information

Source: Entity->ATM system, login system

    Data store-> accounts database,  
    employees database, admins database

Destination: External Entity -> customer, admin,  
employee

Type of Data Flow

File

Screen

Report

Form

Internal

Data structure: Response data

Volume/time: 5 seconds

comments:

- **Data Structure:**

Response data = [Response]



# Data dictionary

## Data Element: Response

Name	Response
Alias	System response
Description	Boolean value to indicates whether the operation succeeded or not
Length	1
Input Format	2(1)
Output Format	2(1)
Default Value	
Continuous / Discrete	Continuous
Type	Boolean
Base / Derived	Base
Upper Limit	1
Lower Limit	0
Discrete	
Comments	



# Data dictionary

## Data Flow Description Form

ID: 7

Name (label): Employee login

Description: Employee gives his information in order to login to the system

Source: Entity->Employee

Destination: Process-> Login

Type of Data Flow

File

Screen

Report

Form

Internal

Data structure: Response data

Volume/time: 5 seconds

comments:

- **Data Structure:**

**Employee data = emp ID +**

absence trials +

First name+

Last name +

salary +

incentives +

address



# Data dictionary

## Data Element: empID

Name	emp ID
Alias	Employee identification
Description	Unique number given to every employee
Length	14
Input Format	9(14)
Output Format	9(14)
Default Value	
Continuous / Discrete	continuous
Type	number
Base / Derived	Base
Upper Limit	99999999999999
Lower Limit	00000000000000
Discrete	
Comments	



# Data dictionary

## Data Element: absenceTrials

Name	Absence trials
Alias	Number of trials
Description	Number of days that employee did not attend the company
Length	2
Input Format	9(2)
Output Format	9(2)
Default Value	0
Continuous / Discrete	continuous
Type	numbers
Base / Derived	Base
Upper Limit	30
Lower Limit	0
Discrete	
Comments	After 30 days of absences the employee will be automatically fired



# Data dictionary

## Data Element: First name

Name	First name
Alias	Employee first name
Description	Contains employee first name
Length	20
Input Format	X(20)
Output Format	X(20)
Default Value	
Continuous / Discrete	Discrete
Type	Alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	



# Data dictionary

## Data Element: Last name

Name	Last name
Alias	Employee last name
Description	Contains Employee last name
Length	20
Input Format	X(20)
Output Format	X(20)
Default Value	
Continuous / Discrete	Discrete
Type	Alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	



# Data dictionary

## Data Element: Salary

Name	Salary
Alias	Employee salary
Description	Contains the amount of money which is paid to the employee
Length	9
Input Format	9(9)
Output Format	9(9)
Default Value	0
Continuous / Discrete	Continuous
Type	number
Base / Derived	Base
Upper Limit	999999999
Lower Limit	1000
Discrete	
Comments	



# Data dictionary

## Data Element: Incentives

Name	Incentives
Alias	Employee incentives
Description	Contains the percentage from the salary that the employee will additionally take
Length	3
Input Format	9(3)
Output Format	9(3)
Default Value	0
Continuous / Discrete	Continuous
Type	number
Base / Derived	Base
Upper Limit	100
Lower Limit	0
Discrete	
Comments	



# Data dictionary

## Data Element: Address

Name	Address
Alias	Employee Address
Description	The place where the employee resident
Length	40
Input Format	X(40)
Output Format	X(40)
Default Value	
Continuous / Discrete	Discrete
Type	alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	



# Data dictionary

## Data Flow Description Form

ID: 8

Name (label): Type of employee operation

Description: The employee gives the operation type he wants to perform.

Source: External Entity -> employee

Destination: data store ->Accounts database

Type of Data Flow

File

Screen

Report

Form



Internal

Data structure: Type of employee operation

Volume/time: 5 seconds

comments:

- **Data Structure:**

Type of employee operation = [employee operation]



# Data dictionary

## Data Element: Employee operation

Name	Employee operation
Alias	Employee operation
Description	The operation that the employee wants to make
Length	10
Input Format	X(10)
Output Format	X(10)
Default Value	
Continuous / Discrete	Discrete
Type	alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	There are four operations: add new customer, update a customer or delete



# Data dictionary

## Data Flow Description Form

ID: 9

Name (label): Admin login

Description: Admin gives his information in order to login to the system

Source: Entity->Admin	Destination: Process-> Login
Type of Data Flow <input type="checkbox"/> File <input checked="" type="checkbox"/> Screen <input type="checkbox"/> Report <input type="checkbox"/> Form <input type="checkbox"/> Internal	
Data structure: Response data	Volume/time: 5 seconds
comments:	

- **Data Structure:**

**Admin data = emp ID +**

loginPWD

absence trials +

First name+

Last name +

salary +

incentives +



# Data dictionary

## Data Element: empID

Name	emp ID
Alias	Admin identification
Description	Unique number given to every admin
Length	14
Input Format	9(14)
Output Format	9(14)
Default Value	
Continuous / Discrete	continuous
Type	number
Base / Derived	Base
Upper Limit	99999999999999
Lower Limit	00000000000000
Discrete	
Comments	



# Data dictionary

## Data Element: absenceTrials

Name	Absence trials
Alias	Number of trials
Description	Number of days that admin did not attend the company
Length	2
Input Format	9(2)
Output Format	9(2)
Default Value	0
Continuous / Discrete	continuous
Type	numbers
Base / Derived	Base
Upper Limit	30
Lower Limit	0
Discrete	
Comments	After 30 days of absences the admin will be automatically fired



# Data dictionary

## Data Element: First name

Name	First name
Alias	Admin first name
Description	Contains admin first name
Length	20
Input Format	X(20)
Output Format	X(20)
Default Value	
Continuous / Discrete	Discrete
Type	Alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	



# Data dictionary

## Data Element: Last name

Name	Last name
Alias	Admin last name
Description	Contains admin last name
Length	20
Input Format	X(20)
Output Format	X(20)
Default Value	
Continuous / Discrete	Discrete
Type	Alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	



# Data dictionary

## Data Element: Salary

Name	Salary
Alias	Admin salary
Description	Contains the amount of money which is paid to the admin
Length	9
Input Format	9(9)
Output Format	9(9)
Default Value	0
Continuous / Discrete	Continuous
Type	number
Base / Derived	Base
Upper Limit	999999999
Lower Limit	5000
Discrete	
Comments	



# Data dictionary

## Data Element: Incentives

Name	Incentives
Alias	Admin incentives
Description	Contains the percentage from the salary that the admin will additionally take
Length	3
Input Format	9(3)
Output Format	9(3)
Default Value	0
Continuous / Discrete	Continuous
Type	number
Base / Derived	Base
Upper Limit	100
Lower Limit	0
Discrete	
Comments	



# Data dictionary

## Data Element: Address

Name	Address
Alias	Admin Address
Description	The place where the admin resident
Length	40
Input Format	X(40)
Output Format	X(40)
Default Value	
Continuous / Discrete	Discrete
Type	alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	



# Data dictionary

## Data Flow Description Form

ID: 10

Name (label): Type of admin operation

Description: The admin gives the operation type he wants to perform.

Source: External Entity -> employee	Destination: data store ->Accounts database
-------------------------------------	---

Type of Data Flow

<input type="checkbox"/> File	<input type="checkbox"/> Screen	<input type="checkbox"/> Report	<input type="checkbox"/> Form	<input checked="" type="checkbox"/> Internal
-------------------------------	---------------------------------	---------------------------------	-------------------------------	--

Data structure: Type of employee operation	Volume/time: 5 seconds
--	------------------------

comments:

- **Data Structure:**

Type of admin operation = [employee operation]



# Data dictionary

## Data Element: Admin operation

Name	Admin operation
Alias	Admin operation
Description	The operation that the admin wants to make
Length	10
Input Format	X(10)
Output Format	X(10)
Default Value	
Continuous / Discrete	Discrete
Type	alphabetic
Base / Derived	Base
Upper Limit	
Lower Limit	
Discrete	
Comments	There are four operations: add new employee, update employee or delete



# Data dictionary

## Accounts Info Data Store Description Form

**ID:** D1

**Name:** Accounts

**Alias:** Accounts data

**Description:** Contains information about customer required to complete his request

**File Type:**  Computer  Manual

**File Format:**

Database  Indexed  Sequential  Direct

**Record Size (Characters):** 500

**Number of records (Maximum):** 80000000

**Number of records (Average):** 20000000

**Growth per year (percent):** 3%

**Dataset name:** Account Database

**Data structure:** Account data

**Primary key:** userID

**Secondary key:** NationalID

**Comments:** Customer password is encrypted using sophisticated algorithm in case that the database got



# Data dictionary

## Employees Info Data Store Description Form

**ID:** D2

**Name:** Employee

**Alias:** Employee data

**Description:** Contains information about employee

**File Type:**  Computer  Manual

**File Format:**

Database  Indexed  Sequential  Direct

**Record Size (Characters):** 500

**Number of records (Maximum):** 1000

**Number of records (Average):** 500

**Growth per year (percent):** 3%

**Dataset name:** Employee Database

**Data structure:** Employee data

**Primary key:** EmpID

**Secondary key:** name

**Comments:** Employee password is encrypted using sophisticated algorithm in case that the database got hacked



# Data dictionary

**ID:** D3

**Name:** Admin

**Alias:** Admin data

**Description:** Contains information about admin.

**File Type:**  Computer  Manual

**File Format:**

Database  Indexed  Sequential  Direct

**Record Size (Characters):** 500

**Number of records (Maximum):** 15

**Number of records (Average):** 5

**Growth per year (percent):** 1%

**Dataset name:** Admins Database

**Data structure:** Admins data

**Primary key:** EmpID

**Secondary key:** name

**Comments:** Admin password is encrypted using sophisticated algorithm in case that the database got hacked



# Process specifications

## Process Specification Form

Number: 1.1

Name: Customer login

Description: determine if the username and password match or not

### **Input Data Flow:**

(1) Customer info

### **Output Data Flow**

System response

### **Type of Process**

Online ✓

Batch

Manual

### **Process Logic:**

**Refer to name:** determine item quantity logic

Structured English ✓

Decision Table

Decision Tree ✓

### **Unresolved Issues:** no



# Process specifications

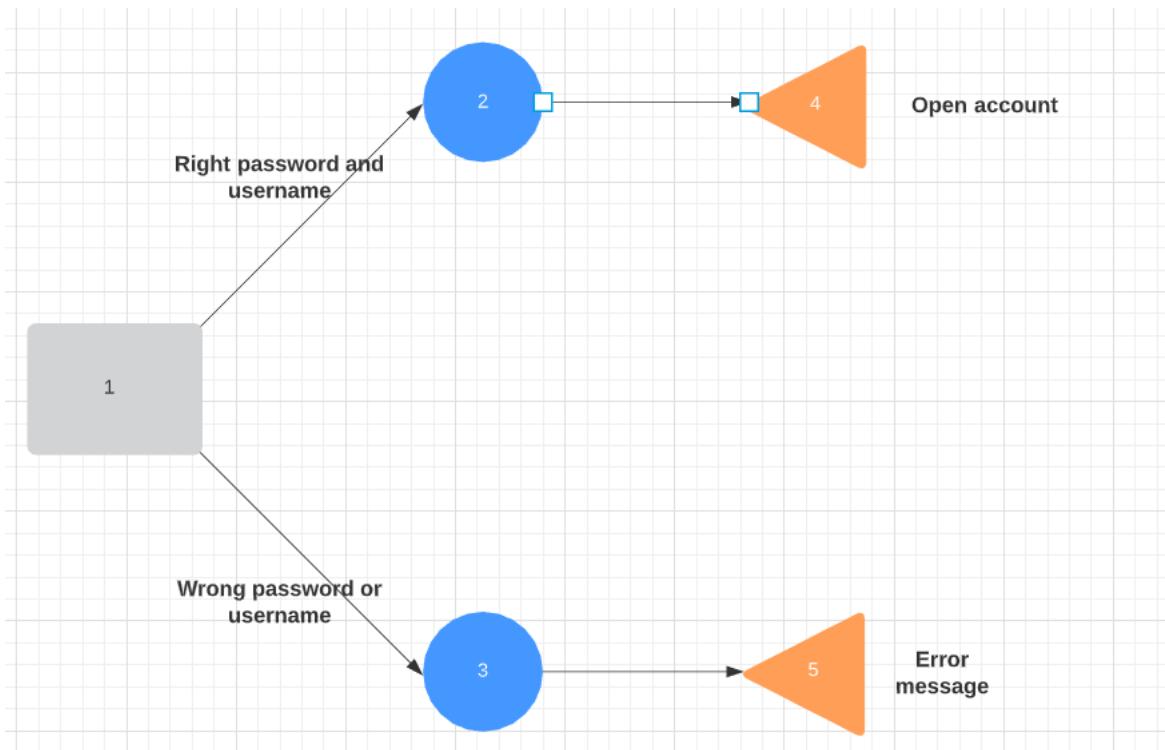
**IF** the password given is the same password that is associated with the username in accounts database **THEN**

