Winter 2023

Revision History

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| --- | --- | --- | --- |
| **Date** | **Issue** | **Description** | **Author** |
| February 13, 2023 | Assignment 2 | Adding Glossary for assignment1 | Abdelkader Ouda |
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| March 14, 2023 | Assignment 3 | Adding Revised Class Diagram | Ashraf Mahdi |

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# iFINANCE System Glossary

## Introduction

This document is used to define terminology specific to the problem domain, explaining terms, which may be unfamiliar to the reader of the use-case descriptions or other project documents. Often, this document can be used as an informal *data dictionary*, capturing data definitions so that use-case descriptions and other project documents can focus on what the system must do with the information.

## Glossary

The glossary contains the working definitions for the key concepts in the iFINANCE System.

|  |  |
| --- | --- |
| Term | definition |
| Authentication | Authentication is the process of determining whether someone or something is, in fact, who or what it is declared to be. |
| User account | A user is a person who uses iFINANCE system. Each user should have an account in order to be identified by iFINANCE. To login to an account, a user is typically required to authenticate himself/herself with a password or other credentials for the purposes of accounting, security, logging, and resource management. |
| Double-entry bookkeeping | It is a system of accounting in which every transaction has a corresponding positive and negative entry (debits and credits). |
| Assets | Tangible and intangible items that the company owns that have value (e.g. cash, computer systems, patents). |
| Liabilities | The money that the company owes to others (e.g. mortgages, vehicle loans). |
| Income | The money the company earns from its sales of products or services, and interest and dividends earned from marketable securities. |
| Expenses | The money the company spends to produce the goods or services that it sells (e.g. office supplies, utilities, advertising). |
| Chart of Accounts | A chart of accounts is a listing of the names of the accounts that a company has identified and made available for recording transactions in its general ledger. A company has the flexibility to tailor its chart of accounts to best suit its needs, including adding accounts as needed. |
| Master Accounts | The Master Accounts are a super-set of all allowable accounts in the chart of accounts. Transactions are never posted to the Master Accounts. |
| UI component | UI stands for User Interface. It is a junction between a user and a computer program. An interface is a set of commands or menus through which a user communicates with a program. |
| PDF Document | Portable Document Format (PDF) is a file format used to present and exchange documents reliably, independent of software, hardware, or operating system. |
| Windows-based computers | A personal computer powered by Microsoft Windows operating system in a form intended for regular use at a single location desk/table due to its size and power requirements. |

# iFINANCE System Actors

The first useful step to analyze the system functionality is to look in the problem statement at the things that interact with the system. In UML use case analysis, these external things are called **actors**. Actors are identified based on the following:

* Actors are always external to the system – they are therefore outside our control.
* Actors interact directly with the system.
* Actors represent roles that people and things play in relation to the system, not specific people or specific things.
* Each actor has a unique name and description.

|  |  |
| --- | --- |
| Actor | Description |
| iFINANCE User | A general user interacting with iFINANCE system. This general user can be the day-to-day regular user (we called non-admin user) or the system administrator. In order to this general user to use iFINANCE, he/she needs to successfully login to the system. |
| Administrator | A special type of iFINANCE User who has the privileges to add user accounts into the system, edit and delete their profiles. The administrator user account will be shipped with the system. |
| Non admin user | A day-to-day iFINANCE user who wish to use iFINANCE system to control the his/her personal finances, keeping track of bank accounts, cash, credit cards, and investment accounts. |

