# The Bank project

Your project will count as 70 % of the note I have to give you, with 20% on your mini project, and 10% on the class participation.

Your project should be sent to me on teams before October 24 midnight. Every project send to me after this date will lose 25/70 of its final grade.

As described in the class, this project will make use of all the things you have learned till now and more.

The objective of this project is to make a software that can be used to manage clients in a bank first, and then for the bank clients to manage their accounts.

Your software user will have one of 2 types: Admin or Client

An admin have the following functionalities:

- Create a client
- Manage a client (unblock, block, change pin, reset tries, delete client….)
- Verify user transactions
- View a list of all users

A client have the following functionalities:

- View GUID and credentials (all except pin!)
- View total amount in preferred currency
- Retrieve money from currency
- Add money to currency
- Change pin
- Exchange between currencies
- Transfer between client (optional)
- Leave message for admin(optional)

An admin will only have a hard coded username and password

As for the client, he will have the following:

- A GUID (use guid library in c#), GUID is a global unique id
- A first name and last name, not unique
- A pin, unique with the same guid
- List of currencies and amount in each currency (use list)
- Main currency
- Any other important fields for the smooth run of the software

You will use **json** to store all the client you have, as well as a database, this database will be **SQLite**

When your application start, it will search for a data source, on SQLite, a database and will read and create a list of the clients you already have. Json will be used in 2 cases, either if a connection to sqlite is impossible (mandatory), or to verify is all users are synced between sqlite and json(optional).

For the interaction of your code with SQLite you can use entity framework (optional) this will make your project a lot easier and you wont write any sql query.

You must use interfaces to make this easier on yourself.

Finally, for your last technologies to use, you must get the currency exchange prices for a public API, so if the user wants to exchange amounts form a currency to another, he will get the latest prices available in the market. To get those prices use one of those public currency converter API or any other api of your choice:

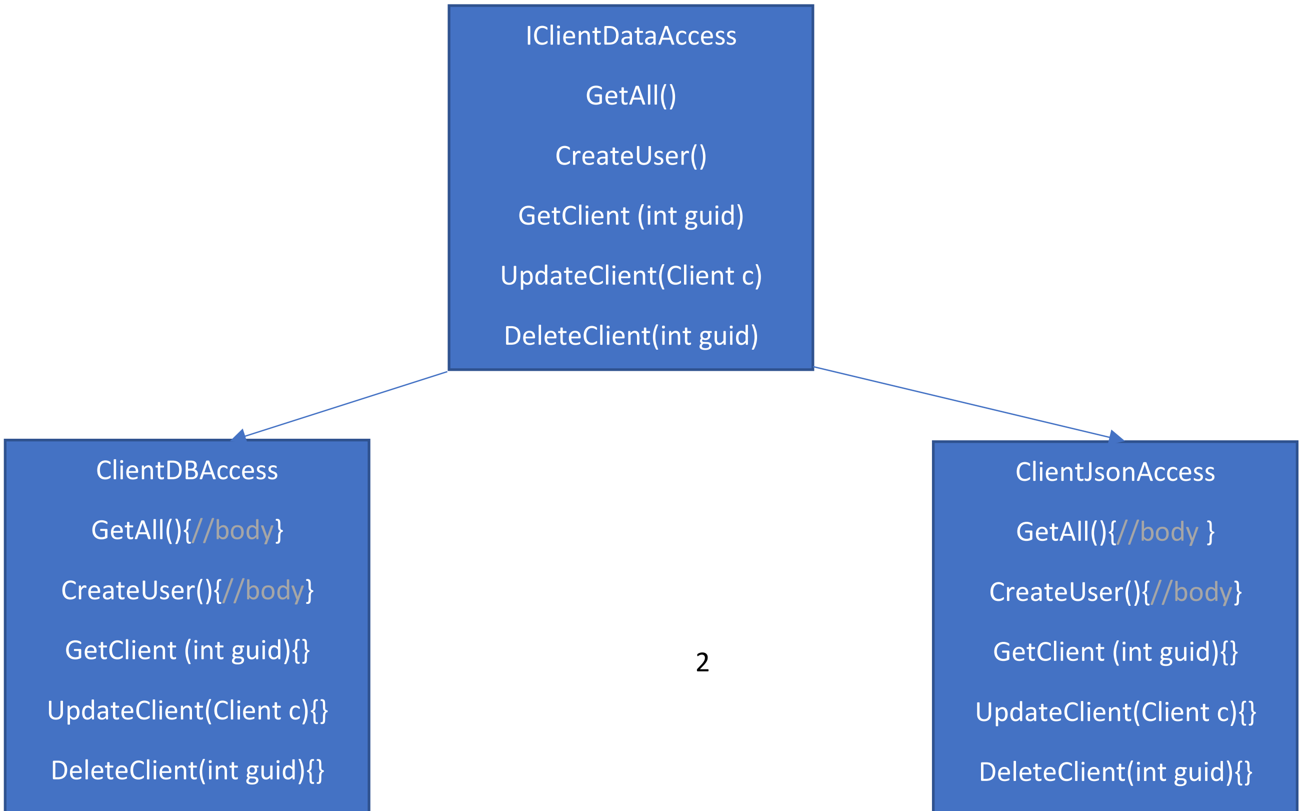
- Free Currency Conversion and Forex Exchange Rate API (currencyfreaks.com) (free for 1000 calls but have a great documentation)
- Free Currency Converter API | Free Currency Converter API (free and good documentation)
- C# Exchange Rate API | C# Currency Converter (exchangerate-api.com) (free for 1.5k class and great complex documentation for c#)

