

Customer Products:

Data Hiding:

- Classes: Customer, Product.
- Product: get details, set Customer Name (Methods)
 - Product id, product name, price (Private variables) pass the values from product constructor.
- Customer: print the details of the product, set customer name.

Super class:

```
package Customers;

public class customer_details {

    customer_details(String product_Name, String product_Model, double
product_Price){
        this.product_Name=product_Name;
        this.product_Model=product_Model;
        this.product_Price=product_Price;
    }
    private String customer_Name;
    private String product_Name;
    private String product_Model;
    private double product_Price;

    public void set_Name(String name){
        customer_Name=name;
    }
    public String getCustomer_Name(){
        if(customer_Name!=null){
            return "Hello "+customer_Name;
        }
        return "Please set your name before getting name use 'set_Name
method'";
    }
    public String getProduct_Model(){
        return "Product model: "+product_Model;
    }
    public String getProduct_Price(){
        return "Product price: "+product_Price+"/-";
    }
    public String getProduct_Name(){
        return "product name: "+product_Name;
    }
}
```

Child class (Main method):

```
package Customers;

public class product_details {
```

```

public static void main(String args[]){
    customer_details cd=new customer_details("Samsung","M31",17000);
    cd.set_Name("Veera");
    System.out.println(cd.getCustomer_Name());
    System.out.println(cd.getProduct_Name());
    System.out.println(cd.getProduct_Model());
    System.out.println(cd.getProduct_Price());
}
}

```

Output:

The screenshot shows the Eclipse IDE interface. The main editor displays the source code of `product_details.java` in the `Customers` package. The code defines a `product_details` class with a `main` method that creates a `customer_details` object, sets its name to "Veera", and prints its details. The console at the bottom shows the output of the program, which matches the expected output from the code above.

```

1 package Customers;
2
3 public class product_details {
4     public static void main(String args[]){
5         customer_details cd=new customer_details("Samsung","M31",17000);
6         cd.set_Name("Veera");
7         System.out.println(cd.getCustomer_Name());
8         System.out.println(cd.getProduct_Name());
9         System.out.println(cd.getProduct_Model());
10        System.out.println(cd.getProduct_Price());
11    }
12 }
13

```

Console Output:

```

<terminated> product_details [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (Dec 26, 2021, 4:33:57 PM - 4:33:58 PM)
Hello Veera
product name: Samsung
Product model: M31
Product price: 17000.0/-

```

Mobile:

Interfaces and inheritance:

- Class: Mobile, smart phone (sub class).
- Interfaces: music Player, Applications.
- Mobile: call, sms (Methods).
- Music player: select music, stop music, pause music (Methods).
- Applications: install (method).

Super class:

```
package Mobile;

public class mobile {
    mobile(){System.out.println("From Mobile... ");}
    public void call() {System.out.println("u can call from mobile... ");}
    public void games() {System.out.println("U can play small games..");}
    public void sms() {System.out.println("U can send and receive
meessages...");}
}
```

Child interface:

```
package Mobile;
    public interface Music_player {

        void select_song();
        void next_song();
        void previous_song();
        void forward_song();
    }
```

Child interface:

```
package Mobile;

    public interface whatsapp {

        void send_Message();
        void receive_message();
        void status();
        void voice_call();
        void video_call();
    }
```

Child class (Main class):

```
package Mobile;

public class Smart_phone extends mobile implements Music_player,whatsapp {

    public void select_song() {
        System.out.println("Select song to play..");
    }
    public void next_song() {
        System.out.println("Click here to play next song...");
    }
}
```

```

    public void previous_song() {System.out.println("Click here to previous
song...");}
    public void forward_song() {System.out.println("click to forward
song...");}
    public void send_Message() {System.out.println("Send message from
whatsapp");}
    public void receive_message() {System.out.println("Receive message from
whatsapp");}
    public void status() {System.out.println("we keep status and we see others
status also");}
    public void voice_call() {System.out.println("We can call any one who r in
our contacts..");}
    public void video_call() {System.out.println("We can do video call also in
whatsapp...");}
    public static void main(String[] args) {

        Smart_phone sp=new Smart_phone();
        sp.call();        // this method from mobile class
        sp.select_song(); // from music player interface.
        sp.video_call();  // from whatsapp interface.

    }

}