# iFINANCE System Use cases

|  |  |
| --- | --- |
| Use Case | Description |
| Authenticate User | iFINANCE shall provide a functionality to authenticate its user by using a username and encrypted password. Once the user has logged in, the set of controls dynamically changes to match the permissions of this account. Note that, each user should be successfully authenticated before using any of iFINANCE functionalities. |
| Manage User Account | iFINANCE shall provide the functionality for the system administrator to create user accounts for the regular iFINANCE users according to a set of access controls predefined for each user type. The administrator account itself is shipped with the system. |
| Change Password | iFINANCE shall provide the functionality for its users to change their secret passwords. |
| Manage Account Group | iFINANCE shall provide the ability for its non-admin users to add, update, or delete a custom sub-categories (called Groups). This includes groupID, groupName, groupElement, i.e., Assets, Liabilities, Income, and Expenses, and groupParent. Each group can be decomposed to further level of sub-groups (the groupParent field is responsible to maintain the parent-children link). |
| Manage Chart of Accounts | Manage Chart of Accounts UC shall provide a graphical user interface GUI to help non-admin users to add, update, or delete Master Account (e.g., cash, bank, and credit card). Each Master Account in the Chart of Accounts record will include accountID, accountName, openingAmount, closingAmount, and accountGroup (to specify a group/sub-group to which the account belongs). |
| Manage Double-Entry  Transactions | iFINANCE shall provide a tool for its non-admin users to manage accounts’ transactions (called double entry bookkeeping or double entry accounting). Each transaction will always have two effects: a debit entry and a credit entry.  This tool will facilitate the non-admin user to add, update, or delete a transaction's entry in a Master-Detail style form. The Master part of the form includes the transaction number, date, the total amount of debit, the total amount of credit in addition to a comments/notes field. The Detail part of this form is a grid that has in each line the account number and name, the debit amount, the credit amount and a field of comments. |
| Generate Reports | iFINANCE shall allow the non-admin users to generate valuable financial reports including the Trial Balance, Balance Sheet, a Profit and Loss statement, or a cash flow statement from the user financial data.  This UC includes two UCs Show Results on Screen and Print out results in PDF files. |
| Show Results on Screen | This is a supplier UC for the Generate Reports UC that shall allow the non-admin users to see the generated reports in an easy to see in the computer screen. |
| Print out results in PDF files | This is a supplier UC for the Generate Reports UC that shall allow the non-admin users to export the generated reports in a formatted style to PDF file type. These PDF files can be printed out later on. |

