

ASSIGNMENT JAVA DAY8

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1. Test the following functionalities :

a. Create class – MyClass in package pack1. Create 4 method in this class with four different access specifiers – private, default, protected, public.

```
package pack1;

public class MyClass {

    public void show() {
        System.out.println("hey public class");
    }
    protected void show1() {
        System.out.println("hey protected class");
    }
    private void show3() {
        System.out.println("hey private class");
    }
    void show4() {
        System.out.println("hey default class");
    }

}
```

b. Create a class TestClass outside the package and test which all methods are accessible.

```
import pack1.MyClass;

public class TestClass {
    public static void main(String[] args) {
        MyClass myClass = new MyClass();
        myClass.show();
        myClass.show1(); // protected access modifier can't be accessed
        outside package
        myClass.show2(); // private access modifier can't be accessed
        outside package
        myClass.show3(); // Default access modifier can't be accessed
        outside package
    }
}
```

```
}  
  
}
```

c. Now create another class in package pack1 and test which all methods of MyClass are accessible and how .

```
package pack1;  
  
public class TesterMYClass {  
    public static void main(String[] args) {  
        MyClass myClass = new MyClass();  
        myClass.show();  
        myClass.show1();  
        myClass.show4();  
  
        //Objects of only public, protected and default classes can be  
        accessed.  
        //myclass.show3() is private, so cannot be accessed.  
    }  
}
```

```
"C:\Program Files\Java\jdk-11\bin  
hey public class  
hey protected class  
hey default class
```

d. Create a subclass of MyClass in package pack1 and test which all methods of MyClass are accessible and how .

```
package pack1;  
  
public class MyClass {  
    public static void main(String[] args) {  
        MyClass myClass = new MyClass();  
        SubClass subClass = myClass.new SubClass();  
        subClass.check();  
    }  
    public void show(){  
        System.out.println("hey public class");  
    }  
    protected void show1(){  
        System.out.println("hey protected class");  
    }  
    private void show3(){  
        System.out.println("hey private class");  
    }  
}
```

```

}

    void show4(){
        System.out.println("hey default class");
    }
}
class SubClass{
    public void check(){
        MyClass myClass = new MyClass();
        myClass.show();
        myClass.show1();
        myClass.show4();
        myClass.show3();
    }
}
}
}

```

```

"C:\Program Files\Java\jdk-11\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\Intelli
hey public class
hey protected class
hey default class
hey private class

Process finished with exit code 0

```

e. Create a subclass of MyClass outside package pack1 and test which all methods of MyClass are accessible and how .

```

import pack1.MyClass;

public class TestClass extends MyClass{
    public static void main(String[] args) {

        TestClass testClass = new TestClass();
        testClass.show();
        testClass.show1(); // only public and private will be accessed
and print the value.
        testClass.show4();
        testClass.show3();
    }
}

```

f. Create a package inside pack1 with the name subpack1. Create a class inside this subpack1 and test which all methods of MyClass are accessible and how .

```

package pack1.subpack1;

import pack1.MyClass;

public class SubPack {
    public static void main(String[] args) {
        MyClass myClass = new MyClass();
        myClass.show();
        myClass.show1(); // only public can be accessed
        myClass.show2();
        myClass.show3();
    }
}

```

g. In the subpack1, create a class which is subclass of MyClass and test which all methods of MyClass are accessible and how.

```

package pack1.subpack1;

import pack1.MyClass;

public class TestClass extends MyClass {
    public static void main(String[] args) {
        TestClass testClass = new TestClass();
        testClass.show();
        testClass.show1(); // only public and protected can be accessed
        testClass.show3();
        testClass.show4();
    }
}

```

2. Combine all the classes created named below now into a single application and there must be a single MainClass as the starting point of the application. Segregate the classes and interfaces according to their functionalities in different packages. The logically related classes should be in same package. Check for the access specifiers which you have already placed for variables, constructors and method. Test which all access specifiers need to be used and why.

The classes which need to be combined in a single application are:

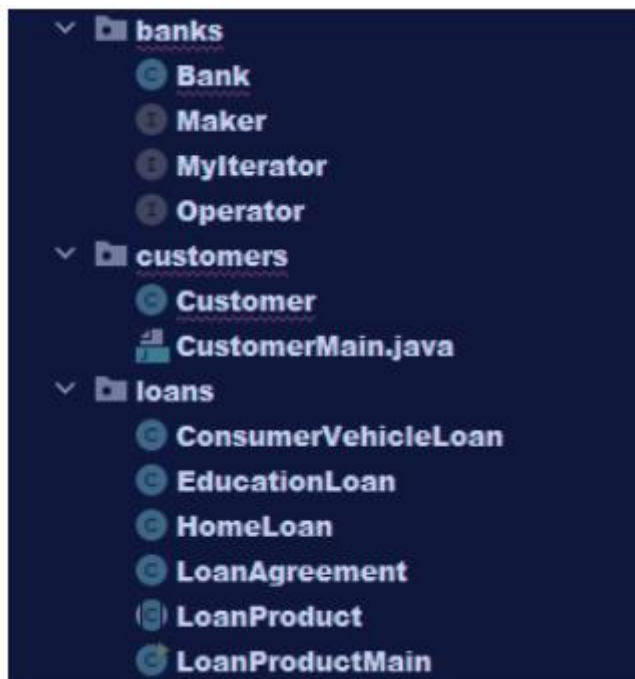
a. Customer

b. LoanAgreement

c. LoanProduct and its subclasses

d. Interfaces

e. Bank



3. Create an interface 'MyIterator' as mentioned below:

The functionalities of the methods are as mentioned below:

a. hasNext() : returns true/false based on whether there is next element in the array or not

b. next(): returns the next object from the array

c. remove(): deletes the object at the current array position and places Null at that index position.

