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1I/01/2241720263

Case:

Create a banking information system program that will be used to manage some **Account** data. It will be used to display data, to sort data with certain criteria, to search data and to perform the transaction (withdrawal and deposit). Withdrawal will reduce balance, while deposit will add balance. The Account data consists of accountNumber, name, motherName, phone, email and balance.
The program must have features/menus as follows:

1. Input/add **Account** data
2. Display all **Account** data
3. Sort **Account** data based on the **balance** in **descending** mode (you can use any sorting algorithm)
4. Display **Account** data that have **balance** = 0
5. Search **Account** data based on the **name** keyword
6. Withdraw certain **Account** for some money
7. Deposit certain

Amount with some

money Use the

following data for on

your program

the following data for on your program

accountNumber	name	phone	email	Initial balance
16030927 3084	Wallace	1-458-264-3263	ligula.Nullam@tacitisociosqu.edu	10000
16100617 0573	Darius	1-357-843-0547	nec@lectusjusto.org	7000
16240401 2243	Fuller	571-7062	convallis@Vestibulumanteipsum.org	5000
16270525 0112	Malcolm	623-0234	porttitor.tellus.non@Curabitur.ca	44000
16971204 2416	Geoffrey	1-683-416-8323	ut.pellentesque@luctusutpellentesque.com	50000
16100727 8862	Rudyard	650-5379	Proin.eget@velitegestaslacinia.ca	123000
16460329 4259	Troy	897-7608	pede.Suspendisse.dui@a.ca	100000
16320421 3437	Alec	792-4447	non@mus.com	34000
16180729 7229	Walter	863-8209	Pellentesque.ut.ipsum@neque.ca	334544
16950313 6823	Simon	592-6919	tellus.justo.sit@commodoauctor.net	23444
16850708 3528	Kamal	1-115-339-7678	dictum@nec.edu	567770

8.

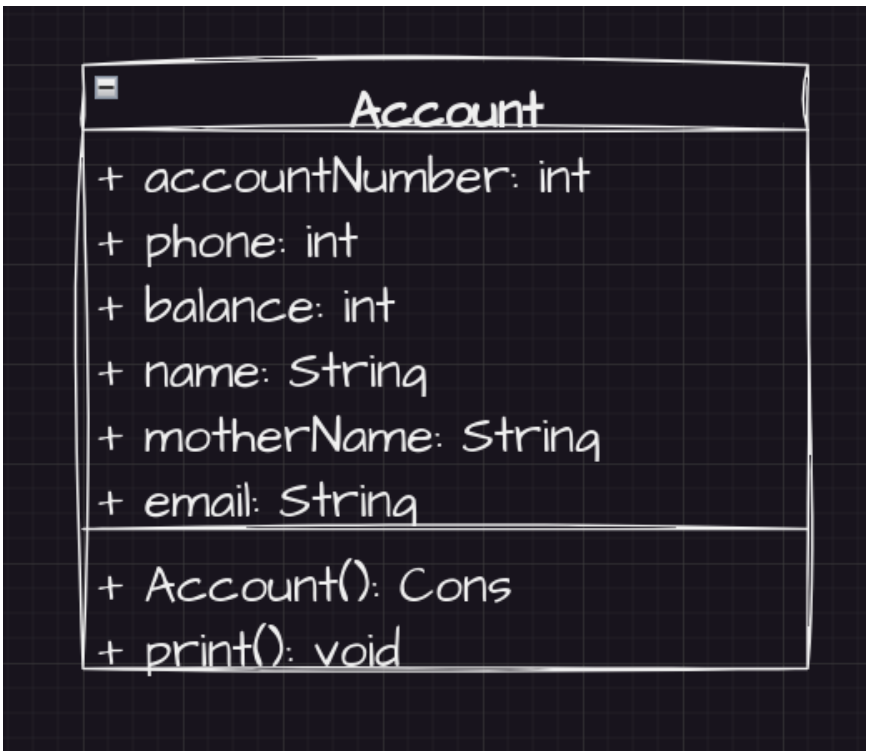
Question:

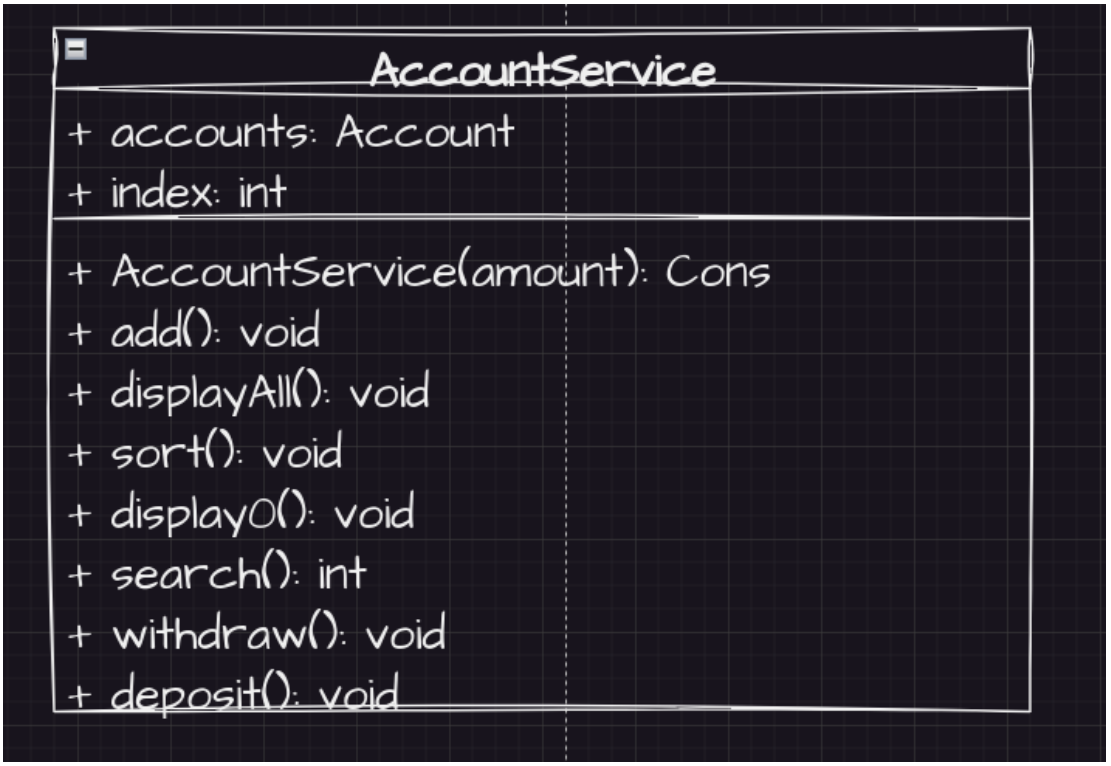
Based on the case given above:

1. Create class diagram/s for your program design
2. Create the program that implements class diagram to solve the problem of the case above (give comments to give explanation for the source code)
3. Put the (1) class diagram, (2) screenshoot of your program source code and (3) screenshoot of the output of the program in a PDF file
4. Submit the PDF file through your LMS account

Answer:

Class diagram


Account
+ accountNumber: int
+ phone: int
+ balance: int
+ name: String
+ motherName: String
+ email: String
+ Account(): Cons
+ print(): void


AccountService
+ accounts: Account
+ index: int
+ AccountService(amount): Cons
+ add(): void
+ displayAll(): void
+ sort(): void
+ display0(): void
+ search(): int
+ withdraw(): void
+ deposit(): void

Code :

```java
public class Account {
    public int accountNumber, phone;
    public String name, motherName, email;
    public double balance;

    public Account(int accountNumber, int phone, String name, String motherName, String email, double balance) {
        this.accountNumber = accountNumber;
        this.phone = phone;
        this.name = name;
        this.motherName = motherName;
        this.email = email;
        this.balance = balance;
    }

    public void print() {
        System.out.println("Account Number = " + accountNumber);
        System.out.println("Phone = " + phone);
        System.out.println("Name = " + name);
        System.out.println("Mother Name = " + motherName);
        System.out.println("Email = " + email);
        System.out.println("Balance = " + balance);
    }
}
```

```java
import java.util.Scanner;

public class Main {
    public static void main(String[] args) throws Exception {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Insert amount of data : ");
        int amount = scanner.nextInt();

        AccountService data = new AccountService(amount);

        for (int i = 0; i < amount; i++) {
            System.out.print("Account Number : ");
            int accountNumber = scanner.nextInt();
            System.out.print("Phone : ");
            int phone = scanner.nextInt();
            System.out.print("Balance : ");
            int balance = scanner.nextInt();
            System.out.print("Name : ");
            String name = scanner.next();
            System.out.print("Mother Name : ");
            String motherName = scanner.next();
            System.out.print("Email : ");
            String email = scanner.next();

            Account account = new Account(accountNumber, phone, name, motherName, email, balance);
            data.add(account);
        }
        System.out.println();

        System.out.println("List of Data");
        data.displayAll();
        System.out.println();

        System.out.println("List of Data that Balance 0");
        data.display0();
        System.out.println();

        System.out.println("List of Data After Sorting");
        data.sort();
        data.displayAll();
        System.out.println();

        System.out.print("Search name : ");
        String search = scanner.next();
        int position = data.search(search);
        System.out.println();

        data.showPosition(search, position);
        System.out.println();
        data.showData(search, position);

        System.out.println();

        System.out.print("Enter account number to withdraw : ");
        int accountNumber = scanner.nextInt();
        System.out.print("Enter amount to withdraw : ");
        double amountToWithdraw = scanner.nextDouble();
        data.withdraw(accountNumber, amountToWithdraw);

        System.out.println();

        System.out.print("Enter account number to deposit : ");
        accountNumber = scanner.nextInt();
        System.out.print("Enter amount to deposit : ");
        double amountToDeposit = scanner.nextDouble();
        data.deposit(accountNumber, amountToDeposit);

        scanner.close();
    }
}