```

Output:

The screenshot shows the Eclipse IDE with the following components:

- Project Explorer:** Shows a project named 'Demo1' with a source folder 'src' containing files 'mobile.java', 'Music_player.java', 'whatsapp.java', and 'Smart_phone.java'.
- Editor:** Displays the code for 'Smart_phone.java'. The main method is highlighted, showing the instantiation of 'Smart_phone' and the calls to 'call()', 'select_song()', and 'video_call()'.
- Console:** Shows the output of the application:


```

<terminated> Smart_phone [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (Dec 26, 2021, 4:57:59 PM - 4:58:00 PM)
From Mobile...
u can call from mobile...
Select song to play..
We can do video call also in whatsapp...
      
```


Account:

Inheritance:

- Super class: Account; Sub class : Loan Account , Savings Account
- Account: Account details (Method), Account Number, Ifsc code, Branch name (Variables)
- Loan Account: Loan details (Method), loan amount, monthly emi, interest (variables).
- Savings Account: details (Method), balance, debit card details (Variables).

Account class (super class):

```
package account;

public class Account {

    public void savings_Account_Details() throws Exception{
        System.out.print("Loading");
        for(int i=0; i<=6; i++) {Thread.sleep(300);System.err.print(".");}
        System.out.println();
        System.out.println("Account Number: 2872428282382");
        Thread.sleep(1000);
        System.out.println("Ifsc Code: SBI10009");
        Thread.sleep(1000);
        System.out.println("Account Holder Name: veera");
        Thread.sleep(1000);
        System.out.println("Account Type: Savings Account");
        Thread.sleep(1000);
        System.out.println();
        System.out.println("***** Thanks Visit Again *****");
    }

    public void loan_Account_Details() throws Exception{
        System.out.print("Loading");

        for(int i=0; i<=6; i++) {Thread.sleep(300);System.err.print(".");}
        System.out.println();
        System.out.println("Account Number: 8997799821");
        Thread.sleep(1000);
        System.out.println("Ifsc Code: ICICI10009");
        Thread.sleep(1000);
        System.out.println("Account Holder Name: suresh");
        Thread.sleep(1000);
        System.out.println("Account Type: loan Account");
        Thread.sleep(1000);
        System.out.println();
        System.out.println("***** Thanks Visit Again *****");
    }

}
```