Open the account and proceed to the operations

**ELSE**

Show error message

**ENDIF**





# Process specifications

## Process Specification Form

Number: 2.1

Name: Employee login

Description: determine if the Emp id and password match or not

### **Input Data Flow:**

(1) Login credentials

### **Output Data Flow**

System response

### **Type of Process**

Online ✓

Batch

Manual

### **Process Logic:**

**Refer to name:** determine item quantity logic

Structured English ✓

Decision Table

Decision Tree ✓

**Unresolved Issues:** no



# Process specifications

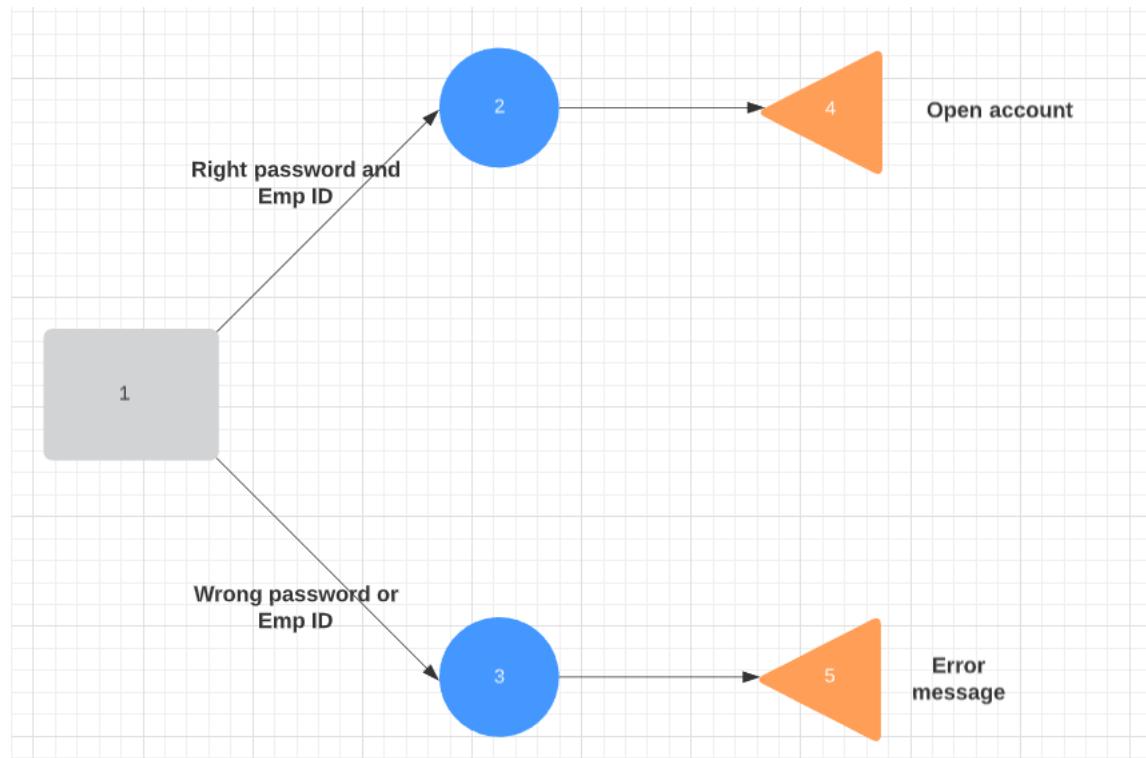
**IF** the password given is the same password that is associated with the Emp ID in employees database **THEN**

Open the account and proceed to the operations

**ELSE**

Show error message

**ENDIF**





# Process specifications

## Process Specification Form

Number: 3.1

Name: Admin login

Description: determine if the Emp id and password match or not

### **Input Data Flow:**

(1) Login credentials

### **Output Data Flow**

System response

### **Type of Process**

Online ✓

Batch

Manual

### **Process Logic:**

**Refer to name:** determine item quantity logic

Structured English ✓

Decision Table

Decision Tree ✓

**Unresolved Issues:** no



# Process specifications

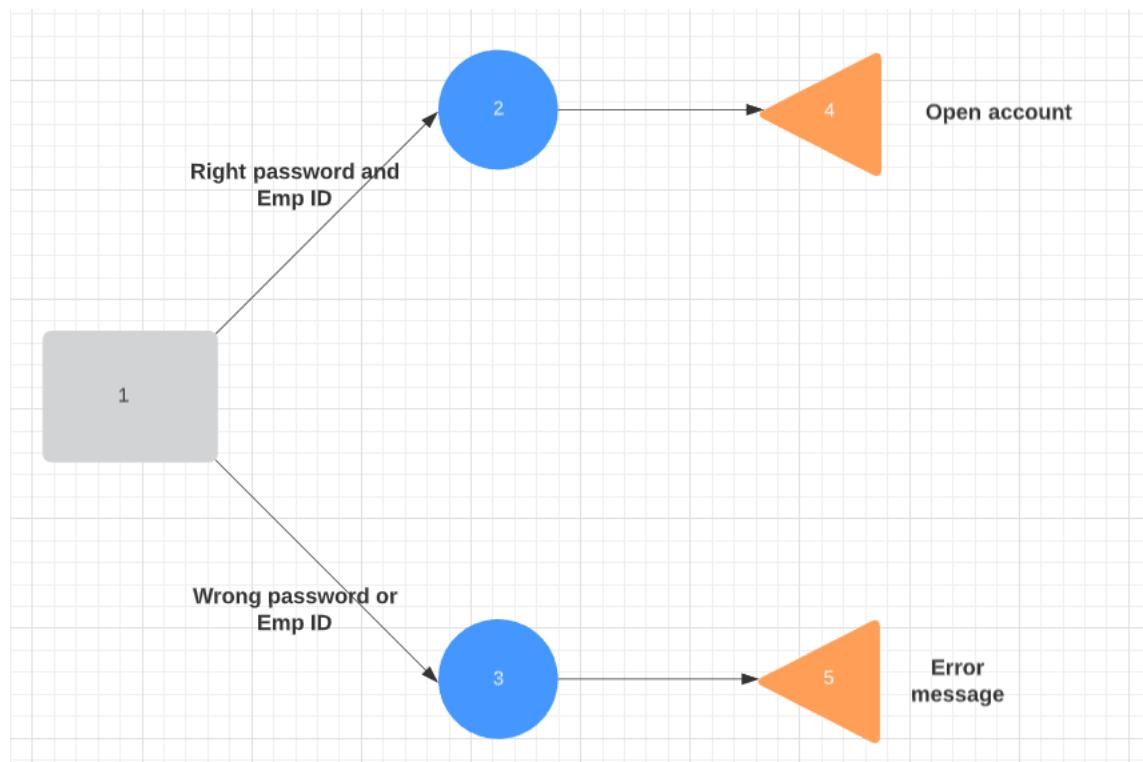
**IF** the password given is the same password that is associated with the Emp ID in admins database **THEN**

Open the account and proceed to the operations

**ELSE**

Show error message

**ENDIF**





# Process specifications

## Process Specification Form

Number: 1

Name: ATM operations

Description: Take the type of operation that the user wants to make and do it

### **Input Data Flow:**

(1) type of operation

### **Output Data Flow**

(1) Money , (2) receipt

### **Type of Process**

Online ✓

Batch

Manual

### **Process Logic:**

**Refer to name:** determine item quantity logic

Structured English ✓

Decision Table

Decision Tree

✓

**Unresolved Issues:** no



# Process specifications

**IF** deposit **THEN**

Receive the money from deposit slot and print receipt

**ELSE IF** withdraw **THEN**

**IF** wanted money > balance **THEN**

Show error message

**ELSE**

Give money to client and print receipt

**END IF**

**ELSE IF** enquiry **THEN**

Print receipt with customer info

**ELSE IF** transfer **THEN**

**IF** transferred money > balance **THEN**

Show error message

**ELSE**

**IF** receiver account not found **THEN**

Show error message

**ELSE**

Receive the money from deposit slot and print receipt

**END IF**

**END IF**

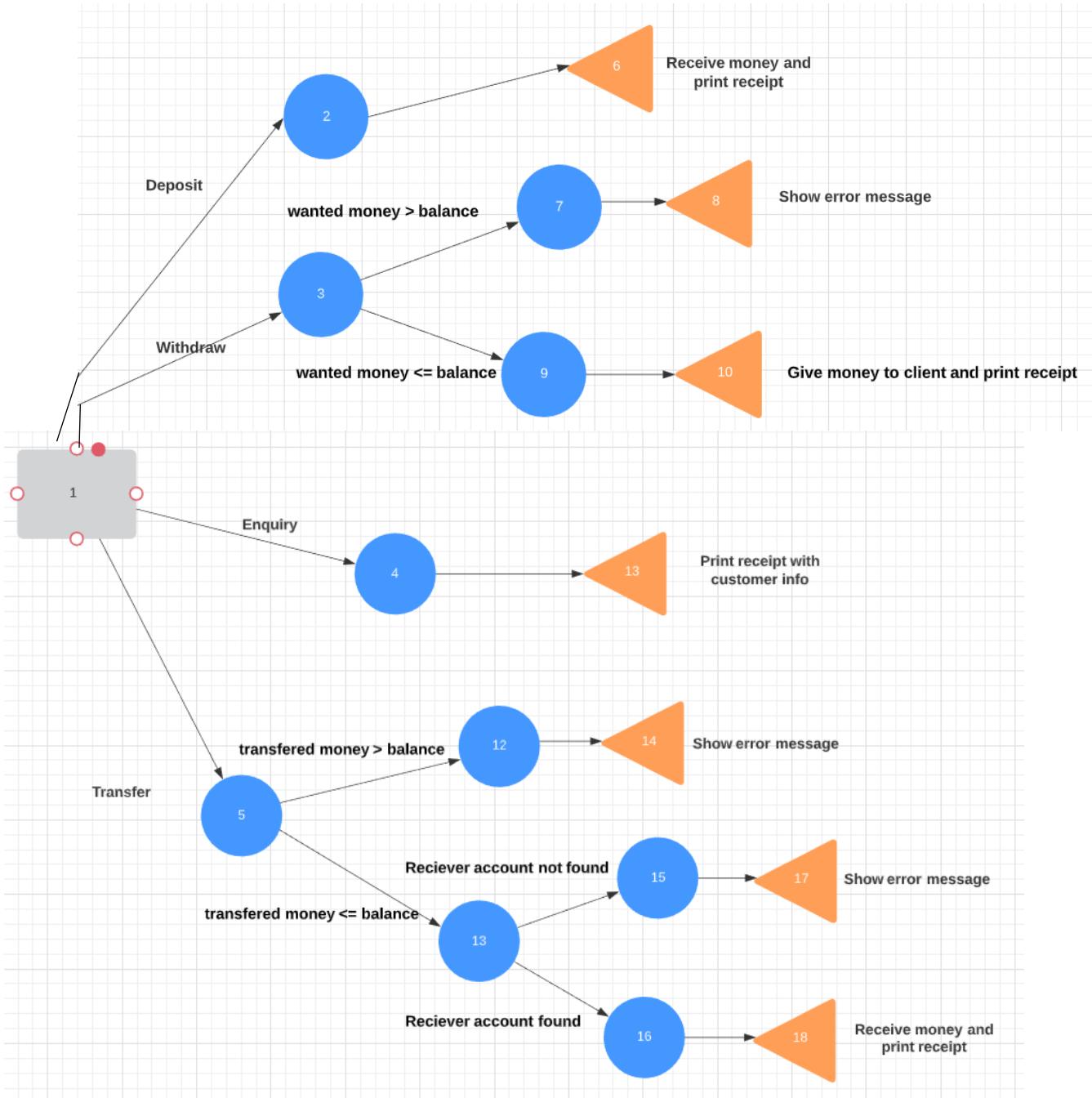
**ELSE**

Give money to client and print receipt

**ENDIF**



# Process specifications





# Process specifications

## Process Specification Form

**Number:** 2

**Name:** Customer account modification

**Description:** Take the type of operation that the employee wants to do to customer and do it

### **Input Data Flow:**

(1) type of operation

### **Output Data Flow**

System response

### **Type of Process**

Online

Batch

Manual

### **Process Logic:**

**Refer to name:** determine item quantity logic

Structured English

Decision Table

Decision Tree

**Unresolved Issues:** no



# Process specifications

**IF Add customer THEN**

Receive information from client and open a new account

**ELSE**

**IF userID found THEN**

**IF update THEN**

Take new information and update database

**ELSE IF delete THEN**

Delete account from database

**ENDIF**

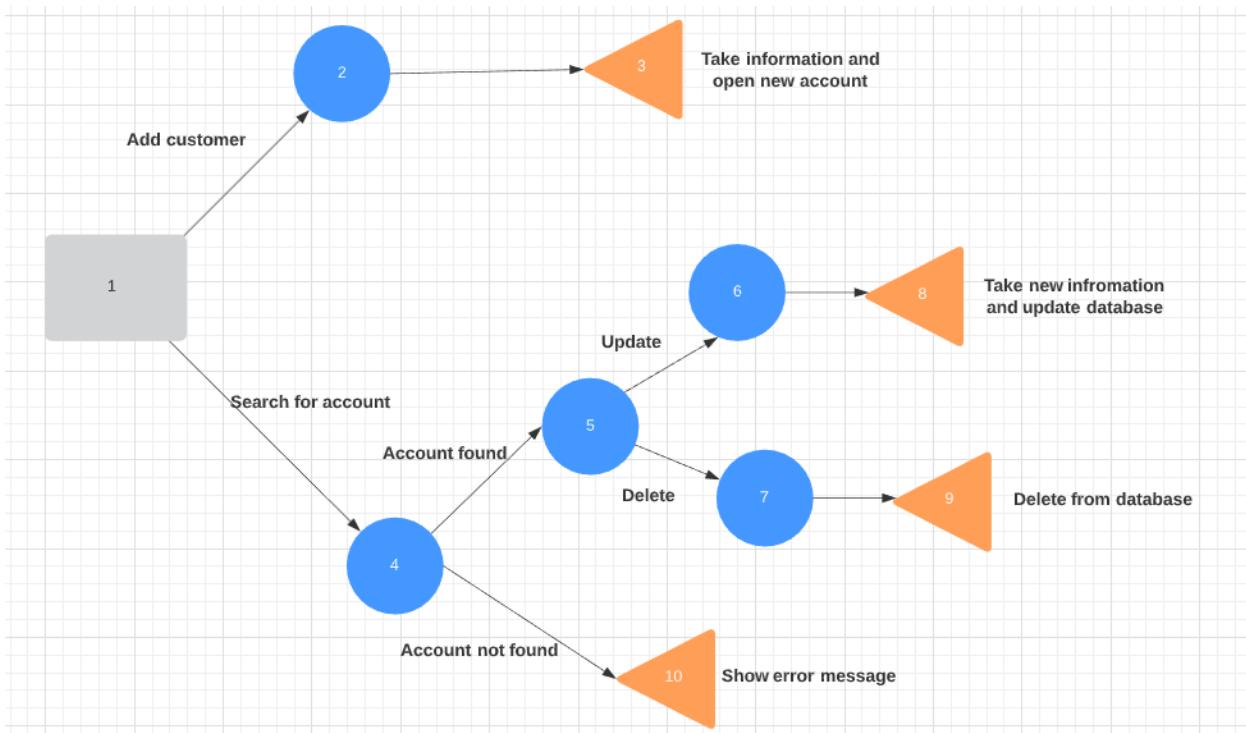
**ELSE**

Show error message

**END IF**

**END IF**

# Process specifications





# Process specifications

## Process Specification Form

Number: 3

Name: Employee account modification

Description: Take the type of operation that the admin wants to do to employee and do it

