Summer School Day 4/5 –

Our class today was looking primarily on the ideas of classes and we can now add in arrays. We have gone back to The First Bank Kazan and asked them look at the code produced – they are happy with our progress, but the system is still not quite meeting with their needs. After further discussion with their employees – the user story has been updated. We now need to look back at our design in order to see what code we can keep and what will need to be updated.  
  
User Story:

Igor is a customer of The First Bank Kazan. The branch banks never have more than 100 customers at any time and allows customers to open accounts, close accounts, and processes internal transactions between their accounts and deposits and debits from customers. Branches have a branch transfer number, which allows for customers to transfer money between branches. There is at most 5 Branches in the bank in Kazan. A branch has customers and transactions. The Branch has a manager, address, telephone number, and business hours listing.

In order to open an account, it is required for Igor to give the bank information such as his first name, last name, and patronym. The bank records his date of birth, sex, and passport number in order to ensure security. First Bank Kazan has three account types, each with their own fees and interest amounts which are applied at the end of the month, these are Savings (5% interest), chequing (1000p fee at end of month), and business (1% interest). Igor has a balance, the bank requires that a Savings account has an initial deposit of 50,000p, a chequing account has a minimum 1,000p initial deposit, and businesses must have 5,000,000p initial deposit. Accounts can have transactions applied to them, which must be checked for validity. At the end of the month all transactions made must be listed in an official statement of the account, an account can have no more than 100 transactions per month.  
  
Igor can make transitions. A transaction is applied to an account based on the account number(s). Transactions can be withdrawals, deposits, transfers, and interest payments. Each transaction is given a transaction number, which is the next in sequence. Transactions should have a means of being displayed at the end of the month in a grand statement of all transactions of all accounts. There is a special type of transaction which allows for an inter-branch transfer to be made between accounts. Inter-branch transfers require the branch identifier, and the account number of both parties, and are labeled with an inter-branch transaction number, the next in sequence. An inter-branch transaction also generates a transaction on both of the reports for each of the branches involved with their own sequence numbers. For example, branches 231 and 431 have made 7 and 14 respective transactions to this point. Inter-branch transfer 1 is made between 231 and 431. These are reported as branch transactions 8 and 15 in their respective branch reports.

The bank due to a policy change is now allowing customers to change their account types via a teller transaction. In order for an account type to be changed it must still have the criteria listed above.

The bank has made a change to how it calculates interest, instead of interest being applied at the end of the month on that balance, the bank now calculates daily interest on the current amount in the account (they had customers which were gaming the system and making huge deposits on the last of the month and then withdrawing that money to gain the interest), you may assume all bank months have 30 days (i.e. simple interest on the day end of monthly percentage divided by the number of days). The bank has also recently issued a new policy – any customer whose savings account reaches more than 5,000,000p at the end of the day is transferred to business account type. The customer can only have this changed back by asking for an account change form, filling it out, and a teller issuing an account change transaction manually.

The head bank requires that 3 types of reports are available to the users. The first type is the customer’s monthly report – this lists all transactions made by the customer by the month. The second type is a branch report – listing all transactions made by the branch. The final report is the grand report which lists all transactions made by all branches, and branch to branch transfers.

1. Discussion as a group. What choices did you make in yesterday’s design that were good, what choices did you make which are bad based on the new user story. Will you need to change the entire program, or did you design code which was resilient to such changes? How can you ensure your design will stand the test of time?
2. What classes are consistent, what classes were added in your design in order to account for the new parameters of the new transactions, branches, and report writing?
3. Implement the new system based on the user story.

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Extra credit: The system requires the ability to save state – using file IO

The reports should be made into a printable format – such as a text file or pdf. Have all the reports sent to a File for printing. Can you format it to look like a proper bank report? A bank report has the branch address, telephone number, etc.