# Spring Core Hands On – EBanking

**Important Instructions:**

- Please read the document thoroughly before you code.
- Import the given skeleton code into your Eclipse.
- Do not change the Skeleton code or the package structure, method names, variable names, return types, exception clauses, access specifiers etc.
- You can create any number of private methods inside the given class.
- You can test your code from main() method of the program
- Using Spring Core develop the application using xml configuration. Object creation and Initialization of variables should be done through constructor injection only .

**Assessment Coverage:**

- **Classes, Objects and Members, Construction Injection**
- **Inheritance, Collection, Property Configuration**

Purpose of this exercise is to simulate a banking process which provides below functionalities:

a) Create **Current Account** and do deposit and withdraw functions.

b) Create **Fixed Deposit Account** and calculate the maturity amount based on deposit and tenure

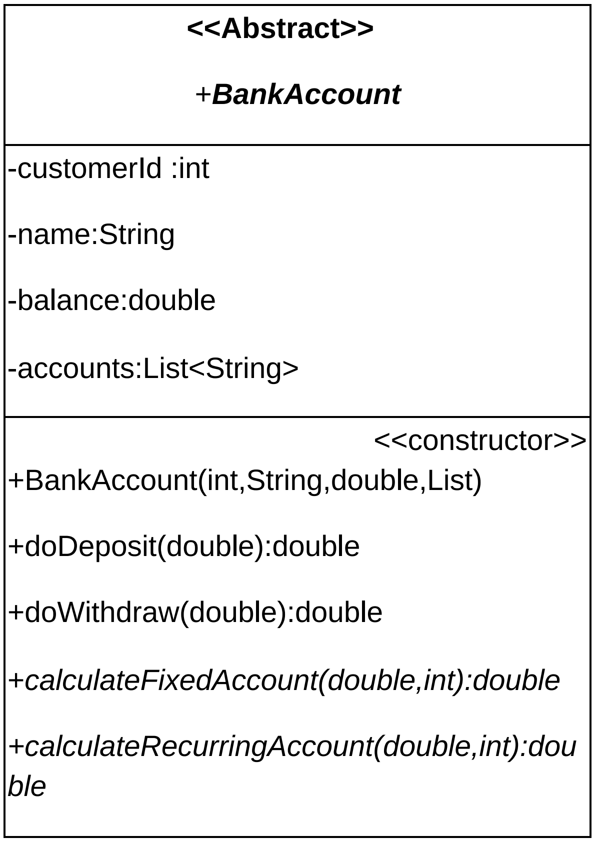
c) Create **Recurring Deposit Account** and calculate the maturity amount based on deposit and tenure.

## Skeleton File for Development:

Import the below attached skeleton code into your eclipse project and implement the required functionalities

## Technical Requirements:

You are required to do the exercise following below conditions.



**<<Abstract>>**

+***BankAccount***

-customerId :int

-name:String

-balance:double

-accounts:List<String>

<<constructor>>

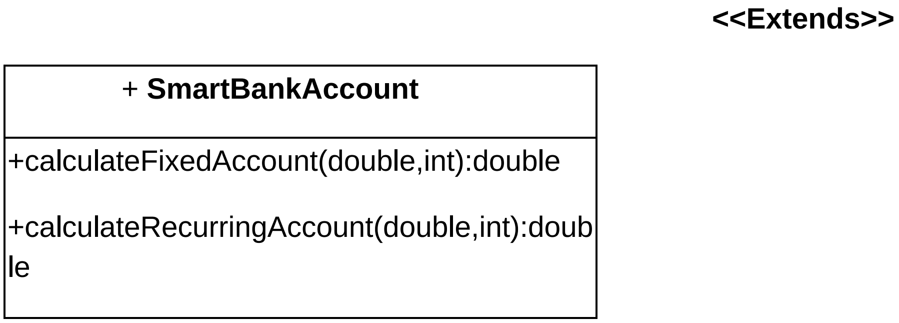
+BankAccount(int,String,double,List)

+doDeposit(double):double

+doWithdraw(double):double

*+calculateFixedAccount(double,int):double*

*+calculateRecurringAccount(double,int):double*



**<<Extends>>**

+ **SmartBankAccount**

+calculateFixedAccount(double,int):double

+calculateRecurringAccount(double,int):double

**Step 1:** Create an **abstract** class **BankAccount** with below mentioned private member variables and public methods:

| | |
|---|---|
| customerId | int |
| name | String |
| balance | double |
| accounts | List<String> |

