Lab Practice – Thursday, June 9, 2022

Identify and write the code of classes, their attributes, behavior/method and relationships that shall fulfil below requirements. Think and decide yourself where you need to use which type, where enum make sense, where overloading, overriding and inheritance can help etc. to devise a solution that is reusable and maintainable. It has nothing to do with how real banking work, so don’t worry if something do not make sense to you.

A bank allow citizens to open accounts, each account must have an id, opening balance, account holder name, and age. Bank offers 3 types of accounts i.e. current account, saving account and investment account. Bank gives no profit on current accounts but to others. So, the saving and investment account are earning accounts, means the account holders of saving and investment accounts make profit from their deposits.

Both earning based account shall expose a public behavior to retrieve total earnings (how it’s calculated is explained below). All saving accounts has a category that is fixed and do not change i.e. young saver, adult saver, and senior citizen saver. Category shall be auto assigned to each saving account at the time of account opening (means at the time of object instantiation) depending on the age of account holder i.e. young, adult, and senior citizen for age below 35, from 35 to 50 age, and above 50, respectively. Bank gives 6% annual profit to young savers, 7% profit to adult savers and 8% to senior citizen savors. Users can withdraw and deposit any time in current and saving accounts, no extra fee is charged.

Each investment account has a type too. The type indicate for how much duration the investment is made. These types are fixed and shall not change during the life cycle of account. These types include one year, three year or five year. It must be specified at the time of account opening. Bank gives 10% profit who open investment account for one year, 12% per year for three year investment and 14% profit who open account for 5 years investment plan. For example, if a senior citizen open an investment account of one year type with initial balance of 100,000, after a year, his earning shall be 112000. For more than one year plan, the investment shall be compounded for subsequent years e.g. if an account belong to 3 year investment plan that was opened with 100,000 PKR investment. First year profit shall be calculated on 100,000, resulting into 112,000, the second year profit of 12% shall be calculated on 112,000 and so on. Bank discourage withdraws from all type of investment accounts, when an account holder withdraw some amount from investment account, bank deduct 4% of that amount as surcharge.

Make an ArrayList which contains one of each type of accounts and then store these objects in a file. Make sure your code is properly indented and meaningful names are used. The name of the main class should be your SID.