Practical No.9

Write a java program to create a class named 'Bank ' with the following data members:

Name of depositor

Address of depositor

Account Number

Balance in account

Class 'Bank' has a method for each of the following:

1 - Generate a unique account number for each depositor

For first depositor, account number will be 1001, for second depositor it will be 1002 and so on

2 - Display information and balance of depositor

3 - Deposit more amount in balance of any depositor

4 - Withdraw some amount from balance deposited

5 - Change address of depositor

After creating the class, do the following operations

1 - Enter the information (name, address, account number, balance) of the depositors. Number of depositors is to be entered by user.

2 - Print the information of any depositor.

3- Add some amount to the account of any depositor and then display final information of that depositor

4 - Remove some amount from the account of any depositor and then display final information of that depositor

5 - Change the address of any depositor and then display the final information of that depositor
6 - Randomly repeat these processes for some other bank accounts.

Source code:

```
import java.util.Scanner;
class Bank {
    String name;
    String address;
    int accNo;
    double balance;

    void setAllDetails(String vName, String vAddress, int vAccNo, double vBalance) {
        name = vName;
        address = vAddress;
        accNo = vAccNo;
        balance = vBalance;
    }

    void showDetails() {
        System.out.println("Name: " + name);
        System.out.println("Address: " + address);
        System.out.println("Account No. : " + accNo);
        System.out.println("Balance: " + balance);
    }

    void changeAddress(String vAddress) {
        if (address.equals(vAddress)) {
            System.out.println("You have entered the same address as the previous one");
            return;
        }
        address = vAddress;
        System.out.println("Your address has been successfully changed");
```

```
    }

    void deposit(double amount) {
        if (amount <= 0) {
            System.out.println("Invalid amount");
        } else {
            balance += amount;
            System.out.println(amount + " has been successfully deposited!");
            System.out.println("Total balance after depositing money: " + balance);
        }
    }

    void withdrawl(double amount) {
        if (amount <= 0) {
            System.out.println("Invalid amount");
        } else if (amount > balance) {
            System.out.println("INSUFFICIENT BANK BALANCE!!");
            System.out.println("TOTAL BALANCE: " + balance);
        } else {
            balance -= amount;
            System.out.println(amount + " has been successfully withdrawn!");
            System.out.println("Total balance after withdrawing money: " + balance);
        }
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter number of users: ");
        int n = sc.nextInt();
```

```
        Bank[] obj = new Bank[n];
        String vName, vAddress;
        int vAccNo;
        double vBalance;

        for (int i = 0; i < n; i++) {
            sc.nextLine();
            System.out.print("Enter your name: ");
            vName = sc.nextLine();
            System.out.print("Enter your address: ");
            vAddress = sc.nextLine();
            boolean isUnique;
            do {
                isUnique = true;
                System.out.print("Enter your account no.: ");
                vAccNo = sc.nextInt();
                for (int j = 0; j < i; j++) {
                    if (obj[j].accNo == vAccNo) {
                        isUnique = false;
                            System.out.println("Account number already exists. Please enter a different
one.");
                        break;
                    }
                }
            } while (!isUnique);

            System.out.print("Enter your balance: ");
            vBalance = sc.nextDouble();
            obj[i] = new Bank();
```

```
        obj[i].setAllDetails(vName, vAddress, vAccNo, vBalance);
        System.out.println("");
    }

    int ch;
    do {
        System.out.println("Enter 1 to show details");
        System.out.println("Enter 2 to deposit");
        System.out.println("Enter 3 to withdraw");
        System.out.println("Enter 4 to change address");
        System.out.println("Enter 5 to EXIT");
        int flag = 0;
        double amt;
        String adr;
        System.out.println("");
        System.out.print("Enter your choice: ");
        ch = sc.nextInt();
        switch (ch) {
            case 1:
                System.out.print("Enter your account no.: ");
                vAccNo = sc.nextInt();
                for (int i = 0; i < n; i++) {
                    if (obj[i].accNo == vAccNo) {
                        obj[i].showDetails();
                        flag = 1;
                    }
                }
                if (flag == 0) {
                    System.out.println("INVALID ACCOUNT NUMBER");
```

```
        }
        break;
    case 2:
        System.out.print("Enter your account no.: ");
        vAccNo = sc.nextInt();
        System.out.print("Enter amount to be deposited: ");
        amt = sc.nextDouble();
        for (int i = 0; i < n; i++) {
            if (obj[i].accNo == vAccNo) {
                obj[i].deposit(amt);
                flag = 1;
            }
        }
        if (flag == 0) {
            System.out.println("INVALID ACCOUNT NUMBER");
        }
        break;
    case 3:
        System.out.print("Enter your account no.: ");
        vAccNo = sc.nextInt();
        System.out.print("Enter amount to be withdrawn: ");
        amt = sc.nextDouble();
        for (int i = 0; i < n; i++) {
            if (obj[i].accNo == vAccNo) {
                obj[i].withdrawl(amt);
                flag = 1;
            }
        }
        if (flag == 0) {
```

```
                System.out.println("INVALID ACCOUNT NUMBER");
            }
            break;
        case 4:
            System.out.print("Enter your account no.: ");
            vAccNo = sc.nextInt();
            sc.nextLine();
            System.out.println("Enter new address: ");
            adr = sc.nextLine();
            for (int i = 0; i < n; i++) {
                if (obj[i].accNo == vAccNo) {
                    obj[i].changeAddress(adr);
                    flag = 1;
                }
            }
            if (flag == 0) {
                System.out.println("INVALID ACCOUNT NUMBER");
            }
            break;
        case 5:
            System.out.println("Exiting....");
            break;
        default:
            System.out.println("INVALID CHOICE");
      }
    } while (ch != 5);
  }
}
```