Loan class (child class / main class):

```
package account;

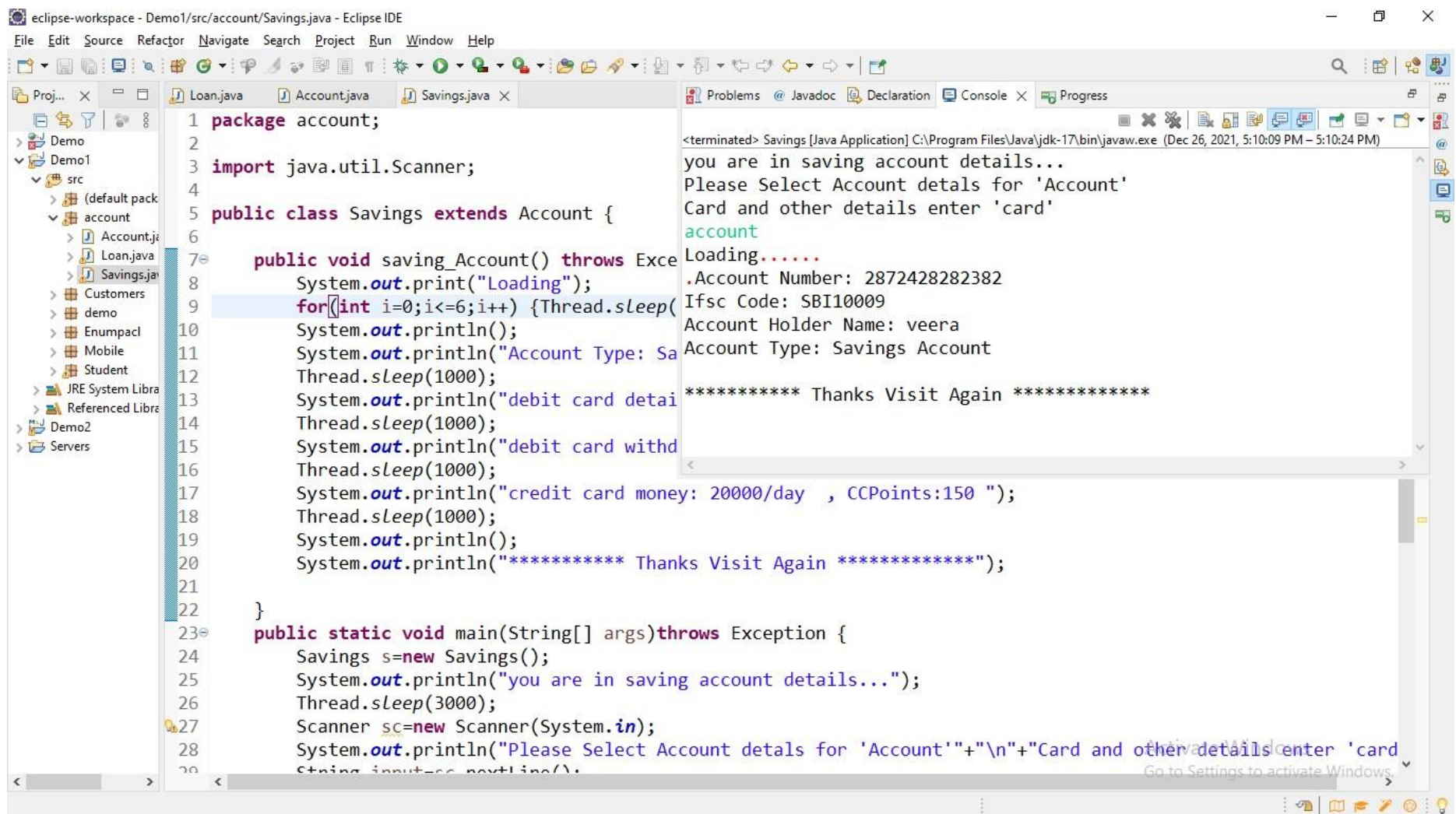
import java.util.Scanner;

public class Loan extends Account {

    public void loan_Details() throws Exception{
        System.out.print("Loading");
        for(int i=0; i<=6; i++) {Thread.sleep(300);System.err.print(".");}
        System.out.println();
        System.out.println("Account Type: loan Account...");
        Thread.sleep(1000);
        System.out.println("Loan amount: 2000000/-");
        Thread.sleep(1000);
        System.out.println("Monthly Emi: 20000");
        Thread.sleep(1000);
        System.out.println("Intrest amount: 10000/-");
        Thread.sleep(1000);
        System.out.println();
        System.out.println("***** Thanks Visit Again *****");
    }

    public static void main(String[] args) throws Exception {
        Loan l=new Loan();
        System.out.println("you are in loan account details...");
        Thread.sleep(3000);
        Scanner sc=new Scanner(System.in);
        System.out.println("Please Select Account detals for 'Account'+"\n"+"
For loan details enter 'loan'");
        String input=sc.nextLine();
        if(input.equalsIgnoreCase("account")) {
            l.loan_Account_Details();
        }
        else if(input.equalsIgnoreCase("loan")) {
            l.loan_Details();
        }
        else {
            System.err.println("Please enter correct input check again. ....");
        }
    }
}
```

Output:



The screenshot shows the Eclipse IDE with the file `Savings.java` open. The code defines a `Savings` class that extends `Account`. It includes a `saving_Account()` method that prints account details and a `main` method that creates a `Savings` object and calls `saving_Account()`. The console output shows the execution of the program, displaying account details and a message to visit again.

```
1 package account;
2
3 import java.util.Scanner;
4
5 public class Savings extends Account {
6
7     public void saving_Account() throws Exception {
8         System.out.print("Loading");
9         for(int i=0;i<=6;i++) {Thread.sleep(300);System.err.print(".");}
10        System.out.println();
11        System.out.println("Account Type: Savings Account");
12        Thread.sleep(1000);
13        System.out.println("debit card details: 9992/8292/8299 , *** ");
14        Thread.sleep(1000);
15        System.out.println("debit card withdraw: 10000/day");
16        Thread.sleep(1000);
17        System.out.println("credit card money: 20000/day , CCPoints:150 ");
18        Thread.sleep(1000);
19        System.out.println();
20        System.out.println("***** Thanks Visit Again *****");
21    }
22
23    public static void main(String[] args) throws Exception {
24        Savings s=new Savings();
25        System.out.println("you are in saving account details...");
26        Thread.sleep(3000);
27        Scanner sc=new Scanner(System.in);
28        System.out.println("Please Select Account details for 'Account'+"\n"+"Card and other details enter 'card'");
29        String input=sc.nextLine();
30    }
31 }
```

Console Output:

```
<terminated> Savings [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (Dec 26, 2021, 5:10:09 PM – 5:10:24 PM)
you are in saving account details...
Please Select Account details for 'Account'
Card and other details enter 'card'
account
Loading.....
.Account Number: 2872428282382
Ifsc Code: SBI10009
Account Holder Name: veera
Account Type: Savings Account
***** Thanks Visit Again *****
```

Savings account (child class / main class):

```
package account;
```

```
import java.util.Scanner;
```

```
public class Savings extends Account {
```

```
    public void saving_Account() throws Exception{
        System.out.print("Loading");
        for(int i=0;i<=6;i++) {Thread.sleep(300);System.err.print(".");}
        System.out.println();
        System.out.println("Account Type: Savings Account");
        Thread.sleep(1000);
        System.out.println("debit card details: 9992/8292/8299 , *** ");
        Thread.sleep(1000);
        System.out.println("debit card withdraw: 10000/day");
        Thread.sleep(1000);
        System.out.println("credit card money: 20000/day , CCPoints:150 ");
        Thread.sleep(1000);
        System.out.println();
    }
```



```

        System.out.println("***** Thanks Visit Again *****");
    }
    public static void main(String[] args) throws Exception {
        Savings s=new Savings();
        System.out.println("you are in saving account details...");
        Thread.sleep(3000);
        Scanner sc=new Scanner(System.in);
        System.out.println("Please Select Account details for 'Account'"+ "\n"+"Card and other details enter 'card'");
        String input=sc.nextLine();
        if(input.equalsIgnoreCase("account")) {
            s.savings_Account_Details();
        }
        else if(input.equalsIgnoreCase("card")) {
            s.saving_Account();
        }
        else {
            System.err.println("Please enter correct input check again. ....");
        }
    }
}

```

Output:

The screenshot shows the Eclipse IDE with the following components:

- Project Explorer:** Shows a project named 'Demo1' with a package 'account' containing files 'Account.java', 'Loan.java', and 'Savings.java'.
- Editor:** Displays the 'Loan.java' file. The code is as follows:


```

1 package account;
2
3 import java.util.Scanner;
4
5 public class Loan extends Account {
6
7     public void loan_Details() throws Exception {
8         System.out.print("Loading");
9         for(int i=0;i<=6;i++) {Thread.sleep(1000);
10            System.out.println();
11            System.out.println("Account Type: loan");
12            Thread.sleep(1000);
13            System.out.println("Loan amount: 2000000/-");
14            Thread.sleep(1000);
15            System.out.println("Monthly Emi: 20000");
16            Thread.sleep(1000);
17            System.out.println("Intrest amount: 10000/-");
18            Thread.sleep(1000);
19            System.out.println();
20            System.out.println("***** Thanks Visit Again *****");
21        }
22    }
23    public static void main(String[] args) throws Exception {
24        Loan l=new Loan();
25        System.out.println("you are in loan account details...");
26        Thread.sleep(3000);
27        Scanner sc=new Scanner(System.in);
28        System.out.println("Please Select Account details for 'Account'"+ "\n"+"For loan details enter 'loan'");
29        String input=sc.nextLine();