### **Input Data Flow:**

(1) type of operation

### **Output Data Flow**

System response

### **Type of Process**

Online

Batch

Manual

### **Process Logic:**

**Refer to name:** determine item quantity logic

Structured English

Decision Table

Decision Tree

**Unresolved Issues:** no



# Process specifications

**IF Add employee THEN**

Receive information from employee and add a new employee

**ELSE**

**IF empID found THEN**

**IF update THEN**

Take new information and update database

**ELSE IF delete THEN**

Delete account from database

**ENDIF**

**ELSE**

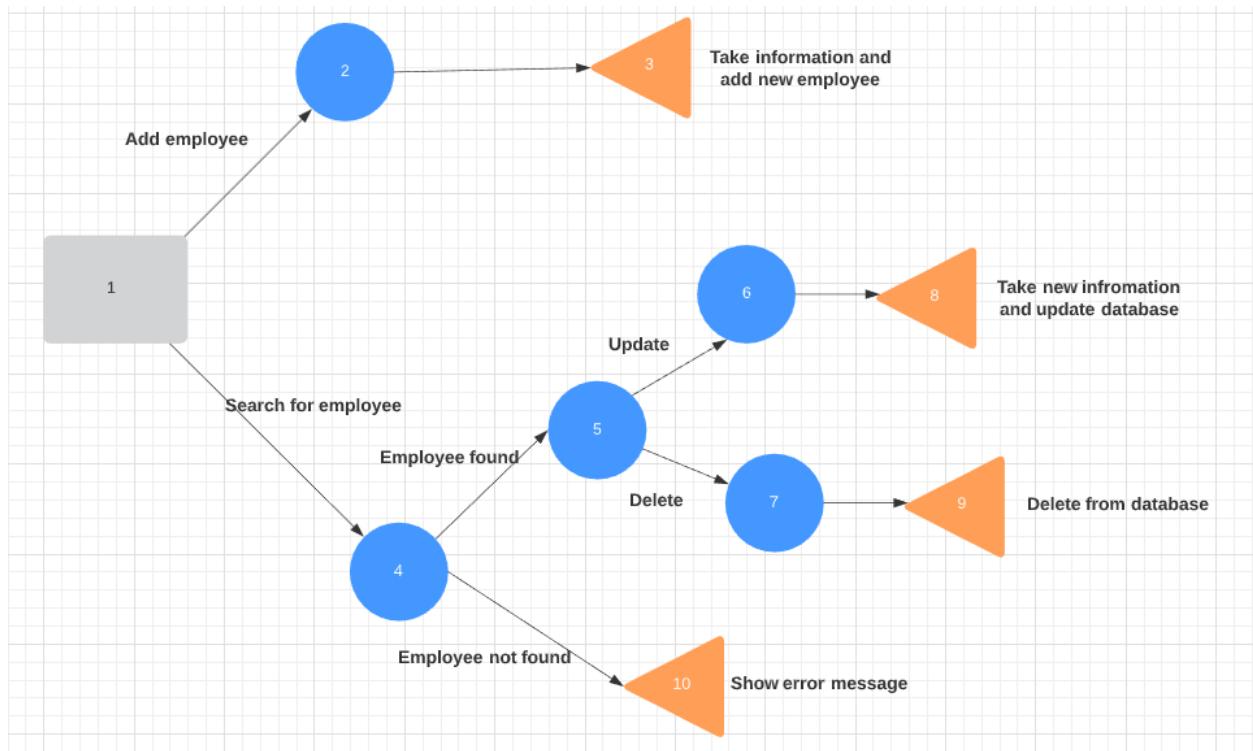
Show error message

**END IF**

**END IF**



# Process specifications





# Normalization

1NF:

Client Table:

userID	fname	lname	phone	nationalID	city	country	street
--------	-------	-------	-------	------------	------	---------	--------

Account Table:

userID	password	Type	Currency	Balance	LogInTrials
--------	----------	------	----------	---------	-------------

Employee Table:

empID	fname	lname	salary	Incentives	city	country	street	AbcenceTrials
-------	-------	-------	--------	------------	------	---------	--------	---------------

Admin Table:

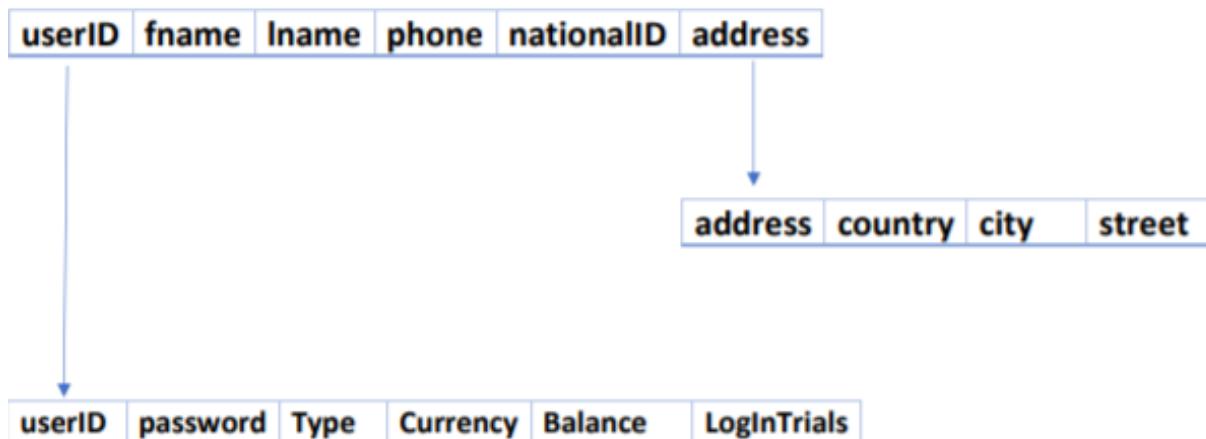
empID	fname	lname	LogInPWD	Salary	city	country	street	AbcenceTrials
-------	-------	-------	----------	--------	------	---------	--------	---------------



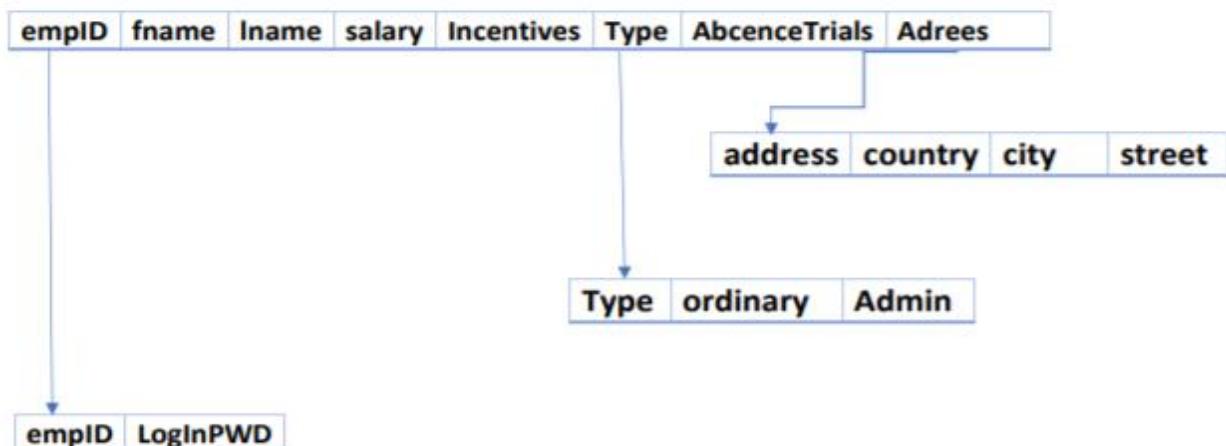
# Normalization

2NF:

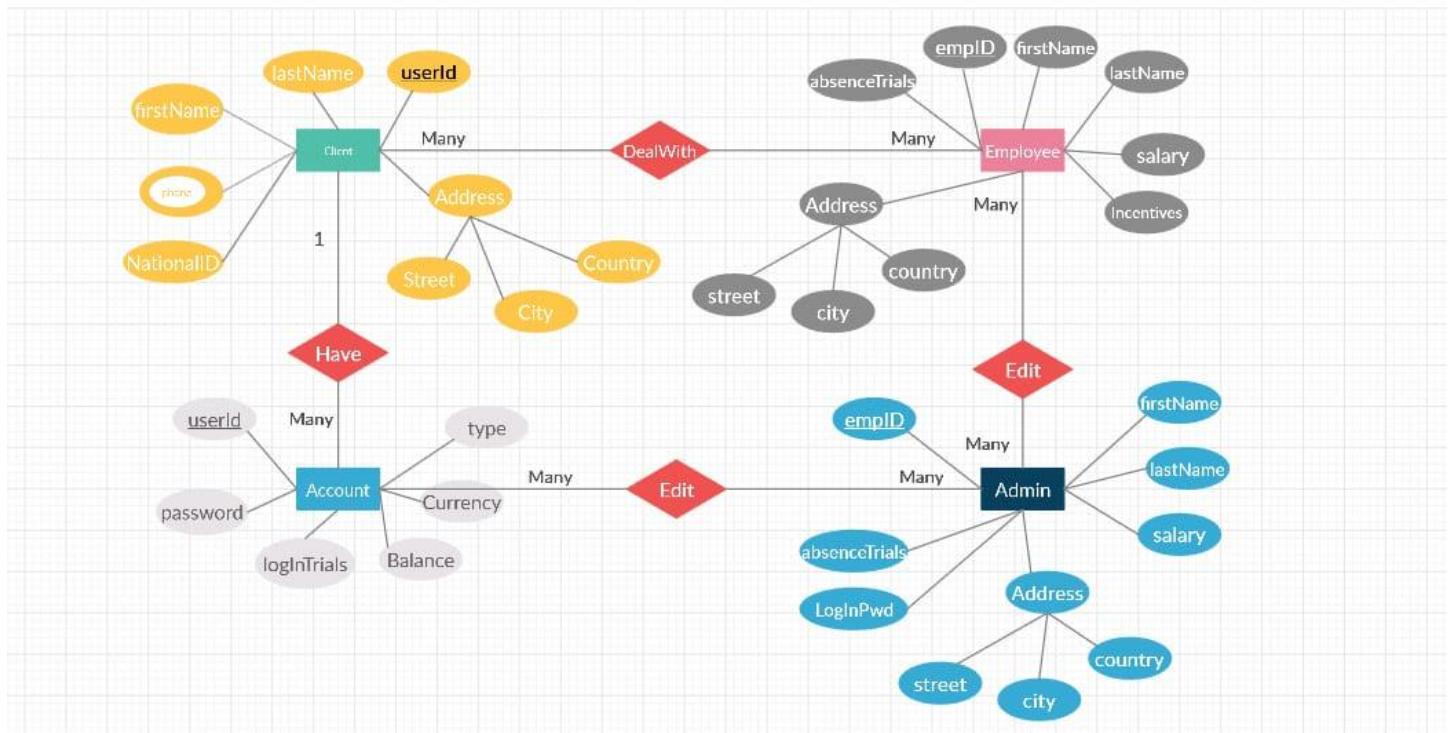
Client Table:



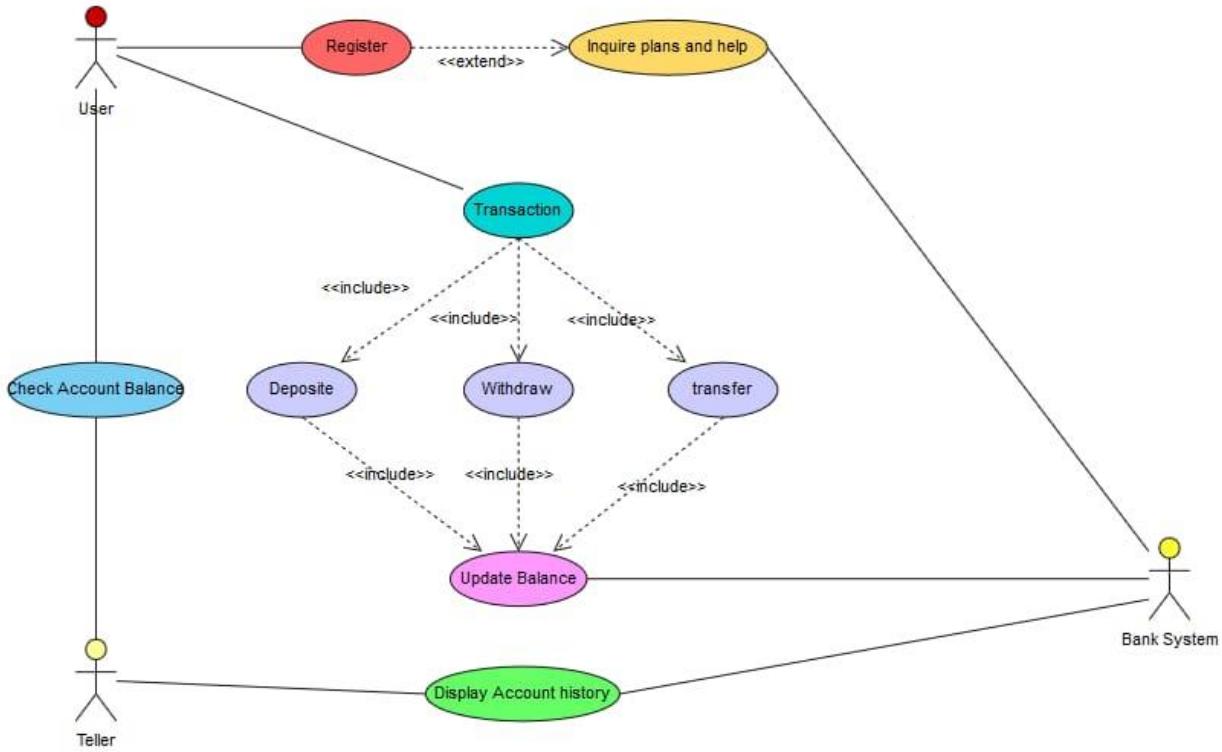
Employee Table:



