Homework 6

CST 338

Create a Java application with three interfaces named `Depositable`, `Withdrawable`, and `Balanceable` that specify the methods that can be used to work with accounts.

The `Depositable` interface should include this method:

```java
public void deposit(double amount)
```

The `Withdrawable` interface should include this method:

```java
public void withdraw(double amount)
```

The `Balanceable` interface should include these methods:

```java
public double getBalance()
public void setBalance(double amount)
```

Create a class named **Account** that implements all **three** of these interfaces. This class should include an instance variable for the balance.

Create a class named **CheckingAccount** that inherits the **Account** class. This class should include an instance variable for the monthly fee that's initialized to the value that's passed to the constructor. This class should also include methods that subtract the monthly fee from the account balance and return the monthly fee.

Create a class named **SavingsAccount** that inherits the **Account** class. This class should include instance variables for the monthly interest rate and the monthly interest payment. The monthly interest rate should be initialized to the value that's passed to the constructor. The monthly interest payment should be calculated by a method that applies the payment to the account balance. This class should also include a method that returns the monthly interest payment.

Create a class named **AccountApp** that prompts the user to enter the initial values.
Then, it asks for a transaction, posts the transaction, and displays the information on the
console output. Basically, it includes the `main()` method and creates necessary objects
for the transactions.

Your program should display the money amount properly with the dollar sign ($) and
cent amounts (two digits after decimal sign). Also, your program should display the
interest rate percentage properly.

The following presents a sample run of your program. Based on the sample run, identify
the detail operation of the application.

```
Welcome to the Account application

Enter initial Checking amount: 1000.0
Enter initial Savings amount: 1000.0
Enter Checking fee: 1.0
Enter Savings interest rate: 0.01

OK! This is your information
Checking Amount: $1,000.00
Savings Amount: $1,000.00
Checking Fee: $1.00
Interest Rate: 1%

Enter the transactions for the month

Withdrawal or deposit? (w/d): w
Checking or Savings? (c/s): c
Amount?: 500

Continue? (y/n): y

Withdrawal or deposit? (w/d): d
Checking or Savings? (c/s): s
Amount?: 200

Continue? (y/n): n
```

```
Monthly Payments and Fees
Checking fee:              $1.00
Savings interest payment:  $12.00

Final Balances
Checking: $499.00
Savings: $1,212.00
```

This is another sample run of your program:

```
Welcome to the Account application

Enter initial Checking amount: 200.0
Enter initial Savings amount: 100.0
Enter Checking fee: 2.0
Enter Savings interest rate: 0.1

OK! This is your information
Checking Amount: $200.00
Savings Amount: $100.00
Checking Fee: $2.00
Interest Rate: 10%

Enter the transactions for the month

Withdrawal or deposit? (w/d): w
Checking or Savings? (c/s): s
Amount?: 10

Continue? (y/n): y

Withdrawal or deposit? (w/d): w
Checking or Savings? (c/s): s
Amount?: 10
Continue? (y/n): n

Monthly Payments and Fees
Checking fee:              $0.00
Savings interest payment:  $8.00
```

```
Final Balances
Checking: $200.00
Savings: $88.00
```

Yet another sample run of your program:

```
Welcome to the Account application

Enter initial Checking amount: 150
Enter initial Savings amount: 150
Enter Checking fee: 1.5
Enter Savings interest rate: 0.15

OK! This is your information
Checking Amount: $150.00
Savings Amount: $150.00
Checking Fee: $1.50
Interest Rate: 15%

Enter the transactions for the month

Withdrawal or deposit? (w/d): d
Checking or Savings? (c/s): c
Amount?: 100

Continue? (y/n): y

Withdrawal or deposit? (w/d): w
Checking or Savings? (c/s): c
Amount?: 100

Continue? (y/n): y

Withdrawal or deposit? (w/d): d
Checking or Savings? (c/s): c
Amount?: 10
Continue? (y/n): n
```

```
Monthly Payments and Fees
Checking fee:              $4.50
Savings interest payment:  $22.50

Final Balances
Checking: $155.50
Savings: $172.50
```

Your program will be graded based on:

1. Compilation without error
2. Correct output result
3. Good programming structure
4. Comments (Title, Abstract, and Date are mandatory for each file.)
5. Meaningful and related variable names.