```
- Console:** Shows the output of the program:


```

<terminated> Loan [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (Dec 26, 2021, 5:11:29 PM - 5:11:41 PM)
you are in loan account details...
Please Select Account details for 'Account'
For loan details enter 'loan'
loan
Loading.....
Account Type: loan Account...
Loan amount: 2000000/-
Monthly Emi: 20000
Intrest amount: 10000/-
***** Thanks Visit Again *****

```


Student details:

Encapsulation and Constructors:

- Class: Student, Student details.
- Student: Student id, Student name, Marks (private variables) pass values from student constructor, getters, setters (methods).
- Student details: call get method to get values and set method to set values.

Student details (super class):

```
package Student;
```

```
import java.util.Scanner;
```

```
public class Student_details {
```

```
    private String id;  
    private String name;  
    private int total_marks=100;  
    private int sub1_marks;  
    private int sub2_marks;  
    private int sub3_marks;  
    private String sub1;  
    private String sub2;  
    private String sub3;
```

```
    Student_details(String id,String name,int marks,int marks1,int marks2){  
        this.id=id;  
        this.name=name;  
        sub1_marks=masks;  
        sub2_marks=masks1;  
        sub3_marks=masks2;  
    }
```

```
    public String get_Details(){
```

```
        if(sub1 !=null && sub2 !=null && sub3 !=null){  
            int total=sub1_marks+sub2_marks+sub3_marks;  
            return "Student Id: "+id+" Student Name: "+name+"\n"+"subject 1: "+sub1+" Marks"+sub1_marks+"\n"+  
                "subject 2: "+sub2+" Marks"+sub2_marks+"\n"+"subject 3: "+sub3+" Marks"+sub3_marks+"\n"+"Total Marks: "+total;  
        }  
        else if(sub1 !=null && sub2 !=null){  
            int total1=sub1_marks+sub2_marks;  
            return "Student Id: "+id+" Student Name: "+name+"\n"+"subject 1: "+sub1+" Marks"+sub1_marks+"\n"+  
                "subject 2: "+sub2+" Marks"+sub2_marks+"\n"+"Total Marks: "+total1;  
        }  
        return "Please select 3 or 2 subjects";  
    }
```

```

public void set_subjects(String ...sub){
    if(sub.length==3){
        sub1=sub[0];
        sub2=sub[1];
        sub3=sub[2];
    }

    else if(sub.length==2)
    {
        sub1=sub[0];
        sub2=sub[1];
    }
    else{
        System.out.println("please select 3 or 2 subjects...");
    }
}

public String get_subjects() {
    if (sub1 != null && sub2 != null && sub3 != null) {
        return "Student id: " + id + " student Name: " + name + "\n" +
"Subject 1: " + sub1 + "\n" + "Subject 2: " + sub2 + "\n"
        + "Subject 3: " + sub3;
    } else if (sub1 != null && sub2 != null) {
        return "Student id: " + id + " student Name: " + name + "\n" +
"Subject 1: " + sub1 + "\n" + "Subject 2: " + sub2;
    }
    return "Please select atleast 2 or 3 subjects...";
}
}

