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ICT 4300

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Module 2 Homework (Pre Java Lab): Questions 1 and 2

1. **Question One (Bank Transaction):** 
   1. In the customer class, it may be of interest to be able to have the date of birth of the customer/bank account, the security question that he or she may have needed to answer to unlock their account, the type of account (checking or savings) and maybe the co-signer on the account if it is an option.
   2. The bank customer should be able to log into their account, deposit or withdraw money, transfer money to another account in his or her name or to another person with a different account. They should also be able to access their transactions from the List of Transactions class as well. Customers may also want to be able to check their balance or even convert money to a different currency for travel reasons. These are just a few of the possible choices, but there most likely are many other possible choices.
   3. List at least five other classes that may be included in the software system for keeping track of a bank account:
      1. Transaction Calculation Class – The Transaction class already is keeping track of all the transactions and is then exporting them to the list of transactions class. In order for the transaction list to fill with transaction types, you need a class to do all of the mathematical calculations/arithmetic for the type of transaction (deposit, withdrawal, transfer of funds).
      2. Database Class – Once you have the customer class with the different fields that are in the class, you will need to be able to search and store the information into the database. The database class will be able to take the input information from the customer class and manipulate/search the database by storing and removing information about each customer and their personal information.
      3. Currency Conversion Class – For people who may bank with a bank that is open to international customers, there might be a problem with currency. Every country for the most part, except for many in Europe and other regions use different forms of currency. To be able to have a class that takes the information from the Transaction Calculation class and the transaction class is important for this class to be able to work properly. It would take the information about the customer and transaction, which would then determine if the currency type matched the bank’s native currency. If not, this class would perform the proper calculation/algorithm on the currency to convert it properly to the bank’s native currency. It would then access the database class and upload or withdrawal the correct amount of money from the customer’s account.
      4. Business/Personal Class – This class may seem simple enough. It would perform an algorithm and check to see what type of customer was accessing their account. If it was a business customer, there would be a separate class to handle business transactions. If the customer was a personal at home user, the system would export this information to the private customer class that would also be written and handling information separately.
      5. Fraud Class – Other than the additional two classes listed above that mention personal versus business data, this would be important as well. This class would take in the customer’s private information from the customer class, the transaction calculation and transaction list classes. It would then compare the information to any legal watch lists and other customers in the database. It would perform an algorithm to check against fraud. If fraud was detected, it would then cancel the transaction and alert the bank.
2. **Question 2 (Library and Book Storage):**
   1. **List five different types of classes that might be part of such a system**
      1. Author/Performer Class – This class would alphabetize the different authors by first name, last name, and country of origin, (Possible Date of Death) only because this would be important to sort living authors from authors that may have passed away.
      2. Database Class – The Database Class would be able to take any user input and manipulate the database by adding, removing or changing information in the database. This would be much like the above bank transactions scenario and pretty much any other application that plans on storing information or is going to have constant transactions taking place from a user or company that is utilizing the software.
      3. Dewey Decimal System Class – Takes in information from the author or performer class. It would then cooperate with the Genre Class and then sort the book information into the correct categories number and decimal according to the Dewey Decimal System in order for the librarian to be able to print and or write the label of the correct number to store the book properly onto the shelf in order.
      4. Age Class – This class would determine the level of reading capability depending on the age of the reader, his or her grad level in school, and maybe some user input of past readings. If this class were to take in some user input of past readings from the child or adult, the class would be able to export a public algorithm to be able to determine if the book needs to be placed in the children’s section or the adult genres sections in the library. By performing this class, it would directly separate the information to help the librarian know immediately whether the book is being stored for lower to children’s reading level customers.
      5. Genre Class – There are most likely are many other classes that could be made from this software. However, genre is an important thing to consider when trying to outline where a book should be located within the library. It would take the information of the author, reading level, and time period to determine the proper genre and factor if it was age appropriate for children or not by then running the information through the Age check class. Some books have the genre directly written on the book or inside of the book. In this case, the librarian would then be able to directly type or select the genre which would skip the previous steps and transfer them directly into the Dewey Decimal System class after the author’s information is entered. The Dewey Decimal System class would then output the proper decimal number for the location of the book inside of the library.
   2. For each of the classes that might be included in the above systems design a class by listing fields and behaviors that be included in that class.
      1. Author/Performer Class
         1. Author Name
         2. Author Age
         3. Author’s Typical Genre
         4. Author’s Country of Origin or Residence
         5. Method to export all information into one complete Author or Performer
      2. Database Class
         1. Takes information from the Author/Performer class that is being search.
         2. Method to physically query the database with Regex or other functions
         3. Addition method to add information to the database
         4. Withdrawal method to remove information from the database
         5. Manipulation method to be able to change any information of a book, author or performer that is located in the database.
      3. Dewy Decimal System Class
         1. Takes information from the database query class
         2. Determines genre from the genre class
         3. Method to export the author/performer along with the genre and title of the selection/book
         4. Method to then convert the export from the first method and convert the selection to the proper number that can be found in the Dewey Decimal System.
      4. Age Class
         1. Takes input from the user about age and reading level
         2. Compares that input to the database information about the current book or article of interest in the database class
         3. Method to then perform on a comparison algorithm of the data and determine if the book needs to be placed into the children’s section or the adult section of the library
      5. Genre Class
         1. Runs through the age class, the author/performer class, the user input classes that may be present, the Dewey Decimal history in the Dewey Decimal System Class, and the information in the database class.
         2. It would then perform a method to determine the proper genre of the book, article, music, etc.
         3. The next method would take the genre decision output from the first method and push it to the Dewey Decimal class to then determine the proper Dewey Decimal system number for the article of interest or book.
3. NEXT ARE THE THREE JAVA LAB QUESTIONS