# iFINANCE System Use Case Diagram

Diagram

Description automatically generated

# iFINANCE List of Candidate Classes

iFinance System

iFinance User

User

Admin

Account Login

Username

Change Password

Authenticate User

Accounting Knowledge

Transactions

Transaction Type

Software

Assets

Income

Expenses

Liabilities

Investments Accounts

Bank Account

Cash

Categories

Sub-Categories

Comments/Notes Field

Credit Cards

Credits

Debits

Deposits

Double-Entry Bookkeeping

Custom Group

Financial Health

General Ledger

Group Element

Group ID

Group Name

Group Parent

iFINANCE Custom Group

Manage Chart of Accounts

Manage Account Groups

Opening Amount

Closing Amount

Personal Finances

Generate Financial Reports

Display Report

Print Report

Summation of Accounts

Balance Sheet

Profit and Loss Statement

Trial Balance

About Tool

# Potential iFINANCE Classes

|  |  |  |
| --- | --- | --- |
| **Class Name** | **Type** | **Brief Description** |
| 1. iFinance User | Entity | Holds all the attributes, properties and operations that allow the user to login and change their account password. |
| 1. Non-Admin User | Entity | Holds the attributes that allows the user who has an account to use the financing management tool. |
| 1. Admin | Entity | Holds the attributes necessary to ensure the logged user is admin. |
| 1. User Account | Entity | Allows users to login and hold all the login information whether they are an admin or non-admin. |
| 1. AccountLoginController | Controller | Holds the necessary attributes and operations that allow the iFinance user to login into their account. |
| 1. ManageUserAccountConroller | Controller | The control class that holds the attributes and operations allowing an admin user to add, delete, and manage user accounts. |
| 1. ManageUserAccountForm | Boundary | A general boundary class that helps the admin user to choose whether they want to add, edit, or delete a non-admin user account. |
| 1. ChangePasswordForm | Boundary | A general boundary class that interacts with the iFinance user to receive permission which will be sent to the control class that will perform the password change |
| 1. ChangePasswordController | Controller | A control class that holds the attributes and operations that will update the password of the user who is logged in. |
| 1. AuthenticateUserForm | Boundary | A boundary class that lets the user put in their username and password and then sends that information to the control class. |
| 1. AuthenticateUserController | Controller | A control class that ensures the username and password match and it sets permissions of this account which will allow the user to use iFinance functionalities. |
| 1. Transaction | Entity | An entity that holds the attributes regarding the financial transaction that the user will manually update such as date, type, and what account it affects. |
| 1. ManageChartOfAccountsForm | Boundary | A graphical user interface GUI that includes all the attributes and names necessary that will be readable by user to add, delete and delete Master Account. |
| 1. Group | Entity | An entity to hold the attributes of the financial accounts which include the group ID, name, and group element it will be added to. |
| 1. Account Category | Entity | An entity that will include the attributes to define the account categories which are assets, liabilities, income and expenses and each category is either of type "Debit" or type "Credit. |
| 1. Master Account | Entity | An entity class that includes the main accounts which are assets, liabilities, expenses, and income. |
| 1. ManageChartOfAccountsController | Controller | A controller class that will hold all the attributes and functions to add, update and delete master accounts with the proper account ID, account Name, opening Amount, closing Amount, and account Group. |
| ManageAccountGroupForm | Boundary | A form class that will hold the attributes for the user to manually add, edit and delete groups. |
| ManageDoubleEntryTransactionsForm | Form | Holds the attributes and tools to allow the user to interact with the UI to manage transactions, each transaction will either be a debit entry or a credit entry. |
| ManageDoubleEntryTransactionsController | Controller | A control class to hold the attributes and operations that will ensure after the user enters the transaction, the information is stored so accounts can get updated. |
| GenerateFinancialReportForm | Boundary | A form that will let user generate whatever financial report they need, whether it be the cash-flow statement, balance sheet or trial balance. |
| GenerateFinancialReportController | Controller | A control class that will hold all the functions and attributes necessary to generate the financial report after user sends request. |
| DisplayReportForm | Boundary | A form that will include the attributes to ask user if they want to display the generated report on screen and sent it to control class. |
| DisplayReportController | Controller | A control class that will include the attributes and operations to display the report generated on screen. |
| PrintReportAsPDFForm | Boundary | A form that will ask the user if they want to print the generated report as a pdf. |
| PrintReportAsPDFController | Controller | A control class that holds all the functions necessary to export and print report into a pdf after the user requests so. |
| Transaction Line | Entity |  |

# Potential iFINANCE Class Diagram

# Diagram Description automatically generated

# Revised iFINANCE class diagram

1. iFinanceUser Class

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Type** | **Brief Description** |
| username | String | The username of whoever is accessing the tool. |
| accessControl | String | The attribute that determines what access the user has. |

1. UserAccount Class

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Type** | **Brief Description** |
| username | String | The username of whoever is accessing the tool. |
| password | String | The attribute that holds password of user. |
| accountPermission | String | The attribute that determines what permission the logged-in user has. |

1. Admin Class

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Type** | **Brief Description** |
| username | String | The username of the admin. |
| password | String | The attribute that holds password of admin. |

1. NonAdminUser

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Type** | **Brief Description** |
| username | String | The username of the non-admin user |
| password | String | The attribute that holds password of the non-admin user. |

1. Transaction Class

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Type** | **Brief Description** |
| transactionNumber | Int | The number to identify the transaction. |
| transactionDate | Date | The date in which the transaction took place. |
| creditAmount | Double | The amount that got credited. |
| debitAmount | Double | The amount that got debited |
| commentAndNotes | String | Any comments about the transaction. |

1. TransactionLine Class

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Type** | **Brief Description** |
| accountNumber | Int | The number to identify the account. |
| accountName | String | The name of the account such as cash. |
| creditAmount | Double | The amount in the credit section. |
| debitAmount | Double | The amount in the debit section. |
| commentAndNotes | String | Any comments about the account. |

1. MasterAccount Class

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Type** | **Brief Description** |
| accountID | Int | The ID-Number to identify the account. |
| accountName | String | The name of the master account. |
| accountGroup | String | What group the account belongs to. |
| openingAmount | Double | The opening amount in the account. |
| closingAmount | Double | The closing amount in the amount. |

1. Group Class

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Type** | **Brief Description** |
| groupID | Int | The ID-Number to identify the group (sub-categories). |
| groupName | String | The name of the group. |
| groupElement | String | What element the group belongs to. |
| groupParent | String | The attribute to maintain the parent-children link. |

1. AccountCategory Class

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Type** | **Brief Description** |
| categoryName | String | The name of account categories whether it be assets, liabilities, income and expenses. |
| categoryType | String | The type of category, either debit or credit. |

