

MODELLING ACCOUNTS

1. Account and its entries. In many fields it is important to keep a record of not only the current value of something but also details of each change that effects that value. A bank account needs to record every withdrawal and deposit; an inventory record needs to record each time items are added or removed. An added entry in an account changes the account value: the balance, which represents the current value of the account, is the net effect of all entries linked to the account.

This does not mean that the balance needs to be recalculated each time it is asked for. Derived values can be cached, although the cache would be invisible to the account user.

By using the entries, a client can also determine the changes over a period of time and the total amount of deposits or withdrawals. The sign on the amount indicates whether the entry is a deposit or a withdrawal. A statement is a list of all the entries that have been carried out against an account over a period of time.

Two time points for each entry: one indicates when the charge is made and the other when the entry is booked to the account. A price for a charge may have changed between the charge date and the booked date, so both dates are required.

Draw the model of the account according to the previous description.

2. Transactions. A transaction helps us to explicitly link a withdrawal from one account to a deposit in another. The double entries approach reflects a very basic accounting principle that money is never created or destroyed, it merely moves from one account to another.

Modeling Principle *When working with accounts, follow the principle of conservation: The item being accounted for cannot be created or destroyed, only moved from place to place. This makes it easier to find and avoid leaks.*

Add transactions to the model of the account.

3. Summary Account. In a system of accounts it is often useful to group accounts together in a summary account. For example, I might want to group my BCR and ING detail accounts into a business income summary account. Similarly I want to put rent and food into personal expenses and my business travel and office expenses into business expenses. Of course, a summary account can contain another summary account. The system is restricted to posting entries only to detail accounts and not to summary accounts. A summary account that contains summary accounts will look for entries in its components, its components' components, and so on, recursively.

Add summary accounts to the previous model of the account.

4. Automatic update of accounts. We can't eliminate the pain of paying taxes, but the paying pain is lessened somewhat by avoiding surprises on our tax return. Each time I earn some money, I allocate a portion to a tax liability account. (Cont de răspundere fiscală). This account acts as a memo to me on how much money I owe in taxes, thus it is referred as a *memo account*. A memo account contains amounts of money but not real money. Using a memo account I can make a posting to a tax liability account, but I still have to remember to do it. Since I always enter 16 percent of each fee income entry into a memo tax liability account, a computer system should be able to do it for me automatically. So, for any new entry in my income account another entry should be created in the memo account by multiplying the original entry by a multiplier (0,16 for the example of the tax liability account). In other cases updating requires an individual instance calculation method.

Hint. The memo account updating may be contained in a "posting rule" object.

Add components for automatic updating of accounts to the previous model of the account.