OUTPUT:

```
PS C:\Users\bajel\OneDrive\Desktop\MANSI BAJELI>  c:; cd 'c:\Users\bajel\OneDrive\Desktop\MANSI BAJELI'; & 'C:\Program Files\Java\jdk-23\bin\
sInExceptionMessages' '-cp' 'C:\Users\bajel\AppData\Roaming\Code\User\workspaceStorage\62562c7cfbadb842afa4e4eaa6c03be5\redhat.java\jdt_ws\M
Enter number of users: 2
Enter your name: Mansi Bajeli
Enter your address: dehradun
Enter your account no.: 1001
Enter your balance: 200000

Enter your name: Bhoomika
Enter your address: delhi
Enter your account no.: 1001
Account number already exists. Please enter a different one.
Enter your account no.: 1002
Enter your balance: 100000

Enter 1 to show details
Enter 2 to deposit
Enter 3 to withdraw
Enter 4 to change address
Enter 5 to EXIT

Enter your choice: 1
Enter your account no.: 1001
Name: Mansi Bajeli
Address: dehradun
Account No. : 1001
Balance: 200000.0
Enter 1 to show details
Enter 2 to deposit
Enter 3 to withdraw
Enter 4 to change address
Enter 5 to EXIT

Enter your choice: 2
Enter your account no.: 1002
Enter amount to be deposited: 1000
1000.0 has been successfully deposited!
Total balance after depositing money: 101000.0
Enter 1 to show details
Enter 2 to deposit
Enter 3 to withdraw
Enter 4 to change address
Enter 5 to EXIT

Enter your choice: 5
Exiting....
```

Practical No.10

Define a class WordExample having the following description:

Data members/instance variables:

private String strdata : to store a sentence.

Parameterized Constructor

WordExample(String) : Accept a sentence which may be terminated by either'.', '? 'or '!' only. The words may be separated by more than one blank space and are in UPPER CASE.

Member Methods:

void countWord(): Find the number of words beginning and ending with a vowel.

void placeWord(): Place the words which begin and end with a vowel at the beginning, followed by the remaining words as they occur in the sentence.