```

Results (child class / main class):

```

package Student;

import java.util.Scanner;

public class Results {
    public static void main(String args[]){

        Student_details sd[]= new Student_details[4];
        sd[0]=new Student_details("1","veera",60,50,65);
        sd[1]=new Student_details("2","soujanya",70,65,60);
        sd[2]=new Student_details("3","sony",75,80,46);
        sd[3]=new Student_details("4","rafi",73,75,80);

        sd[0].set_subjects("JAVA","web","python");
        sd[1].set_subjects("JAVA","web");
        sd[2].set_subjects("web","python");
        sd[3].set_subjects("JAVA","python");
    }
}

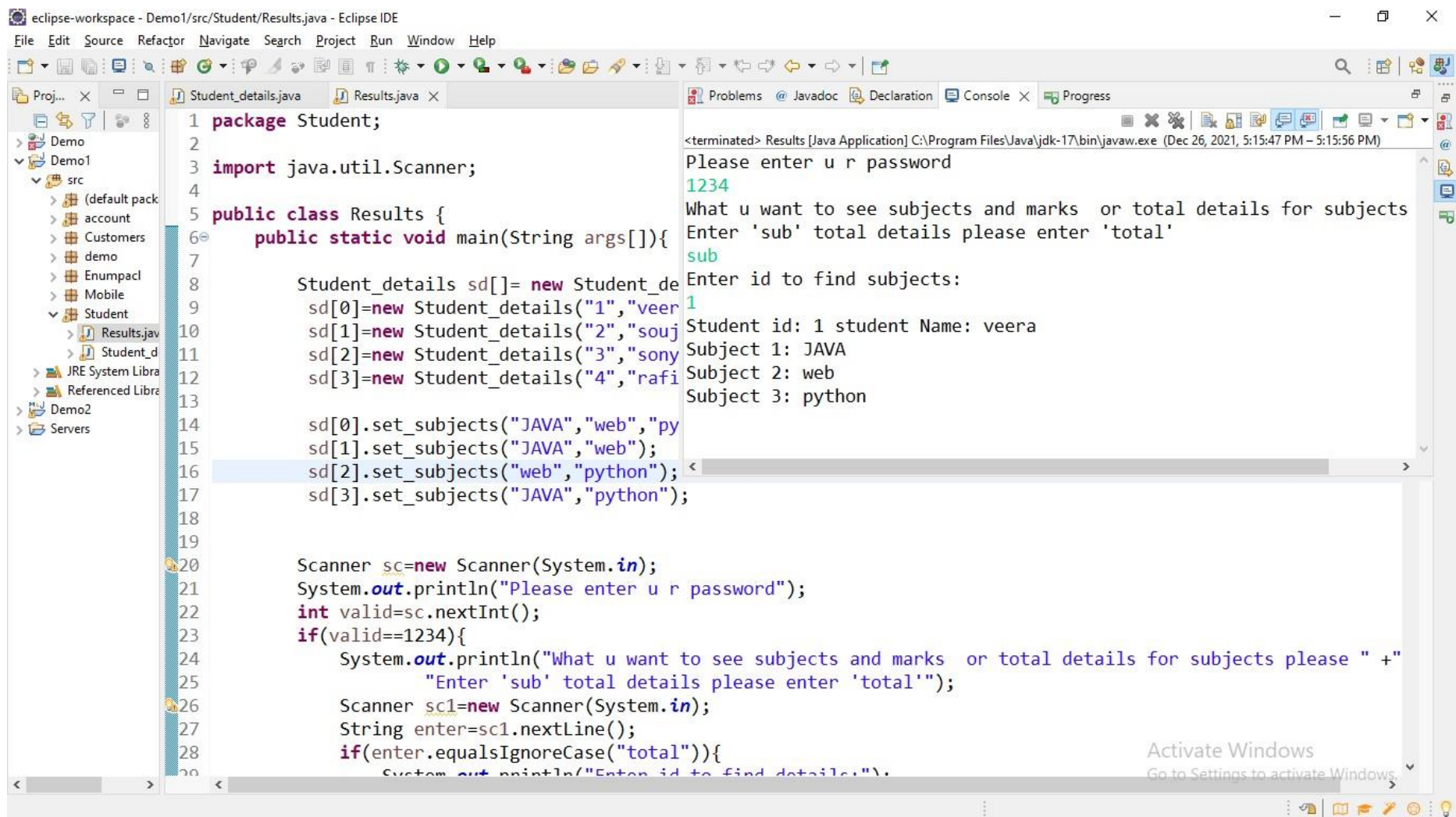
```

```

Scanner sc=new Scanner(System.in);
System.out.println("Please enter u r password");
int valid=sc.nextInt();
if(valid==1234){
    System.out.println("What u want to see subjects and marks or total
details for subjects please " +"\n"+
        "Enter 'sub' total details please enter 'total'");
    Scanner sc1=new Scanner(System.in);
    String enter=sc1.nextLine();
    if(enter.equalsIgnoreCase("total")){
        System.out.println("Enter id to find details:");
        int id=sc1.nextInt();
        try{
            System.out.println(sd[id-1].get_Details());
        }catch(Exception e){
            System.err.println("Please enter correct student id");
        }
    }
    else if(enter.equalsIgnoreCase("sub")){
        System.out.println("Enter id to find subjects:");
        int id=sc1.nextInt();
        try{
            System.out.println(sd[id-1].get_subjects());
        }catch(Exception e){
            System.err.println("Please enter correct student id");
        }
    }
    else{
        System.out.println("please select correct input...");
    }
}
else{
    System.out.println("Wrong Password please enter correct
password...");
}
}
}