# ERD

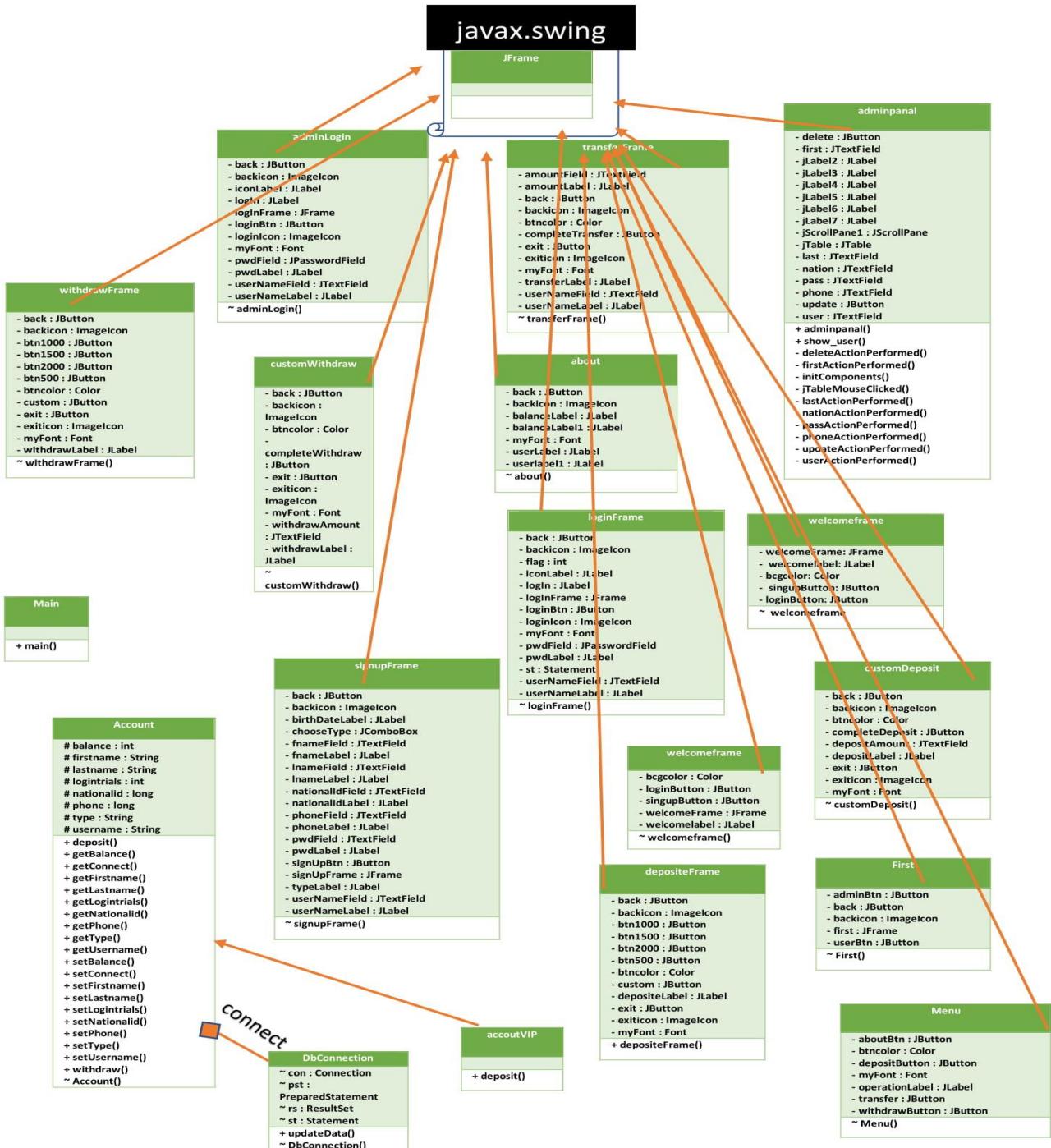


# UML- Use Case



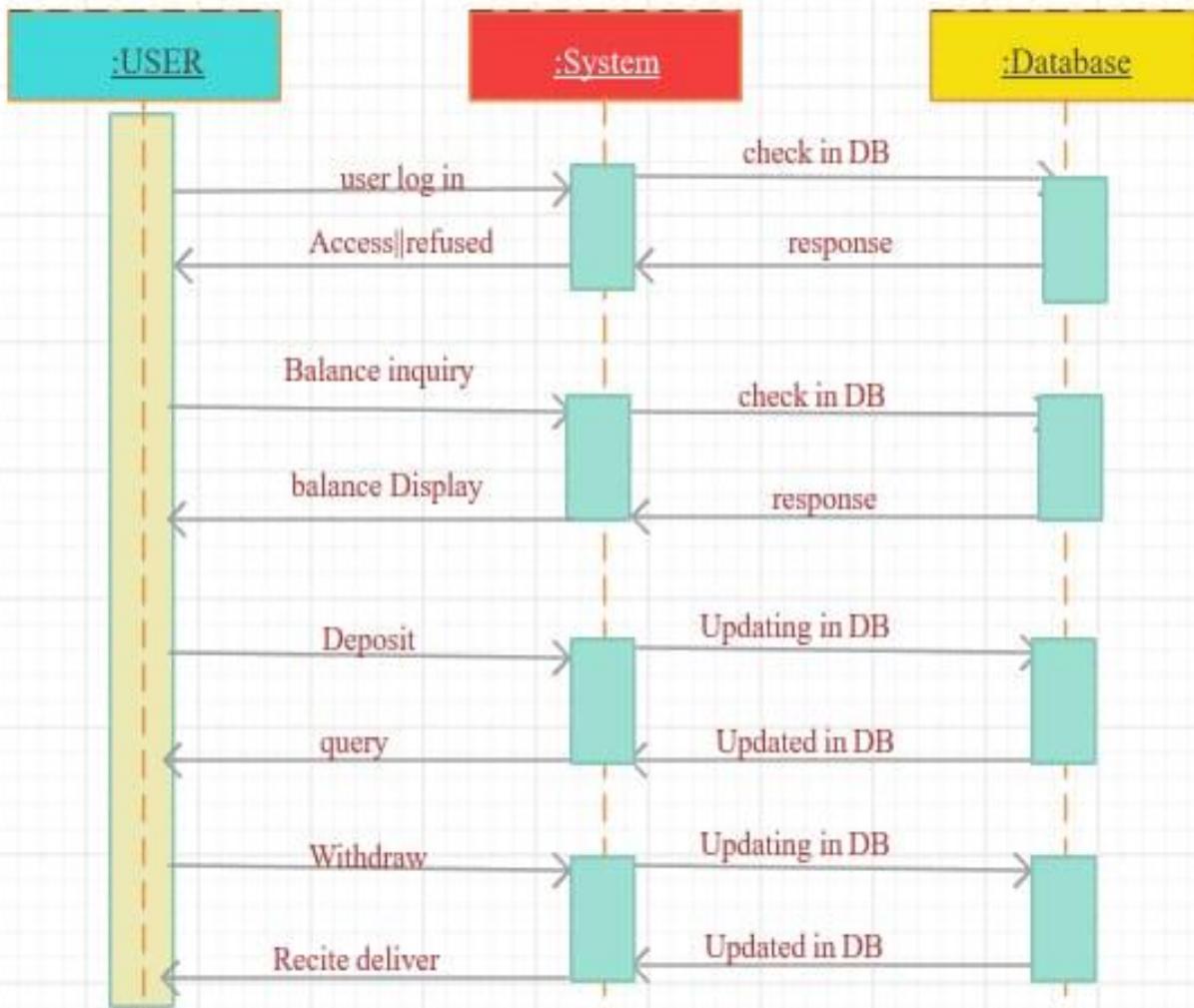


# UML- Class diagram





# UML- Sequence diagram





# Architecture design

## Operational Requirement

<b>Technical environment</b>	System will work over Windows 7 ,8,10 System need network to access data base
<b>System Integration</b>	System will read information of clients and employees from data base
<b>Portability</b>	System works only on windows platform, so it is not portable
<b>Maintainability</b>	Maintainability is available when business requirements are needed

## Performance Requirements

<b>Speed</b>	Response time is less than 2 sec Data base update done on real time Data printing time depend on quantity of data One paper of data takes at most 0.2 sec
<b>Capacity</b>	300 users can access system at the same time Transaction capacity is 3MB
<b>Availability and Reliability</b>	System available 24 hour seven days a week Maintenance once every month and take 10 hours



# Architecture design

## Security Requirement

<b>System value</b>	If the hole system lost it will cost 500,000 \$
<b>Access control</b>	Ordinary employee can insert and export data Admin can insert, export and update data
<b>Encryption / Authentication</b>	Data are encrypted on data base Password of user cannot be retrieved but can be reset via email
<b>Virus control</b>	All data and files uploaded to the system is checked properly

## Cultural and political requirements

<b>Multilingual</b>	System can be run on English only
<b>Customization</b>	Foreign clients have more restricted terms than local clients
<b>Unstated norms</b>	All dates are in form DD-MM_YYYY
<b>Legal</b>	Personal information cannot be transferred or send to any organization on any country

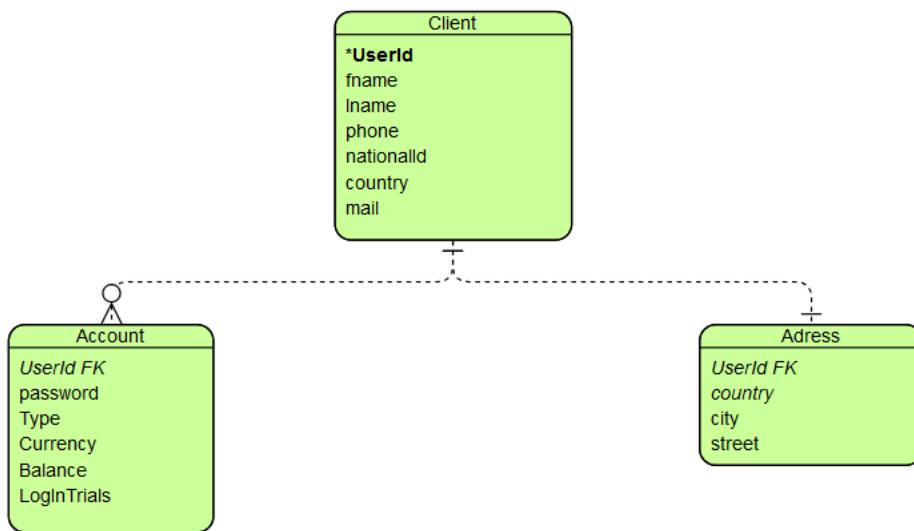


# Data storage Design

## Data storage format:

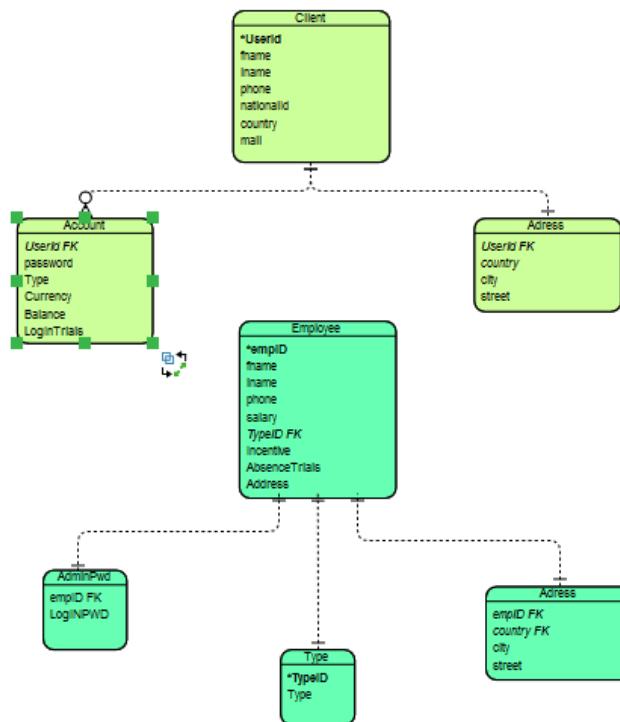
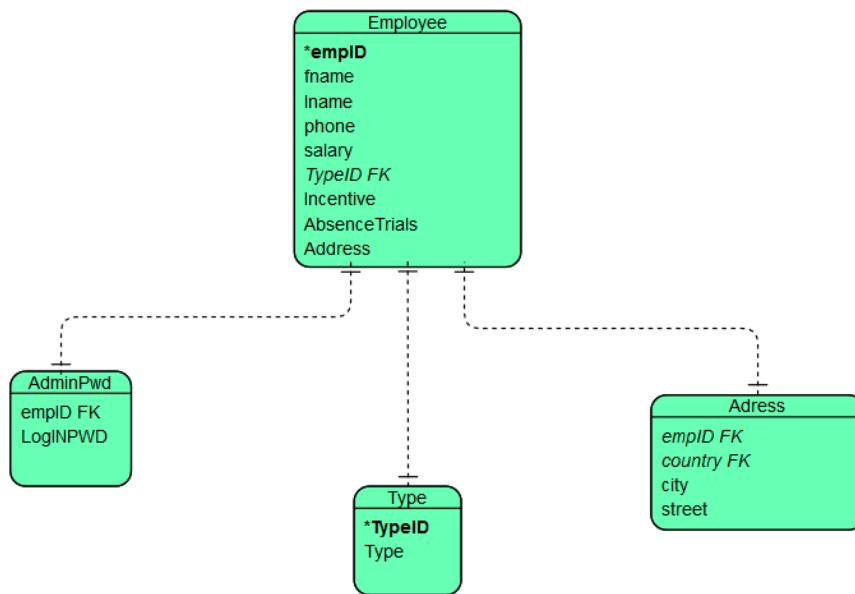
- Relational database (mysql)