Define a **public parameterized constructor with all the above variables in the same order of parameters**, along with getter and setter methods.

| **Specifier/Modifier** | **Method Name** | **Input Parameters** | **Output Parameters** | **Logic** |
|---|---|---|---|---|
| public | doDeposit | double amount | double | This method accepts amount as parameter and adds amount to balance and returns balance |
| public | doWithdraw | double amount | double | This method accepts |

| | | | | |
|---|---|---|---|---|
| | | | | amount as parameter and deducts amount from balance and returns balance |
| Public abstract | calculateFixedAccount | double amount, int months | double | This method takes amount and months as parameters and calculates fixed maturity amount and returns it |
| Public abstract | calculateRecurringAccount | double amount, int months | double | This method takes amount and months as parameters and calculates recurring maturity amount and return it. |

**Business Rules:**

| **Methods** | **Business Condition** |
|---|---|
| calculateFixedAccount | Amount should be greater than 9999 and less than 1000001 and tenure should be less than 121 months and greater than 0. Return should be format to 2 decimal places.<br>Hint :Use DecimalFormat API |
| calculateRecurringAccount | Amount should be greater than 999 and less than 50001 and tenure less than 61 months and greater than 0. Return should be format to 2 decimal places.<br>Hint :Use DecimalFormat API |

**BankAccount** class should be registered as a **bean** as '**abstract= true**' with the spring container via **XML file**.

**Step 2: Create** class **SmartBankAccount** which **extends** BankAccount and give implementation for abstract methods calculateFixedAccount and calculateRecurringAccount. Use below formulas to calculate fixed deposit and recurring deposit .For fixed deposit interest is fixed at 10% and for recurring deposit interest is fixed at 7%.

**SmartBankAccount** class should be registered as a **bean** with the spring container via **XML file** with **bean id** as **smartBankAccount**.

The values for all the attributes should **be injected via constructor based injection** , the default **custId** should be **100**, **name** should be **'Joe'**, **balance** should be **10000**, **accounts** should be a list containing values **"CurrentAccount", "RecurringAccount", "FixedAccount".** Values of list should be fetched from properties file called **accounts.properties** using property configuration concept by creating a bean of PropertyPlaceholderConfigurer in spring container via XML file.

**accounts.properties**

| **Key** | **Value** |
|---|---|
| Current | CurrentAccount |
| Recurring | RecurringAccount |
| Fixed | FixedAccount |

**Fixed Amount** : $A=P(1 + r/n)^{nt}$

A=final amount, P=initial principal balance, r=interest rate, n=number of times interest applied per time period, t=number of time periods elapsed

e.g: p=10000, r=10%=0.1, n=12, t=60

result = $10000*( ( 1+ ( o.10 ) /12 )^{12*(60/12)} )$

A=16453.09

**Recurring Amount**: (P*n)+(P(n(n+1)/(2*12))*(r/100))

P=initial principal balance, r=interest rate, n=number of times interest applied per time period

e.g: p=10000, r=7%, n=12

result = (10000*12) + (10000(12(12+1)/24)*(0.07))=124550.00

**General Design Constraints:**

- Ensure that all the Java Coding Standards are followed.
- Assume that the method inputs are valid always, hence exceptional blocks are not needed to be included in the development.

**Sample Input Output 1:**

```
Welcome Mr/Ms: Joe
Your customer id is :100
Please select account type
1 CurrentAccount
2 RecurringAccount
3 FixedAccount
1
Select transaction type
```

```
 1.Deposit
 2.Withdraw
1
Enter amount to be deposited
10000
Your balance amount is 20000.00
```

**Sample Input Output 2:**

```
Welcome Mr/Ms: Joe
Your customer id is :100
Please select account type
1 CurrentAccount
2 RecurringAccount
3 FixedAccount
1
Select transaction type
 1.Deposit
 2.Withdraw
2
Enter amount to be withdrawn
5000
Your balance amount is 5000.00
```

**Sample Input Output 3:**

```
Welcome Mr/Ms: Joe
Your customer id is :100
Please select account type
1 CurrentAccount
2 RecurringAccount
3 FixedAccount
2
Enter monthly installment
15000
Enter tenure in months
10
Your balance after 10 months will be 154812.50
```

**Sample Input Output 4:**

```
Welcome Mr/Ms: Joe
Your customer id is :100
Please select account type
1 CurrentAccount
2 RecurringAccount
```

```
3 FixedAccount
3
Enter FD amount
100000
Enter tenure in months
36
Your balance after 36 months will be 134818.18
```