4. Implement this interface as an InnerClass in Bank class to iterator over array of Customer Objects. Simultaneously remove all the objects where the monthlyIncome of the customer is less than 5lac.

```
package assignment8;

import assignment4.Customer;
import assignment5.LoanProduct;
import assignment6.Maker;
import assignment6.Operator;
```

```

public class Bank implements Maker, Operator {
    private static int arrSize = 10;
    private static int customerSize = 0;
    private static int loanProductSize = 0;
    private static Bank bankObj;
    private Customer[] customers;
    private LoanProduct[] loanProducts;

    private Bank() {
        this.customers = new Customer[arrSize];
        this.loanProducts = new LoanProduct[arrSize];
        customers[0] = new Customer("Test1", 20000, 5000);
    }

    public static Bank getBankInstance() {
        if (bankObj == null) {
            bankObj = new Bank();
        }
        return bankObj;
    }

    public BankIterator getIterator() {
        return new BankIterator();
    }

    // customers
    public boolean registerCustomer(Customer c) { // O(n)
        try {
            for (int i = 0; i < customerSize; i++) {
                if (customers[i].equals(c)) {
                    System.out.println(c + " is already present");
                    return false;
                }
            }
            customers[customerSize++] = c;

            return true;
        } catch (Exception e) {
            System.out.println(e.getMessage());
        }
        return false;
    }

    @Override
    public boolean deleteCustomer(Customer c) {
        for (int i = 0; i < customerSize; i++) {
            if (customers[i].equals(c)) {
                for (int j = i; j < arrSize - 1; j++) {
                    customers[j] = customers[j + 1];
                }
                customers[customerSize - 1] = null;
                customerSize--;
                return true;
            }
        }
        return false;
    }

    @Override
    public boolean addNewLoanProduct() {
        return false;
    }
}

```

```

    }

    @Override
    public boolean removeLoanProduct(assignment6.LoanProduct
loanProductCode) {
        return false;
    }

    public boolean findCustomer(Customer c) {
        for (Customer customer : customers) {
            if (customer.equals(c)) {
                return true;
            }
        }
        return false;
    }

    boolean deleteCustomer(int customerID) {
        for (int i = 0; i < customerSize; i++) {
            if
                (customers[i].getCustomerId()==(customerID)) {
                    for (int j = i; j < arrSize - 1; j++) {
                        customers[j] = customers[j + 1];
                    }
                    customers[customerSize - 1] = null;
                    customerSize--;
                    return true;
                }
        }
        return false;
    }

    public void printAllCustomers() {
        for (int i = 0; i < customerSize; i++) {
            System.out.println(customers[i]);
        }
    }

    @Override
    public void printAllLoanProducts() {

    }

    @Override
    public void printLoanProductDetails(assignment6.LoanProduct
loanProductId) {

    }

    @Override
    public void calculateLTVForLoanProducts() {

    }

    @Override
    public Customer findCustomer(int customerId) {
        for (int i = 0; i < arrSize; i++) {
            if
                (customers[i].getCustomerId()==(customerId)) {

```

```

        return customers[i];
    }
}
return null;
}

@Override
public boolean findCustomer(String customer) {
    return false;
}

@Override
public void printAllCustomer() {

}

class BankIterator implements MyIterator {
    int index = -1;

    @Override
    public boolean hasNext() {
        if (index < customers.length - 1) {
            index++;
            return true;
        }

        return false;
    }

    @Override
    public Customer next() {
        {
            return customers[index];
        }
    }

    @Override
    public void remove() {

    }
}
}

```


OUTPUT:

```
C:\Program Files\Java\jdk-11\bin\java.exe -javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.2.3\lib\idea_rt.jar=54627:C:\Program
Current Customers :
Customer{customerId=0, customerName='null', dateOfBirth=null, emailAddress='null', monthlyIncome=0.0, profession='null', totalMonthlyExpenses=0.0, maxEligibl
Customer{customerId=0, customerName='null', dateOfBirth=null, emailAddress='null', monthlyIncome=0.0, profession='null', totalMonthlyExpenses=0.0, maxEligibl
Customer{customerId=0, customerName='null', dateOfBirth=null, emailAddress='null', monthlyIncome=0.0, profession='null', totalMonthlyExpenses=0.0, maxEligibl
Customer{customerId=0, customerName='null', dateOfBirth=null, emailAddress='null', monthlyIncome=0.0, profession='null', totalMonthlyExpenses=0.0, maxEligibl
Customer{customerId=0, customerName='null', dateOfBirth=null, emailAddress='null', monthlyIncome=0.0, profession='null', totalMonthlyExpenses=0.0, maxEligibl
```

[illegible][illegible]

monthlyIncome=0.0,	profession='null'	totalMonthlyExpenses=0.0,	maxEligibleLoanAmount=0.0,	designations='null'	companyName='null'}
monthlyIncome=0.0,	profession='null'	totalMonthlyExpenses=0.0,	maxEligibleLoanAmount=0.0,	designation='null'	companyName='null'}
monthlyIncome=0.0,	profession='null'	totalMonthlyExpenses=0.0,	maxEligibleLoanAmount=0.0,	designation='null'	companyName='null'}
monthlyIncome=0.0,	profession='null'	totalMonthlyExpenses=0.0,	maxEligibleLoanAmount=0.0,	designations='null'	companyName='null'}
monthlyIncome=0.0,	profession='null'	totalMonthlyExpenses=0.0,	maxEligibleLoanAmount=0.0,	designation='null'	companyName='null'}
monthlyIncome=0.0,	profession='null'	totalMonthlyExpenses=0.0,	maxEligibleLoanAmount=0.0,	designation='null'	companyName='null'}