

1.

Create a class named "BankAccount" with private instance variables "accountNumber" and "balance." Implement encapsulation by providing public getter and setter methods for both variables. Additionally, create an abstract method called "calculateInterest" in the "BankAccount" class. Implement two subclasses, "SavingsAccount" and "CheckingAccount," that extend the "BankAccount" class and provide their own implementations of the "calculateInterest" method. Write the implementation code for the getter and setter methods in the "BankAccount" class, and the "calculateInterest" method in both the "SavingsAccount" and "CheckingAccount" classes. Assuming that the interest for saving is 12% and checking is 2% (both private variables), find out What will be the interest for a person with 1 million in his checking and 20 million in his saving account.

```
package com.mycompany.TestBankAccounts;

public class TestBankAccounts
{
    public static void main(String[] args)
    {
        CheckingAccount checkingAccount = new CheckingAccount("123456789", 1000000);
        SavingsAccount savingsAccount = new SavingsAccount("987654321", 20000000);

        double checkingInterest = checkingAccount.calculateInterest();
        double savingsInterest = savingsAccount.calculateInterest();

        System.out.println("Interest for Checking Account: $" + checkingInterest);
        System.out.println("Interest for Savings Account: $" + savingsInterest);
    }
}
```

```
package com.mycompany.TestBankAccounts;

public abstract class BankAccount {

    private String accountNumber;

    private float balance;

    public BankAccount(String accountNumber, float balance) {

        this.accountNumber = accountNumber;

        this.balance = balance;

    }

    public String getAccountNumber() {

        return accountNumber;

    }

    public void setAccountNumber(String accountNumber) {

        this.accountNumber = accountNumber;

    }

    public float getBalance() {

        return balance;

    }

    public void setBalance(float balance) {

        this.balance = balance;

    }

    public abstract float calculateInterest();

}
```

```
package com.mycompany.TestBankAccounts;

public class SavingsAccount extends BankAccount {

    private static final float INTEREST_RATE = 0.12;

    public SavingsAccount(String accountNumber, float balance) {

        super(accountNumber, balance);

    }

    @Override

    public float calculateInterest() {

        return getBalance() * INTEREST_RATE;

    }

}
```

```
package com.mycompany.TestBankAccounts;

public class CheckingAccount extends BankAccount

{

    private static final float INTEREST_RATE = 0.02;

    public CheckingAccount(String accountNumber, float balance) {

        super(accountNumber, balance);

    }

    public float calculateInterest() {

        return getBalance() * INTEREST_RATE;

    }

}
```