```

```java
public class AccountService {
    Account [] accounts;
    int index;

    public AccountService(int amount) {
        accounts = new Account[amount];
    }

    public void add(Account account) {
        if (index < accounts.length) {
            accounts[index] = account;
            index++;
        }
    }

    public void displayAll() {
        for (Account account : accounts) {
            account.print();
            System.out.println();
            System.out.println("================================");
        }
    }

    public void sort() {
        for (int i = 0; i < accounts.length-1; i++) {
            for (int j = 1; j < accounts.length-i; j++) {
                if (accounts[j].balance > accounts[j-1].balance) {
                    // swap
                    Account tmp = accounts[j];
                    accounts[j] = accounts[j-1];
                    accounts[j-1] = tmp;
                }
            }
        }
    }

    public void display0() {
        for (Account account : accounts) {
            if (account.balance == 0) {
                account.print();
                System.out.println();
                System.out.println("================================");
            }
        }
    }

    public int search(String search) {
        int position = -1;
        for (int i = 0; i < accounts.length; i++) {
            if (accounts[i].name.equalsIgnoreCase(search)) {
                position = i;
                break;
            }
        }
        return position;
    }

    public void showPosition(String x, int pos) {
        if (pos != -1) {
            System.out.println("Data : " + x + " is found in index-" + pos);
        } else {
            System.out.println("Data : " + x + " is not found!");
        }
    }

    public void showData(String x, int pos) {
        if (pos != -1) {
            System.out.println("Account number \t = " + accounts[pos].accountNumber);
            System.out.println("Phone \t = " + accounts[pos].phone);
            System.out.println("Balance \t = " + accounts[pos].balance);
            System.out.println("Name \t = " + x);
            System.out.println("Mother Name \t = " + accounts[pos].motherName);
            System.out.println("Email \t = " + accounts[pos].email);
        } else {
            System.out.println("Data " + x + " is not found!");
        }
    }

    public void withdraw(int accountNumber, double amount) {
        for (int i = 0; i < accounts.length; i++) {
            if (accounts[i].accountNumber == accountNumber) {
                if (accounts[i].balance >= amount) {
                    accounts[i].balance -= amount;
                    System.out.println("Withdrawal successful. New balance: " + accounts[i].balance);
                } else {
                    System.out.println("Insufficient balance.");
```

Result :

```
List of Data
Account Number = 573
Phone = 8430547
Name = Darius
Mother Name = motherDarius
Email = nec@lectusjusto.org
Balance = 7000.0

==================================
Account Number = 3437
Phone = 7924447
Name = Alec
Mother Name = motherAlec
Email = non@mus.com
Balance = 34000.0

==================================
Account Number = 7229
Phone = 8638209
Name = Walter
Mother Name = motheraWalter
Email = walter@gmail.com
Balance = 0.0

==================================
```

```
List of Data that Balance 0
Account Number = 7229
Phone = 8638209
Name = Walter
Mother Name = motheraWalter
Email = walter@gmail.com
Balance = 0.0

==================================
```

```
List of Data After Sorting
Account Number = 3437
Phone = 7924447
Name = Alec
Mother Name = motherAlec
Email = non@mus.com
Balance = 34000.0

==================================
Account Number = 573
Phone = 8430547
Name = Darius
Mother Name = motherDarius
Email = nec@lectusjusto.org
Balance = 7000.0

==================================
Account Number = 7229
Phone = 8638209
Name = Walter
Mother Name = motheraWalter
Email = walter@gmail.com
Balance = 0.0

==================================
```

```
==================================

Search name : Alec

Data : Alec is found in index-0

Account number   = 3437
Phone    = 7924447
Balance          = 34000.0
Name     = Alec
Mother Name      = motherAlec
Email    = non@mus.com

Enter account number to withdraw : 3437
Enter amount to withdraw : 1000
Withdrawal successful. New balance: 33000.0

Enter account number to deposit : 3437
Enter amount to deposit : 5000
Deposit successful. New balance: 38000.0
```