## Physical ERD:

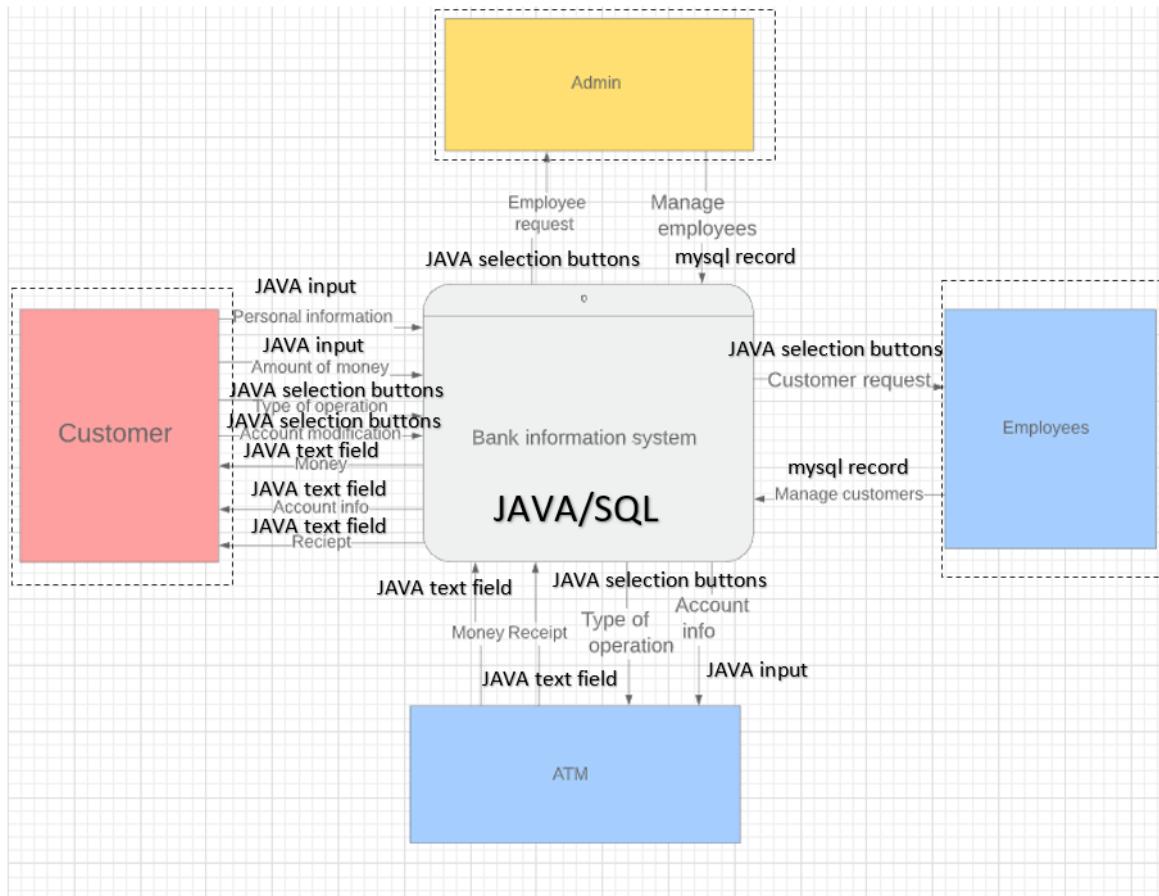




# Data storage Design

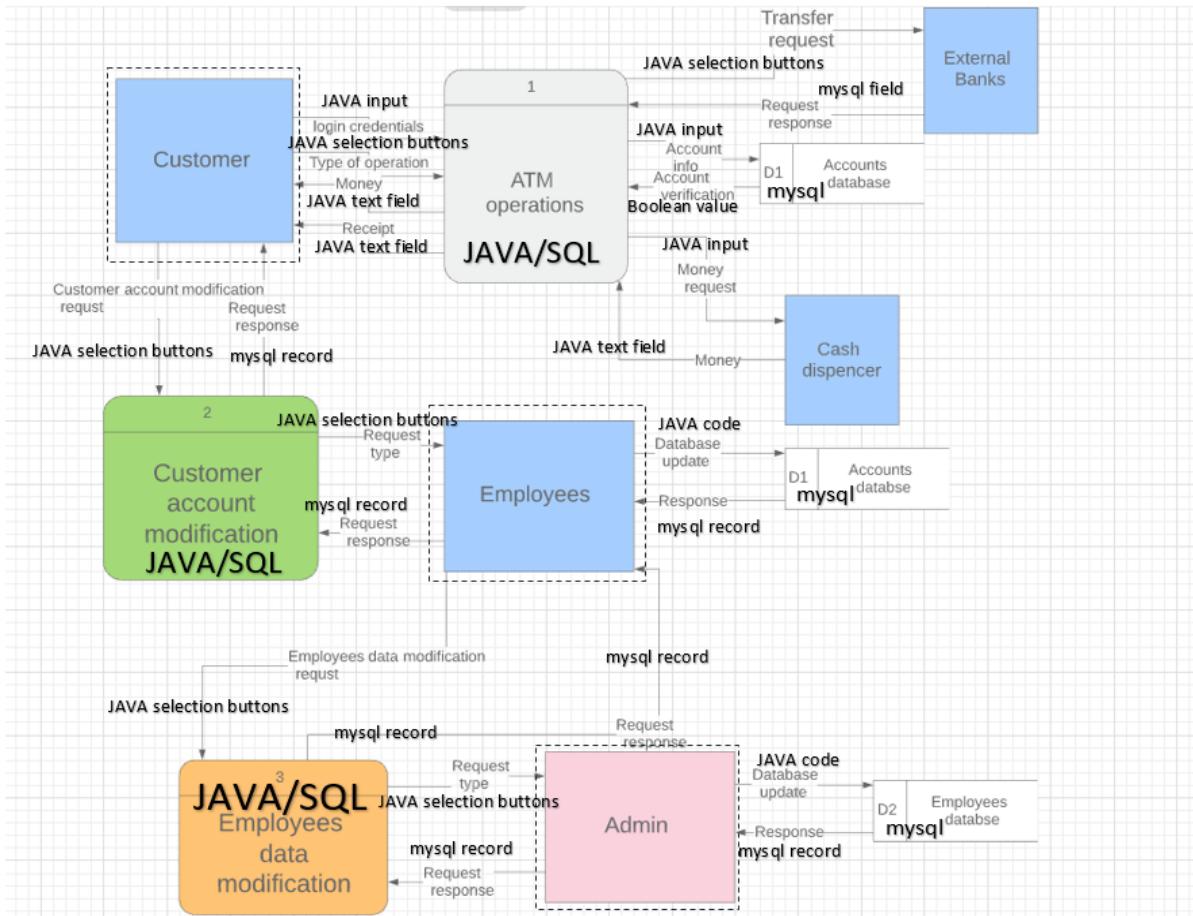


# Physical DFD



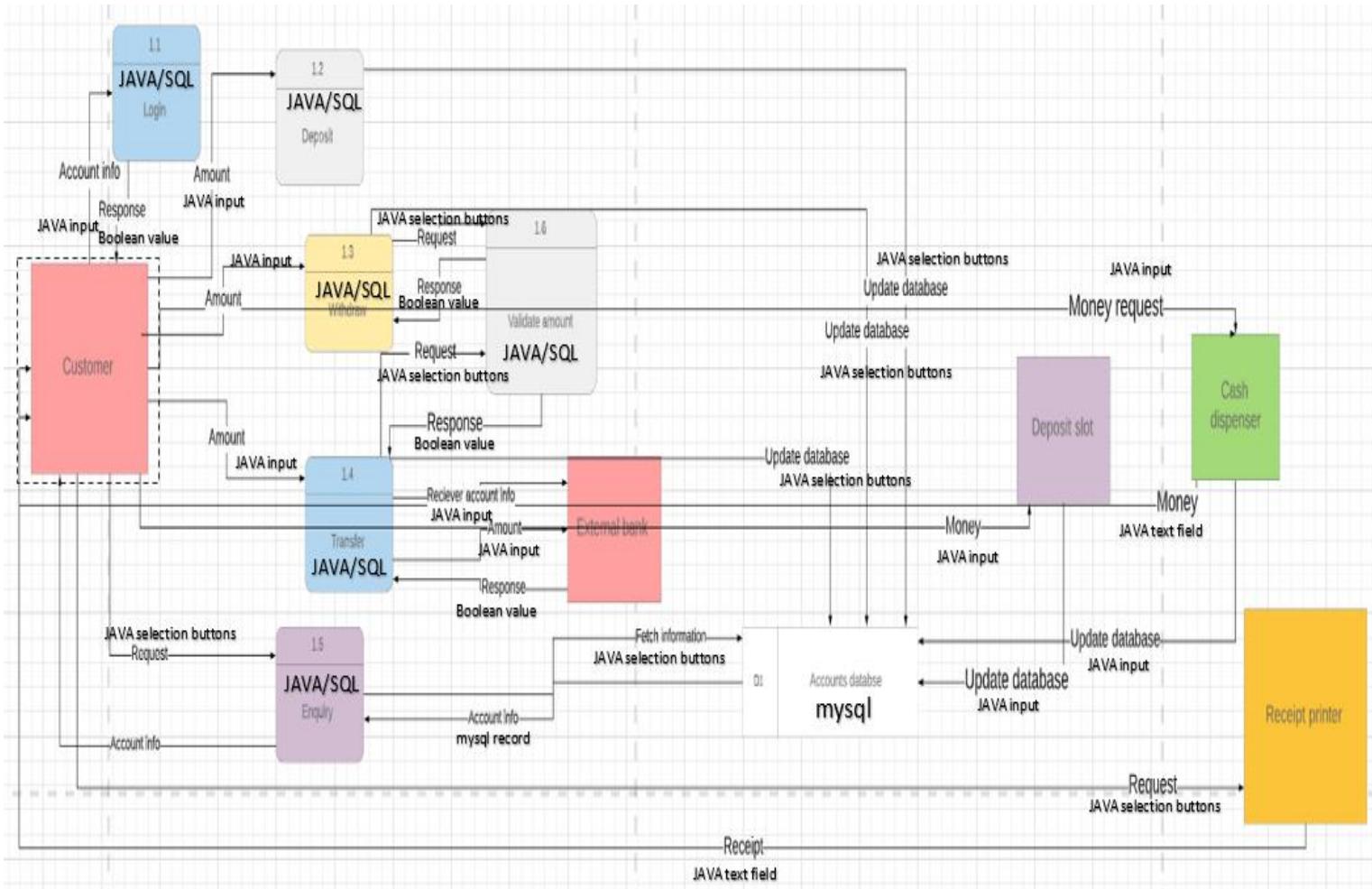


# Physical DFD

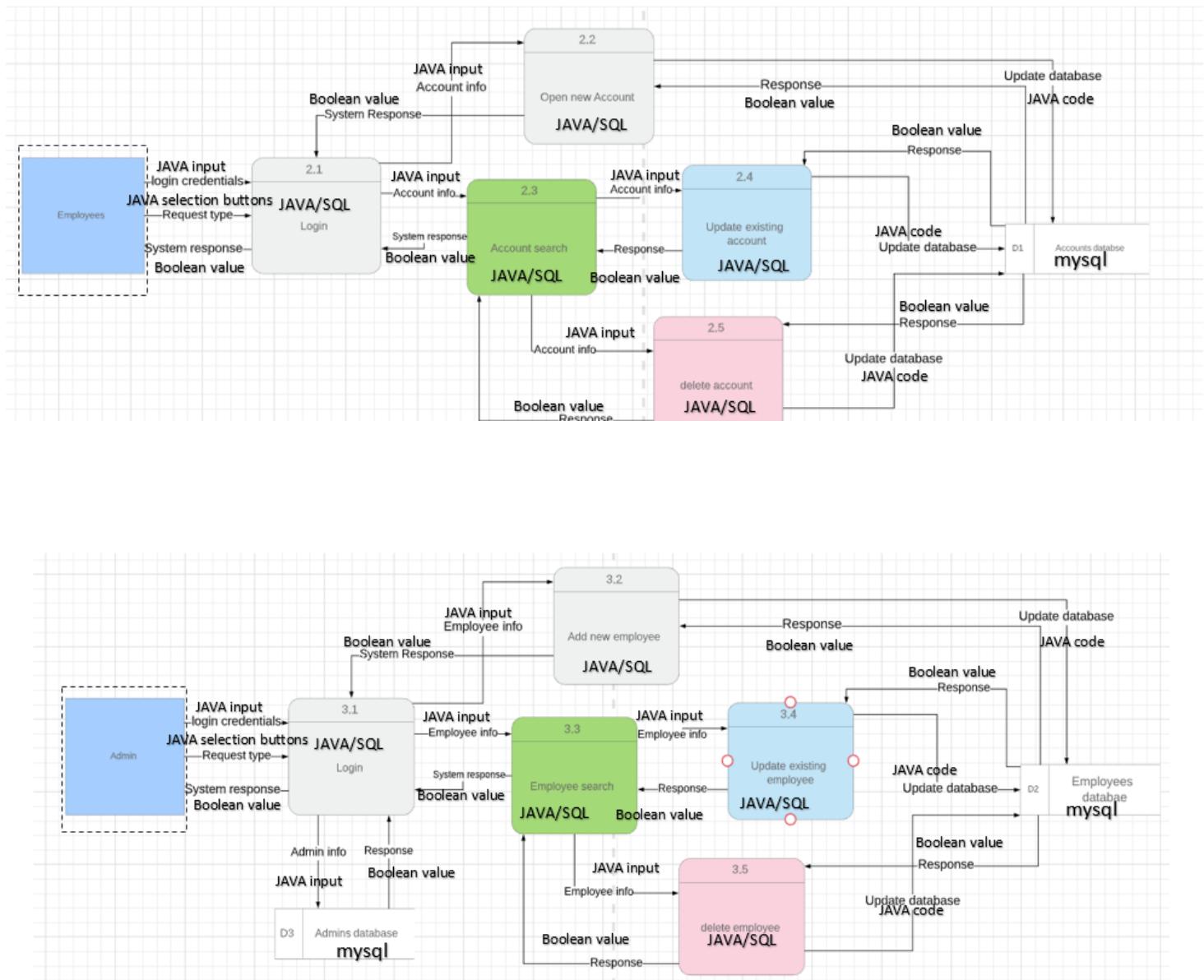




# Physical DFD



# Physical DFD



# Scenario Development



**Use scenario: ATM operations**

User login to his account and choose operations from the ATM to do them.