Source code:

```
import java.util.Scanner;
class WordExample {
   private String strdata;
   WordExample(String str) {
      strdata = str;
   }

   boolean isVowel(String str) {
      char ch = str.charAt(0);
      char ch1 = str.charAt(str.length() - 1);
      if (ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U') {
         if (ch1 == 'A' || ch1 == 'E' || ch1 == 'I' || ch1 == 'O' || ch1 == 'U') {
            return true;
         }
      }
      return false;
   }
   void countWord() {
```

```
        String[] words = strdata.split("\\s+");
        int count = 0;
        for (String word : words) {
            if (isVowel(word)) {
                count++;
            }
        }
        System.out.println("COUNT OF WORDS STARTING AND ENDING WITH VOWEL:
" + count);
    }

    void placeWord() {
        String[] words = strdata.split("\\s+");
        String s1 = "", s2 = "";
        for (String word : words) {
            if (isVowel(word)) {
                s1 = s1 + word + " ";
            } else {
                s2 = s2 + word + " ";
            }
        }
        s1 = s1 + s2;
        System.out.println("MODIFIED STRING: " + s1);
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("enter the string:");
        String str = sc.nextLine();
```

```
        str = str.toUpperCase();
        WordExample obj;
        if (str.endsWith(".") || str.endsWith(",") || str.endsWith("?") || str.endsWith("!")) {
            obj = new WordExample(str);
            obj.countWord();
            obj.placeWord();
        }
        else
        {
            System.out.println("INVALID STRING");
        }

    }

}
```

OUTPUT:

```
PS C:\Users\bajel\OneDrive\Desktop\MANSI BAJELI>  c:; cd 'c:\Users\bajel\OneDrive\Desktop\MANSI BAJELI
:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\bajel\AppData\Roaming\Code\User\workspaceStorage
89\bin' 'WordExample'
enter the string:hello everyone welcome to the world of programming.
COUNT OF WORDS STARTING AND ENDING WITH VOWEL: 1
MODIFIED STRING: EVERYONE HELLO WELCOME TO THE WORLD OF PROGRAMMING.
PS C:\Users\bajel\OneDrive\Desktop\MANSI BAJELI> javac WordExample.java
PS C:\Users\bajel\OneDrive\Desktop\MANSI BAJELI> java WordExample
enter the string:mango apple orange banana.
COUNT OF WORDS STARTING AND ENDING WITH VOWEL: 2
MODIFIED STRING: APPLE ORANGE MANGO BANANA.
```

Practical No.11

Write a Java program to create a class called ArrayDemo and overload arrayFunc() function.
void arrayFunc(int [], int) ➔To find all pairs of elements in an Array whose sum is equal to a given number.

void arrayFunc(int A[], int p, int B[], int q)➔Given two sorted arrays A and B of size p and q, Overload method arrayFunc() to merge elements of A with B by maintaining the sorted order i.e. fill A with first p smallest elements and fill B with remaining elements.