```


Output 1 (subjects):

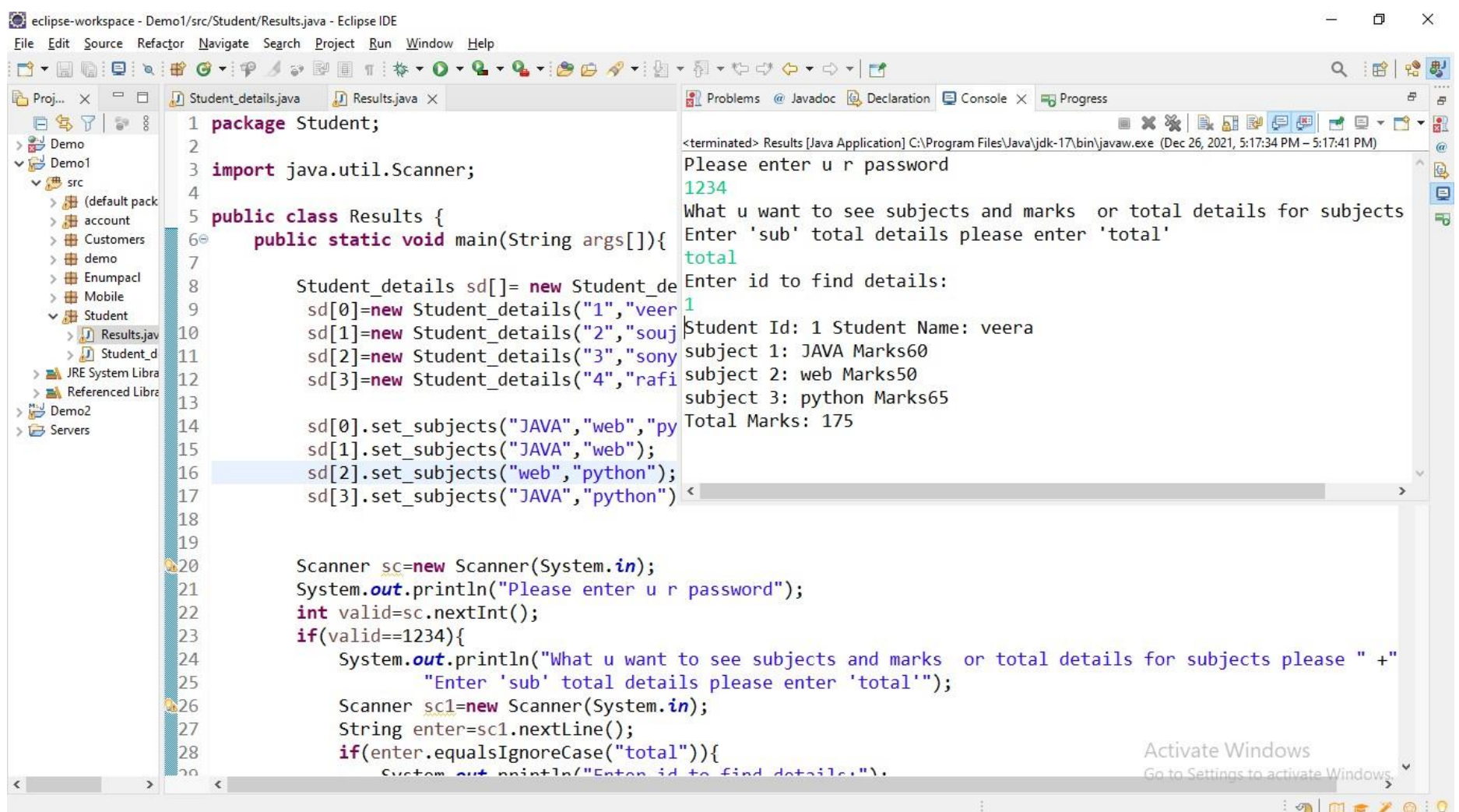


```
1 package Student;
2
3 import java.util.Scanner;
4
5 public class Results {
6     public static void main(String args[]){
7
8         Student_details sd[]= new Student_de
9         sd[0]=new Student_details("1","veer
10        sd[1]=new Student_details("2","souj
11        sd[2]=new Student_details("3","sony
12        sd[3]=new Student_details("4","rafi
13
14        sd[0].set_subjects("JAVA","web","py
15        sd[1].set_subjects("JAVA","web");
16        sd[2].set_subjects("web","python");
17        sd[3].set_subjects("JAVA","python");
18
19
20        Scanner sc=new Scanner(System.in);
21        System.out.println("Please enter u r password");
22        int valid=sc.nextInt();
23        if(valid==1234){
24            System.out.println("What u want to see subjects and marks or total details for subjects please " +
25                "Enter 'sub' total details please enter 'total'");
26            Scanner sc1=new Scanner(System.in);
27            String enter=sc1.nextLine();
28            if(enter.equalsIgnoreCase("total")){
29                System.out.println("Enter id to find details:");
30            }
31        }
32    }
33 }
```