1. First, user chooses the services window from the window shown to him(1)
- 2- If the user doesn't have an account he can choose signup and provide his information otherwise he can choose to login with username and password. Note that more than three wrong trials will cause the account to be closed (1.1)
- 3- There are four options provided for the user he can choose from them the first one is enquiry or balance it provides the user with his balance and username (1.5)
- 4- The second option is to withdraw the user chooses to take money from his account either throughout panels provided or by putting the value he wants the amount is first validated in order to see if the customer has enough money and then the money is taken and database updated (1.3 , 1.6)
- 5- The third option is to deposit the user chooses to put money in his account either throughout panels provided or by putting the value he wants then the money is added and database updated (1.2)
- 6- The fourth option is to transfer the user chooses to take money from his account and puts it in another account. First the user enters the name of the receiver account and it is checked in the database to see if it is there or not then user provides the value he wants the amount is first validated in order to see if the customer has enough money and then the money is taken and database updated (1.4 , 1.6)

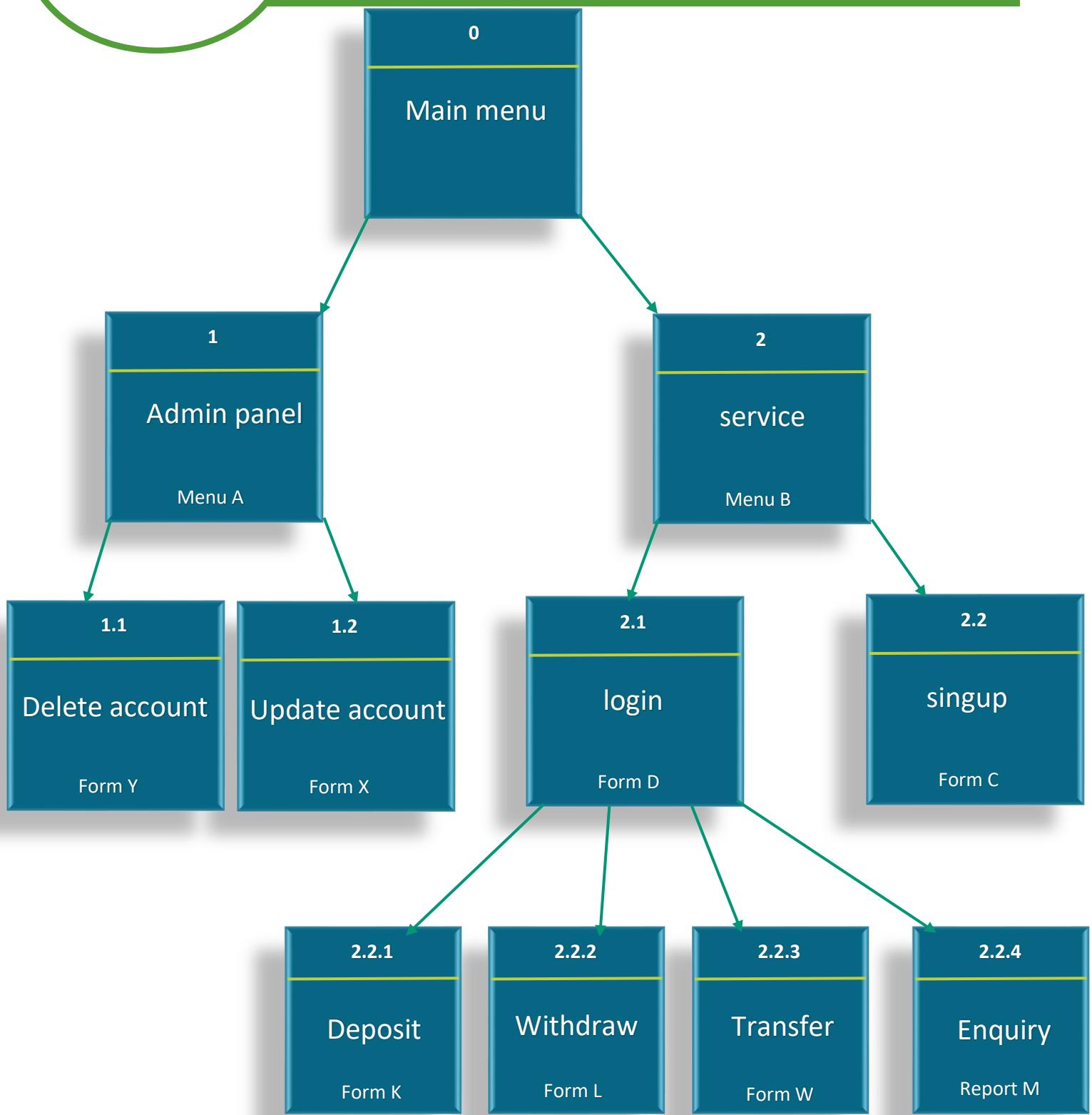
**Use scenario: Employee operations**

Employee login to his account and modify the user account with one of the shown options

- 1- First the employee chooses the admin panel option from the window shown to him(2)
- 2- The login window is shown and the employee provides his with username and password to access his privileges (2.1)
- 3- The admin panel is opened with all the customers in the system and the employee can search for the one he wants(2.3)
- 4- The employee has two options the first one is to update a client the employee searches for the client and then provides the new information he wants to change and then the database is updated(2.4)
- 5- The second option is to delete a client. The employee first searches for the account and then chooses delete client option to delete him (2.5)



# Interface structure design





# Interface metaphor

- **First name:** the first name of the client.
- **Last name:** the last name of the client.
- **National Id:** a unique number that is given to every citizen.
- **Type:** the account type whether it is normal or VIP.
- **Balance:** the amount of money that is with the client.
- **Login trials:** the number of wrong attempts to access. Note that more than three wrong attempts will close the account.

## Interface actions:

- **Sign up:** after entering the account info the account is added to the database.
- **Log in:** after entering the username and password this will open the account associated with them.
- **Services:** Procced to the ATM operations.
- **Back:** return to the previous window.
- **Exit:** close the window.
- **Ok:** complete the current action and validate values.
- **Deposit:** Add money to the account.
- **Withdraw:** take money from the account.
- **Transfer:** take money from the current account and put them in another one.
- **Balance:** show the username and balance of the current account.
- **Admin panel:** Procced to accounts modifications by employee.
- **Update client:** update values of the chosen account.
- **Delete client:** delete the chosen account.

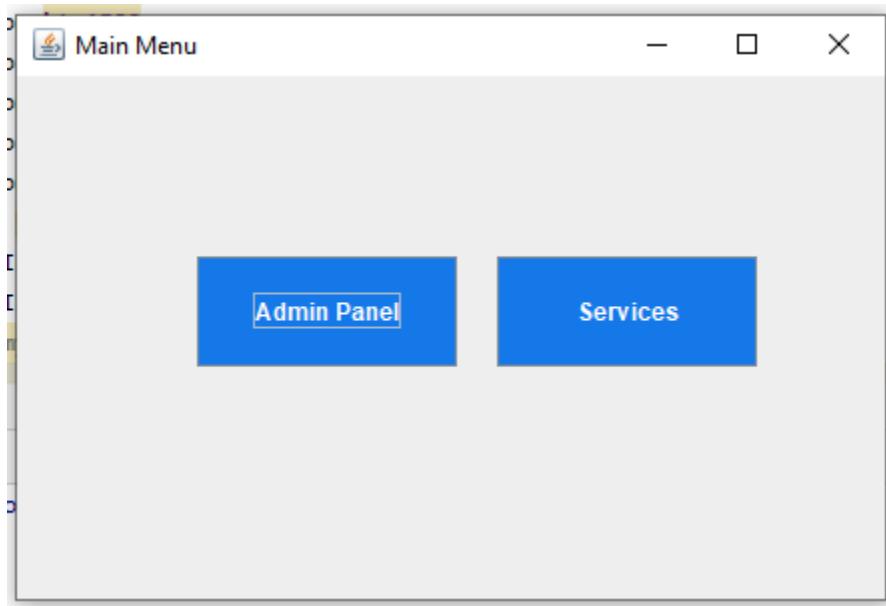
## Interface icons:

- **Welcome icon:** icon shown at the beginning.
- **Back icon:** icon associated with the back button.
- **Exit icon:** icon associated with the exit button.