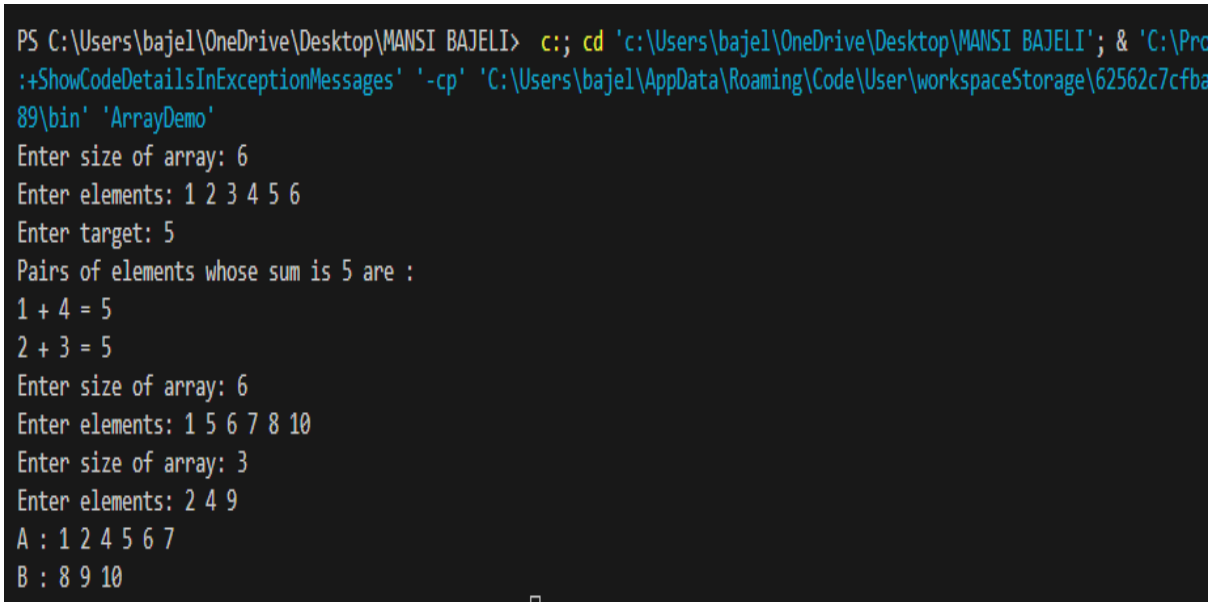
Source code:

```
import java.util.Arrays;
import java.util.Scanner;
class ArrayDemo {
   void arrayFunc(int[] numbers, int target) {
     System.out.println("Pairs of elements whose sum is " + target + " are : ");
      boolean found = false;
      for (int i = 0; i < numbers.length; i++) {
         for (int j = i + 1; j < numbers.length; j++) {
            if (numbers[i] + numbers[j] == target) {
               System.out.println(numbers[i] + " + " + numbers[j] + " = " + target);
               found = true;
            }
         }
      }
      if (!found) {
         System.out.println("No pairs found.");
      }
   }
   void arrayFunc(int[] A, int p, int[] B, int q) {
      int i = p - 1, j = 0;
      while (i >= 0 && j < q && A[i] > B[j]) {
```

```
            int temp = A[i];
            A[i] = B[j];
            B[j] = temp;
            i--;
            j++;
        }
        Arrays.sort(A);
        Arrays.sort(B);
        System.out.print("A : ");
        for (int num : A) {
            System.out.print(num+" ");
        }
        System.out.println("");
        System.out.print("B : ");
        for (int num : B) {
            System.out.print(num+" ");
        }
    }
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        ArrayDemo obj = new ArrayDemo();
        System.out.print("Enter size of array: ");
        int n = sc.nextInt();
        int arr[] = new int[n];
        System.out.print("Enter elements: ");
        for (int i = 0; i < n; i++) {
            arr[i] = sc.nextInt();
        }
        System.out.print("Enter target: ");
```

```
        int target = sc.nextInt();
        obj.arrayFunc(arr, target);
        System.out.print("Enter size of array: ");
        int num1 = sc.nextInt();
        int arr1[] = new int[num1];
        System.out.print("Enter elements: ");
        for (int i = 0; i < num1; i++) {
            arr1[i] = sc.nextInt();
        }
        System.out.print("Enter size of array: ");
        int num2 = sc.nextInt();
        int arr2[] = new int[num2];
        System.out.print("Enter elements: ");
        for (int i = 0; i < num2; i++) {
            arr2[i] = sc.nextInt();
        }
        obj.arrayFunc(arr1, num1, arr2, num2);
    }
}
```

OUTPUT:


PS C:\Users\bajel\OneDrive\Desktop\MANSI BAJELI> c:; cd 'c:\Users\bajel\OneDrive\Desktop\MANSI BAJELI'; & 'C:\Pro
:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\bajel\AppData\Roaming\Code\User\workspaceStorage\62562c7cfba
89\bin' 'ArrayDemo'
Enter size of array: 6
Enter elements: 1 2 3 4 5 6
Enter target: 5
Pairs of elements whose sum is 5 are :
1 + 4 = 5
2 + 3 = 5
Enter size of array: 6
Enter elements: 1 5 6 7 8 10
Enter size of array: 3
Enter elements: 2 4 9
A : 1 2 4 5 6 7
B : 8 9 10