For your software, you will choose a software architecture and work base on it.

You will use Object Oriented Programming, as well as creating a lot of classes.

You will create an interface called IClientDataAccess that will have all the empty functions for the data access, and you will then 2 classes will inherit in, ClientDBAccess(responsible of the db access), and ClientJsonAccess(responsible for the json access ).

Those 2 classes will only write the interface function in their own way.



In the previous drawing, you can see that in the interface the functions are empty, but we redefined them in the child class with bodies.

In addition, all the functionalities we need to do to the user can be done using 4 -5 functions, named CRUD operations, Create, Read, Update, Delete.

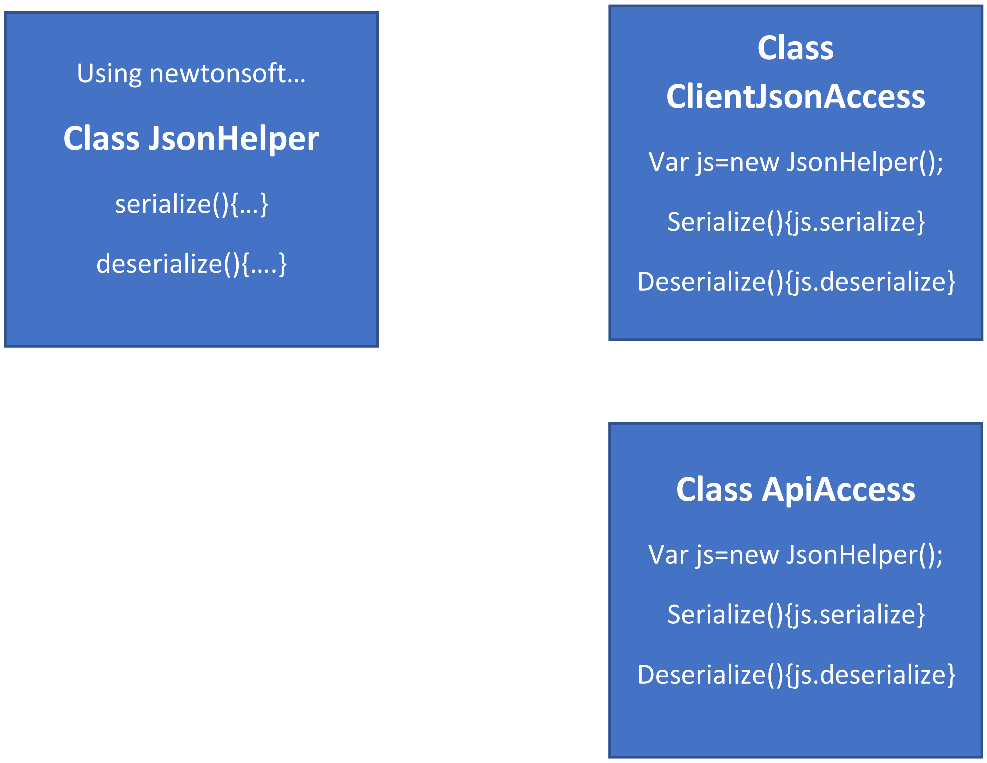
The updateClient function can be used to any changes made to the client or to any field of the client being changed.

Moreover, use a helper class. What's a helper class?

It's a class where we put functions that are common to a problem and not an object.

This means, a JsonHelper, is a class where we define json function that don't depend on database access of api calls or any other object.

Exemple:



Using newtonsoft…

**Class JsonHelper**

serialize(){…}

deserialize(){….}

**Class ClientJsonAccess**

Var js=new JsonHelper();

Serialize(){js.serialize}

Deserialize(){js.deserialize}

**Class ApiAccess**

Var js=new JsonHelper();

Serialize(){js.serialize}

Deserialize(){js.deserialize}

## This work should be done by 2 persons.

When you finish your project, you will have to send me your code, with a pdf that explain the most important things about it. The pdf must have the name of the persons that did the project.

Finally, and again all your project should be sent to me on teams before October 24 midnight. Every project send to me after this date will lose 25/70 of its final grade.

Remember all the optional things in the projects, if attempted and done correctly, will give extra 10 points.

Goodluck everyone.

Mikael Chaaya.