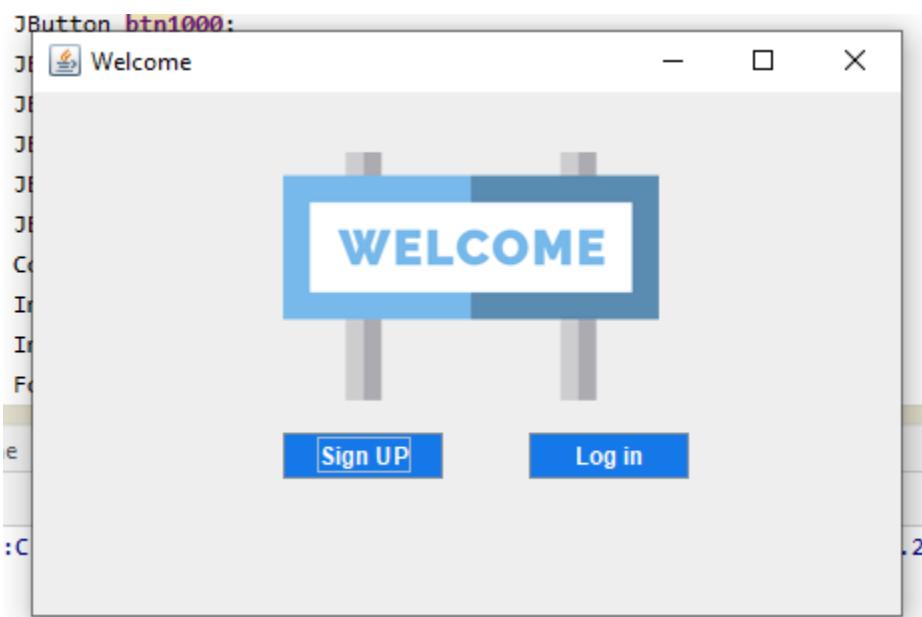


# Interface template

First Window when opening the program



Services Panel





# Interface template

Sign up frame

Sign up

User name

password

First name

Last name

Phone

National ID

Type  ▾

Sign UP

back

Log in Frame

log in

Log IN →

User name

password

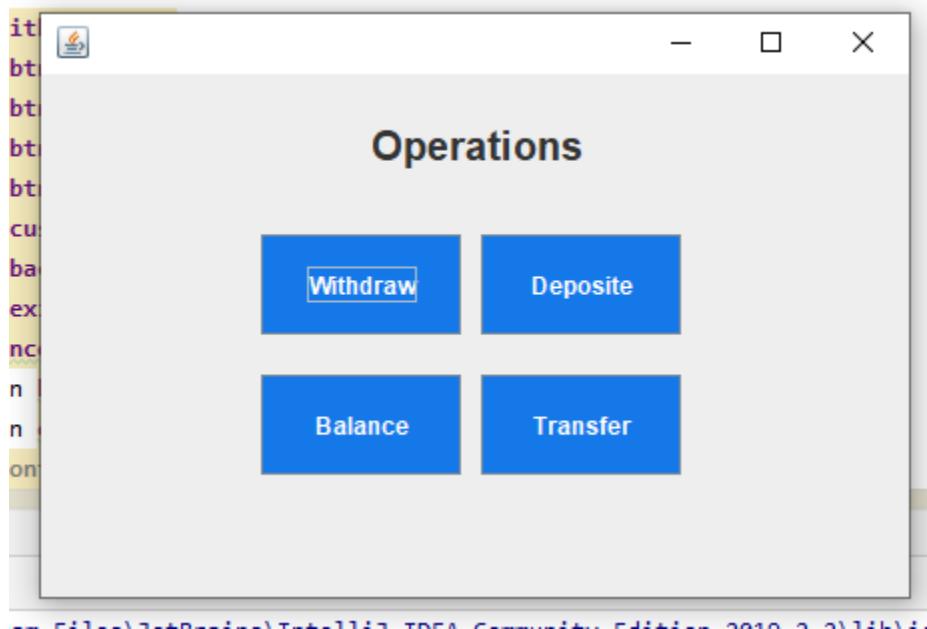
Log in

back

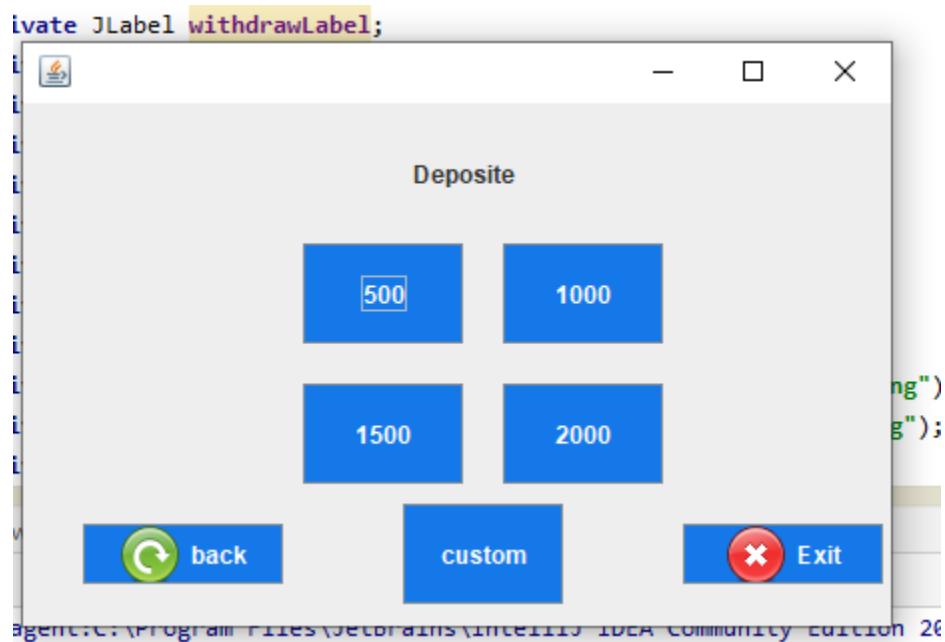


# Interface template

After logging in operation frame



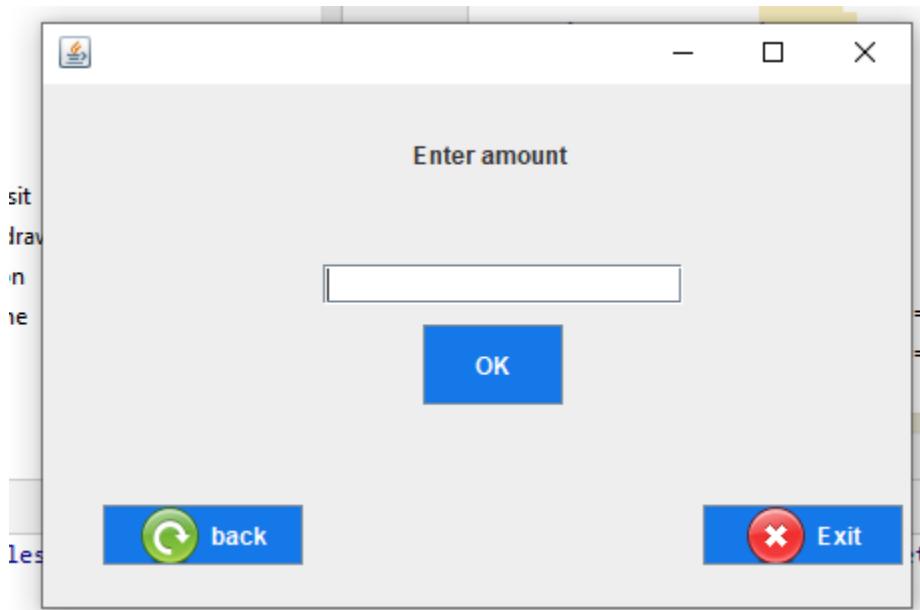
Deposit frame



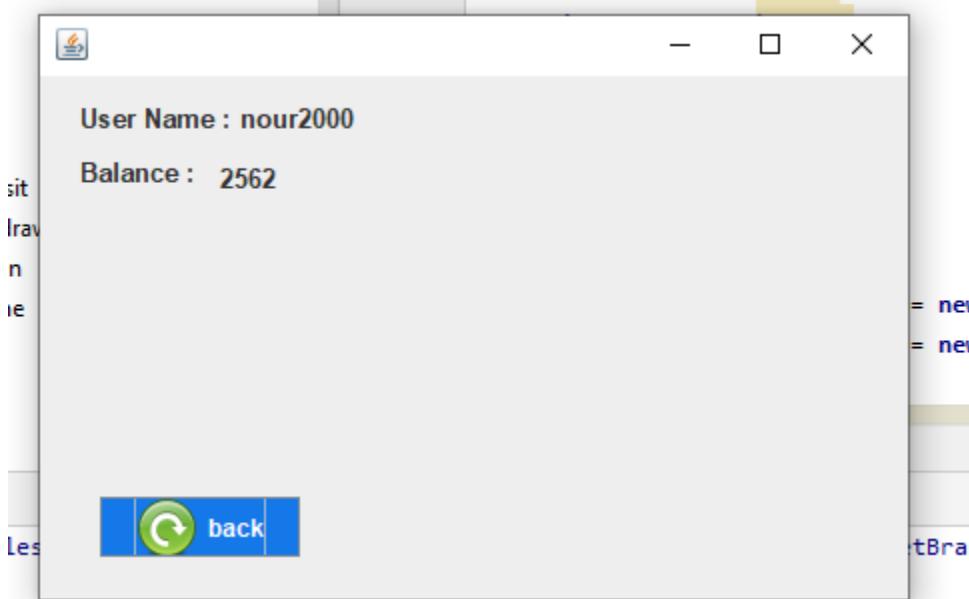


# Interface template

Custom deposit frame



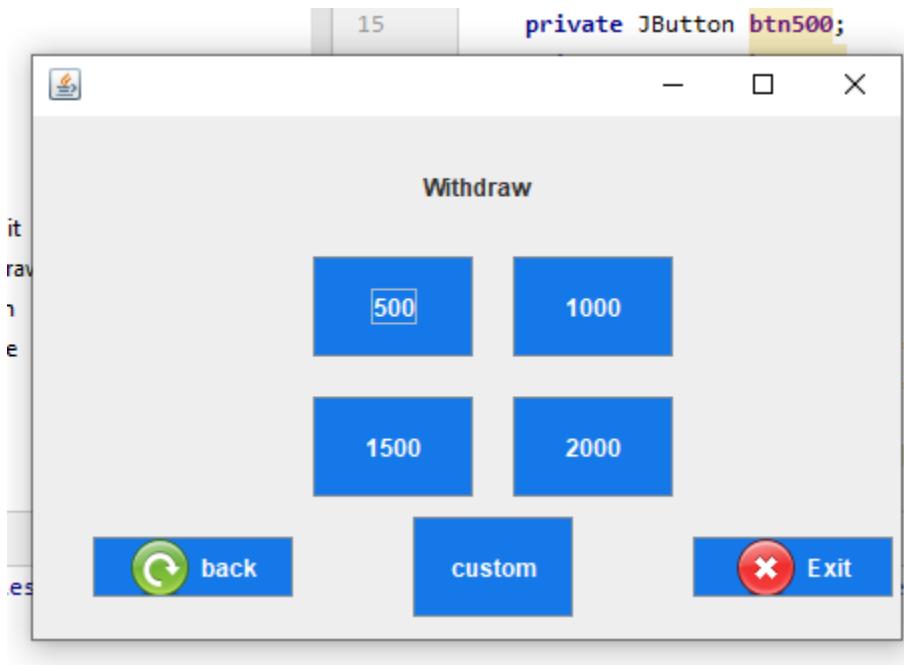
Check for Balance after deposit



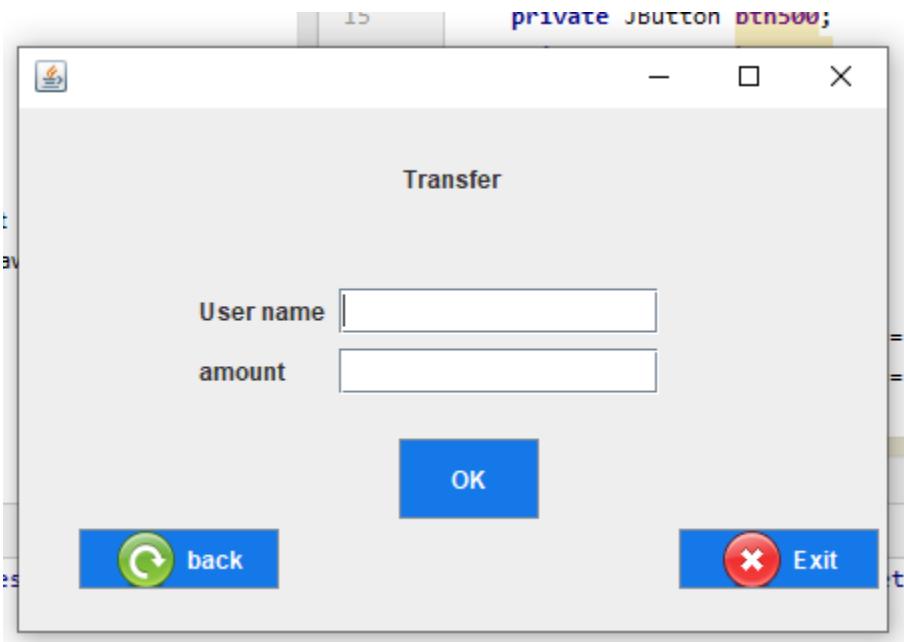


# Interface template

Withdraw frame



Transfer Frame





# Interface template

## Admin Panel

The screenshot shows a Windows application window titled "log in". Inside, there is a "Log IN →" button at the top right. Below it are two input fields: "User name" and "password", each with its own label. A blue "Log in" button is positioned below the password field. The window has standard minimize, maximize, and close buttons at the top right.

Data of All client can be edited or deleted by admin

The screenshot shows a Windows application window with a table on the left and a form on the right. The table has columns: username, password, phone, firstname, lastname, and nationalid. Two rows of data are visible: "hour2000" and "momen2000". The form on the right contains fields for "username", "password", "phone", "firstname", "lastname", and "nationalid", each with its own label and input box. At the bottom are two buttons: "delete client" and "update client". The window has standard minimize, maximize, and close buttons at the top right.

username	password	phone	firstname	lastname	nationalid
hour2000	MTIzNDU2...	1098547422	nour	atalla	200100122
momen2000	MTIzNDU2...	101231231	momen	zakrya	12333344



# Interface design prototyping

Enter client Data

Sign up

User name: nour2000

password: 123456nour

First name: nour

Last name: atalla

Phone: 01098547422

National ID: 200100122

Type: VIP

Sign UP

back

If another client has the same username nour2000

Sign up

User name: nour2000

password: 121212nour

First name: nour

Last name: ahmed

Phone: 01012312312

National ID: 122334445

Type: normal

Sign UP

Message

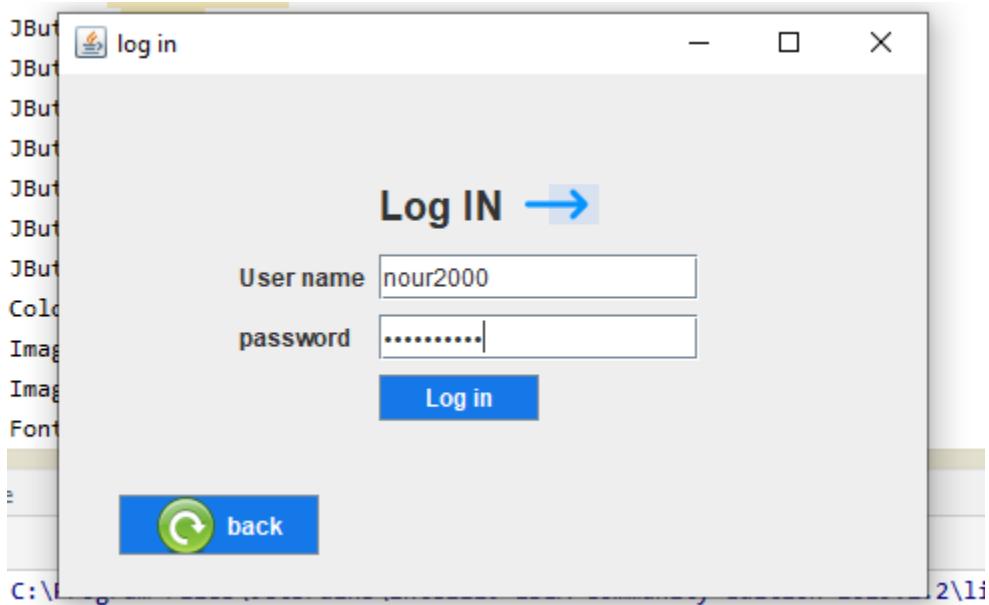
User name is already taken !!