<terminated> Results [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (Dec 26, 2021, 5:15:47 PM - 5:15:56 PM)

Please enter u r password
1234
What u want to see subjects and marks or total details for subjects
Enter 'sub' total details please enter 'total'
sub
Enter id to find subjects:
1
Student id: 1 student Name: veera
Subject 1: JAVA
Subject 2: web
Subject 3: python

Output 2 (All details):



```
1 package Student;
2
3 import java.util.Scanner;
4
5 public class Results {
6     public static void main(String args[]){
7
8         Student_details sd[]= new Student_de
9         sd[0]=new Student_details("1","veer
10        sd[1]=new Student_details("2","souj
11        sd[2]=new Student_details("3","sony
12        sd[3]=new Student_details("4","rafi
13
14        sd[0].set_subjects("JAVA","web","py
15        sd[1].set_subjects("JAVA","web");
16        sd[2].set_subjects("web","python");
17        sd[3].set_subjects("JAVA","python");
18
19
20        Scanner sc=new Scanner(System.in);
21        System.out.println("Please enter u r password");
22        int valid=sc.nextInt();
23        if(valid==1234){
24            System.out.println("What u want to see subjects and marks or total details for subjects please " +
25                "Enter 'sub' total details please enter 'total'");
26            Scanner sc1=new Scanner(System.in);
27            String enter=sc1.nextLine();
28            if(enter.equalsIgnoreCase("total")){
29                System.out.println("Enter id to find details:");
30            }
31        }
32    }
33 }
```

<terminated> Results [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (Dec 26, 2021, 5:17:34 PM - 5:17:41 PM)

Please enter u r password
1234
What u want to see subjects and marks or total details for subjects
Enter 'sub' total details please enter 'total'
total
Enter id to find details:
1
Student Id: 1 Student Name: veera
subject 1: JAVA Marks60
subject 2: web Marks50
subject 3: python Marks65
Total Marks: 175