OK

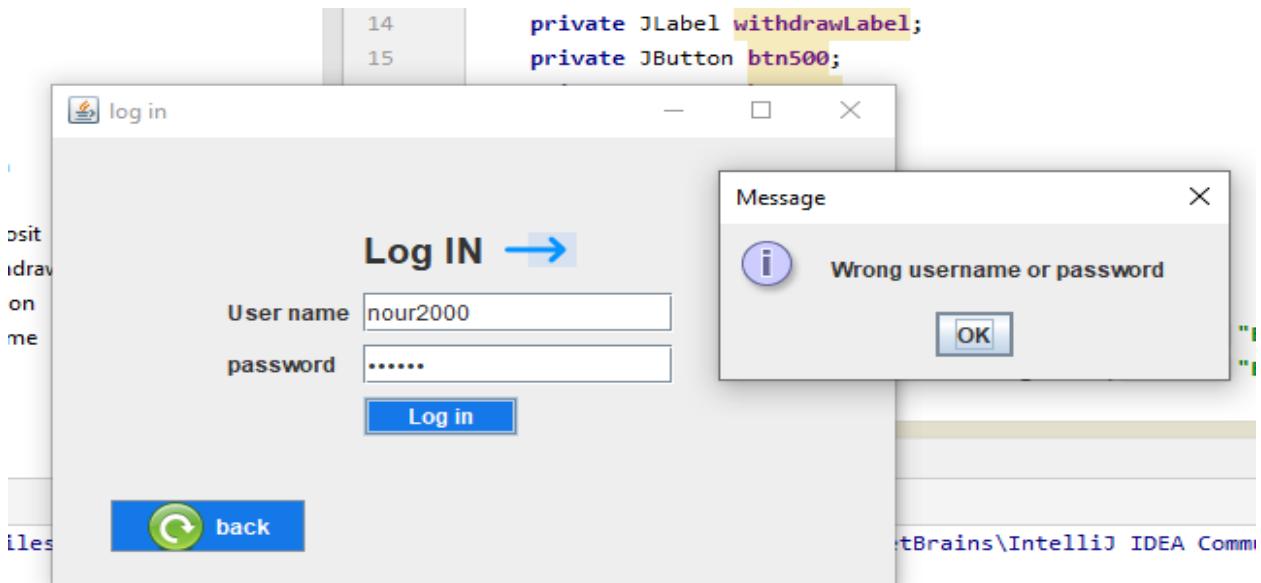


# Interface design prototyping

Enter data



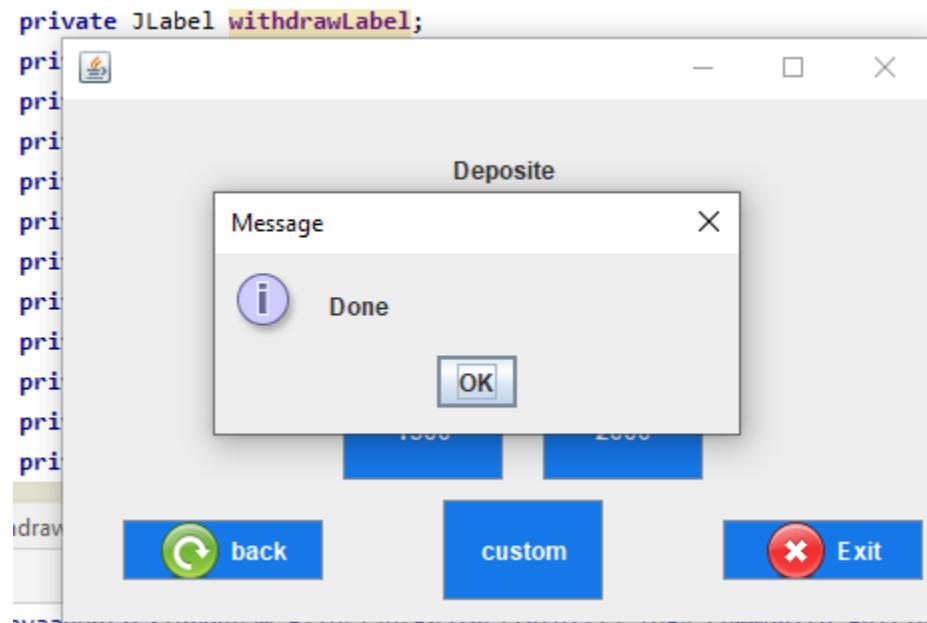
If the password or username wrong



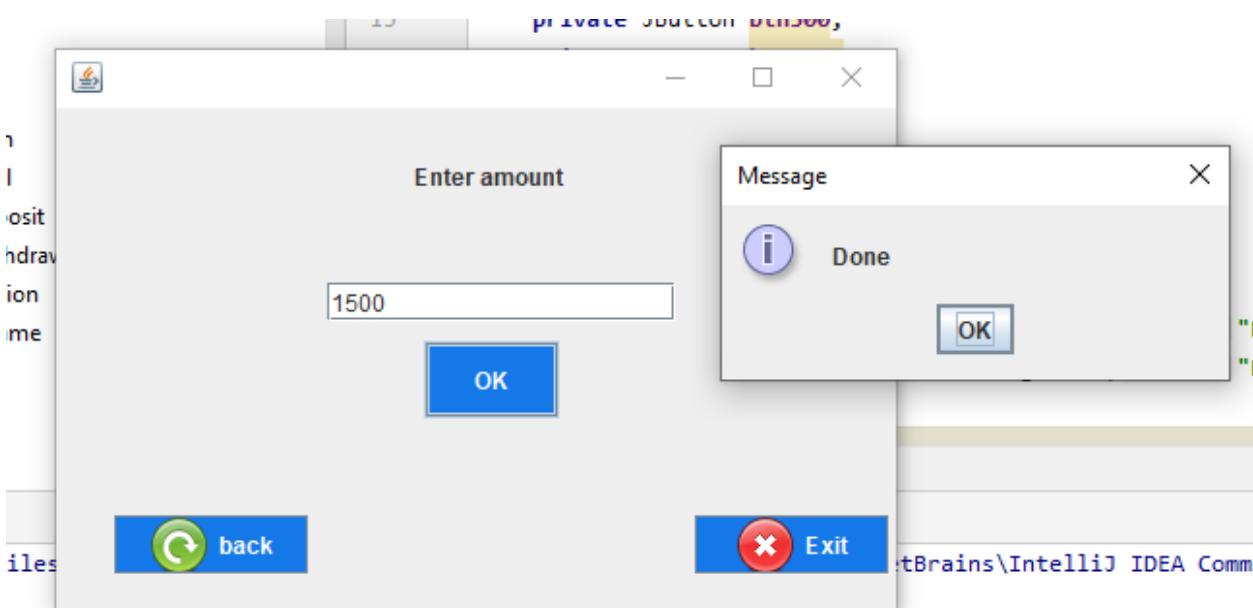


# Interface design prototyping

Click any button to deposit amount



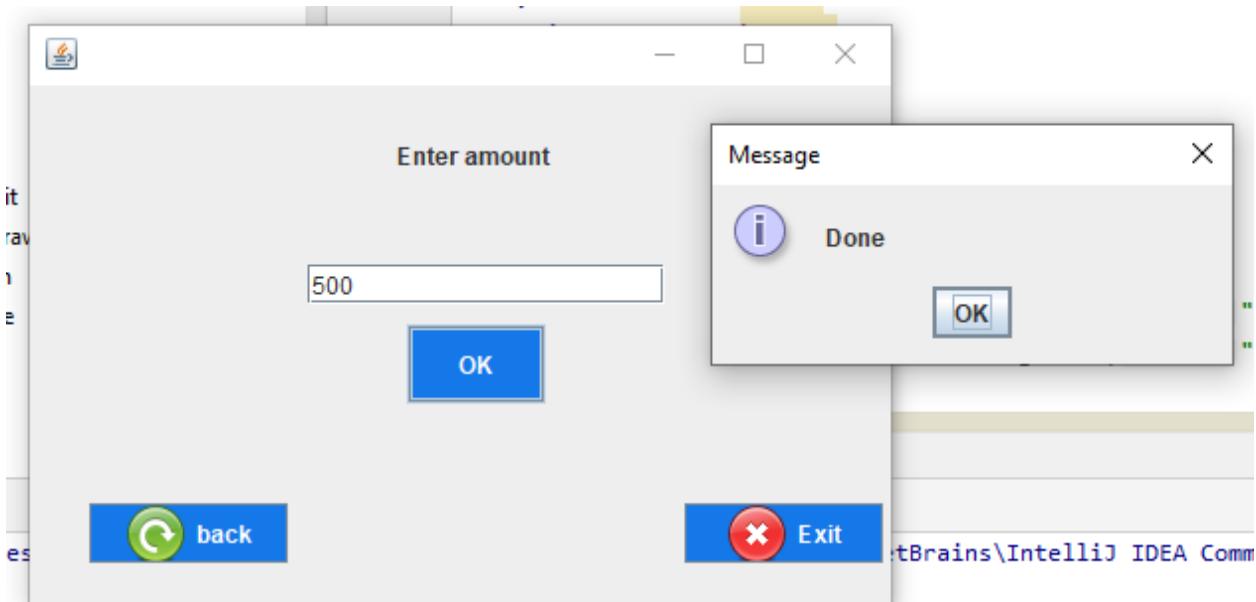
Enter amount



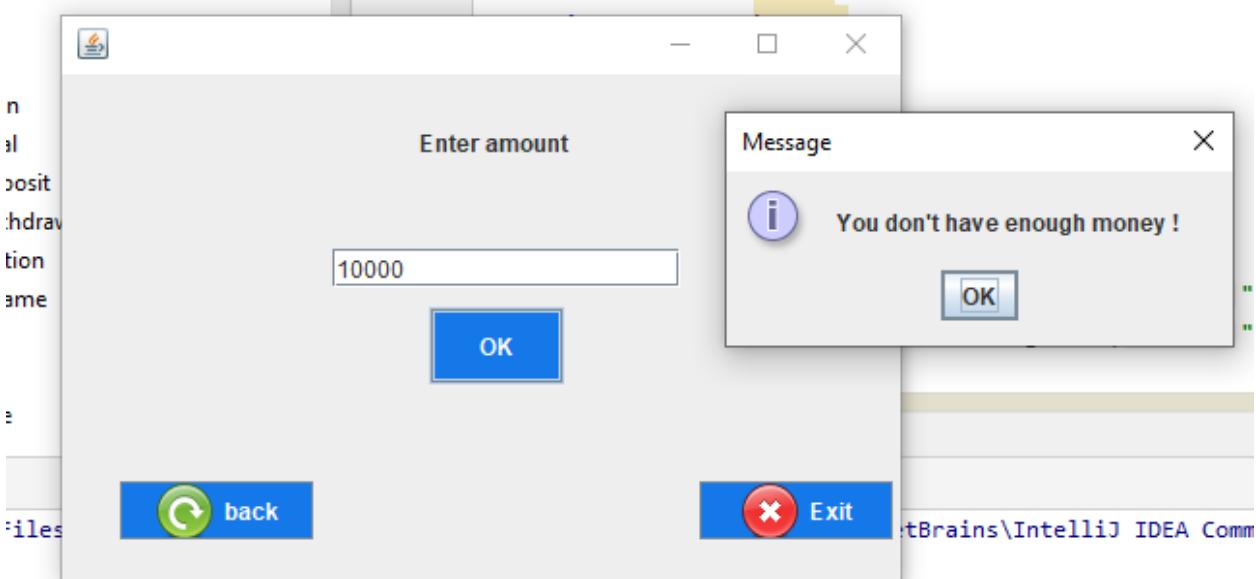


# Interface design prototyping

Custom withdraw Frame



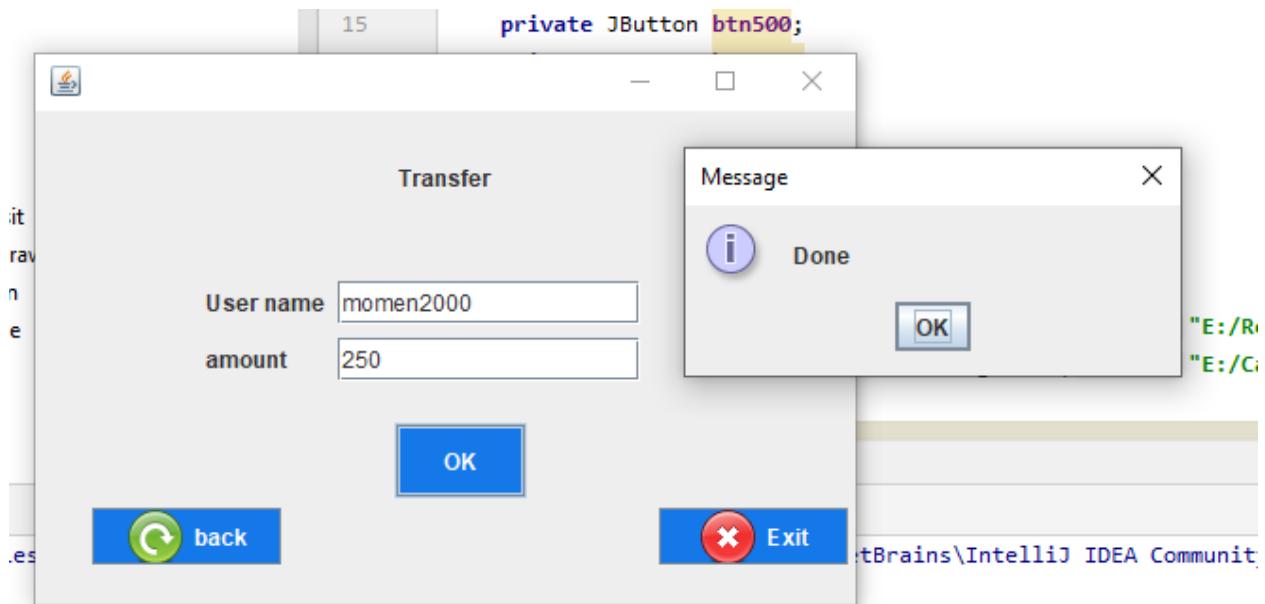
If amount is bigger than account balance





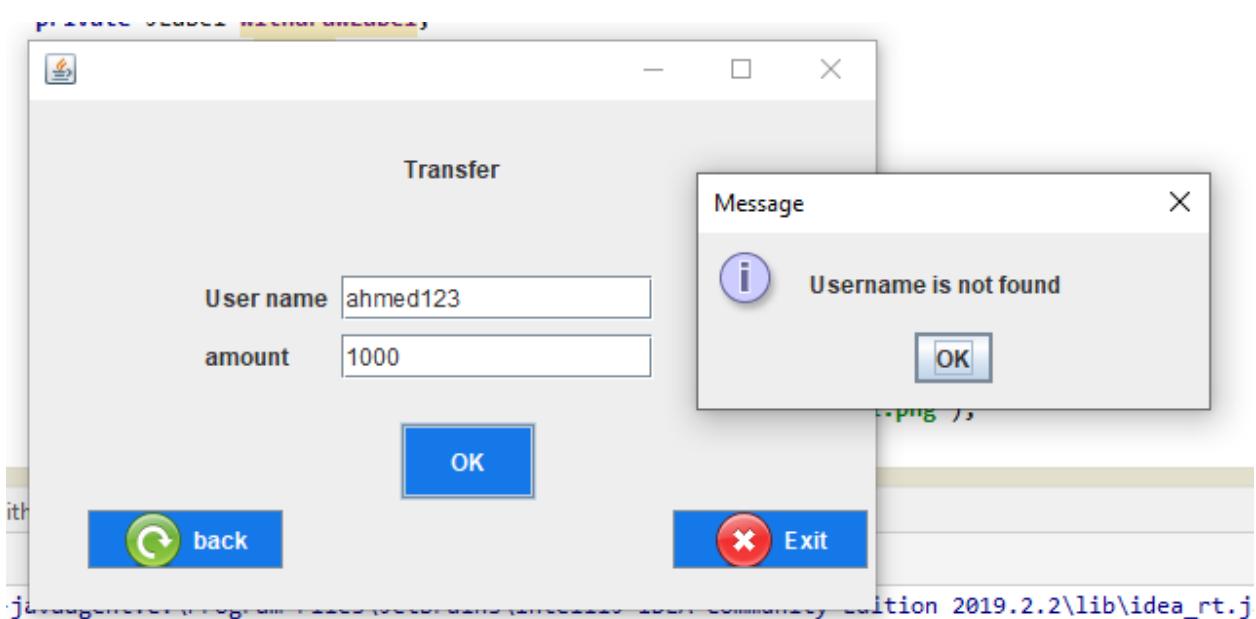
# Interface design prototyping

Transfer data



If

username is not on database





# Interface design prototyping

## Admin log in

The screenshot shows a window titled "log in". Inside, there is a "Log IN →" button at the top. Below it are two input fields: "User name" containing "admin" and "password" containing "\*\*\*\*\*". A blue "Log in" button is positioned below the password field.

## Edit nour2000 nationalID

The screenshot shows a window titled "Edit nour2000 nationalID". On the left, there is a table with columns: username, password, phone, firstname, lastname, and nationalid. Two rows are visible: one for "hour2000" and one for "momen2000". On the right, there is a form with fields for "username" (nour2000), "password" (MTIzNDU2bm91cg==), "phone" (1098547422), "firstname" (nour), "lastname" (atalla), and "nationalid" (200100122). At the bottom are two buttons: "delete client" and "update client".

username	password	phone	firstname	lastname	nationalid
hour2000	MTIzNDU2...	1098547422	nour	atalla	200100122
momen2000	MTIzNDU2...	101231231	momen	zakrya	12333344



# Interface design prototyping

Screenshot of a Java Swing application window showing a client management interface.

The left panel displays a table of clients:

username	password	phone	firstname	lastname	nationalid
nour2000	MTIzNDU2...	1098547422	nour	atalla	200100122
momen2000	MTIzNDU2...	101231231	momen	zakrya	12333344

The right panel contains input fields for updating a client:

- username: nour2000
- password: MTIzNDU2bm91cg==
- phone: 1098547422
- firstname: nour
- lastname: atalla
- nationalid: 300100111

A message dialog box is displayed in the center-right, indicating "User updated Successfully".

Buttons at the bottom right are "delete client" and "update client".

```
C:\Program Files\Java\jdk-12.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition\lib\idea_rt.jar" -Dfile.encoding=UTF-8
```

After edit

Screenshot of the same Java Swing application window after editing the client information.

The left panel shows the updated table of clients:

username	password	phone	firstname	lastname	nationalid
nour2000	MTIzNDU2...	1098547422	nour	atalla	300100111
momen2000	MTIzNDU2...	101231231	momen	zakrya	12333344

The right panel shows the updated input fields:

- username: nour2000
- password: MTIzNDU2bm91cg==
- phone: 1098547422
- firstname: nour
- lastname: atalla
- nationalid: 300100111

Buttons at the bottom right are "delete client" and "update client".

```
C:\Program Files\Java\jdk-12.0.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition\lib\idea_rt.jar" -Dfile.encoding=UTF-8
```