

Task 6: Service Provider Interface /Abstract class

1.To Create 2 Interfaces /Abstract class ICourierUserService and ICourierAdminService to make contract for these methods

placeOrder()

getOrderStatus()

cancelOrder()

getAssignedOrder()

int addCourierStaff(Employee obj)

CREATION : ICourierUserService;

import java.util.Map;

public interface ICourierUserService {

/* @param courierObj Courier object created using values entered by users
@return The unique tracking number for the courier order*/

String placeOrder(Courier courier);

/*@param trackingNumber The tracking number of the courier order.
@return The status of the courier order*/

String getOrderStatus(Courier courier);

/* @param trackingNumber The tracking number of the courier order to be canceled.
@return True if the order was successfully canceled, false otherwise.*/

boolean cancelOrder(Courier courier,String trackingNumber);

/* @param courierStaffId The ID of the courier staff member.
* @return A list of courier orders assigned to the staff member.*/

//For Array implementation

Courier[] getAssignedOrder(Courier courierobj, int empid);

//For Collection Implementation

Map<Integer, Courier> getAssignedOrderMap(Courier courierobj, int empid);}

CREATION : ICourierAdminService

```
public interface ICourierAdminService {  
  
    /*Add a new courier staff member to the system.  
    * @param name The name of the courier staff member.  
    * @param contactNumber The contact number of the courier staff member.  
    * @return The ID of the newly added courier staff member.  
    */  
    int addCourierStaff(Employee emp);  
}
```

2.Implementation Class for the Declared methods in the Interface and method calling in main function

Method Definition inside class CourierUserService

1.PlaceOrder

```
@Override  
public String placeOrder(Courier courier)  
{  
    return courier.getTrackingNumber();  
}
```

Main Class Method Calling:

```
//Instantiation of CourierUserService to Interface  
ICourierUserService service=new CourierUserService();
```

```
Scanner sc=new Scanner(System.in);  
System.out.println("Enter Courier ID: ");  
int courierID = sc.nextInt();  
sc.nextLine();
```

```
System.out.println("Enter Sender Name: ");  
String senderName = sc.nextLine();
```

```
System.out.println("Enter Sender Address: ");  
String senderAddress = sc.nextLine();
```

```
System.out.println("Enter Receiver Name: ");  
String receiverName = sc.nextLine();
```

```
System.out.println("Enter Receiver Address: ");
String receiverAddress = sc.nextLine();
```

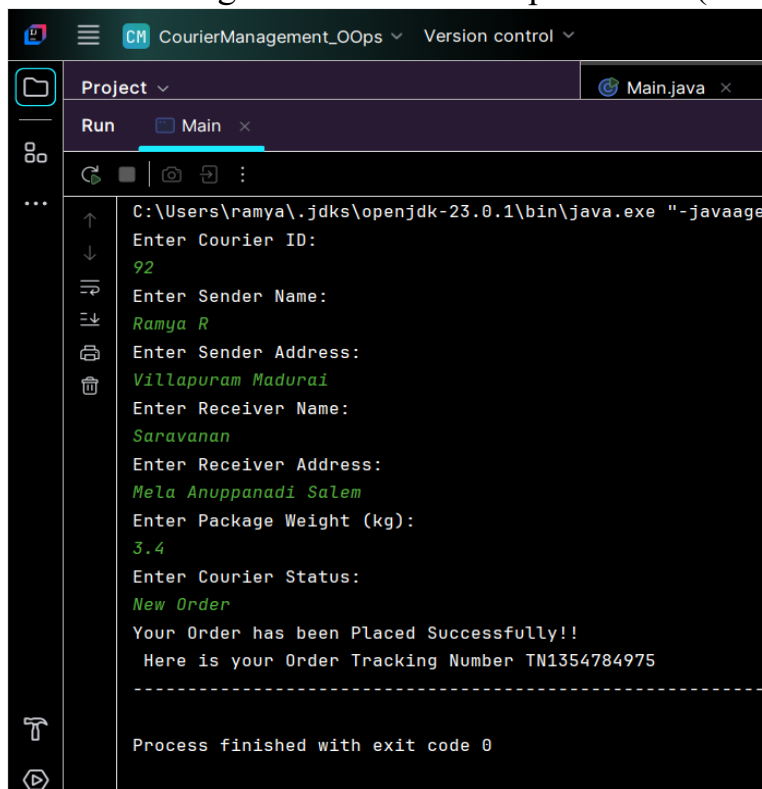
```
System.out.println("Enter Package Weight (kg): ");
double weight = sc.nextDouble();
sc.nextLine();
```

```
System.out.println("Enter Courier Status: ");
String status = sc.nextLine();
```

```
String trackingNumber=null;
```

```
//Formatting date after 7 days from current date
SimpleDateFormat dateFormat = new SimpleDateFormat("EEEE, MMMM dd,
yyyy");
Date deliverydate=new Date(System.currentTimeMillis()+7*24*60*60*1000);
String date=dateFormat.format(deliverydate);
```

```
Courier courier=new
Courier(courierID,senderName,senderAddress,receiverName,receiverAddress,w
eight,status,trackingNumber,deliverydate);
System.out.println("Your Order has been Placed Successfully!!\n Here is your
Order Tracking Number "+service.placeOrder(courier));
```



```
CM CourierManagement_OOps Version control
Project Main.java
Run Main
C:\Users\ramya\.jdk\openjdk-23.0.1\bin\java.exe "-javaage
Enter Courier ID:
92
Enter Sender Name:
Ramya R
Enter Sender Address:
Villapuram Madurai
Enter Receiver Name:
Saravanan
Enter Receiver Address:
Mela Anuppanadi Salem
Enter Package Weight (kg):
3.4
Enter Courier Status:
New Order
Your Order has been Placed Successfully!!
Here is your Order Tracking Number TN1354784975
-----
Process finished with exit code 0
```

2.Get Order Status

```
@Override
public String getOrderStatus(Courier courier) {
    return courier.getStatus();
}
```

Main Class Method Calling:

```
System.out.println("The Order Status of the Placed Order is
"+service.getOrderStatus(courier));
```

The Order Status of the Placed Order is In Transit

3.Cancel Order

```
@Override
public boolean cancelOrder(Courier courier,String trackingNumber) {
    if (courier != null && courier.getTrackingNumber().equals(trackingNumber))
    {
        return true; // Order canceled
    }
    return false;
}
```

Main Class Method Calling

```
System.out.println("It seems like you are not Interested to Continue the
Delivery Process.\nIf you want to cancel the Order then Enter the Tracking
Number");
trackingNumber=sc.next();
//checks for boolean value from cancelOrder()
```

```
if(service.cancelOrder(courier,trackingNumber))
    System.out.println("Your Order has been Cancelled");
else
    System.out.println("The Tracking Number not found.Please Enter Correct
Number");
```

```
-----  
It seems like you are not Interested to Continue the Delivery Process.  
If you want to cancel the Order then Enter the Tracking Number)  
TN1354784975  
Your Order has been Cancelled  
-----
```

4.Get Assigned Order

```
public Courier[] getAssignedOrder(Courier courierobj, int empid) {  
    int[] empIds = new int[100];  
    Courier[] couriers = new Courier[100];  
    int count = 0;  
    empIds[count] = empid;  
    couriers[count] = courierobj;  
    count++;  
  
    return couriers;  
}
```

Main Class Method Calling

```
Employee employee1=new Employee(101, "Arun B", "arun156@email.com",  
"9876543210", "Admin", 90000.00);  
Employee employee2=new Employee(102, "Raj Velan K", "raj@email.com",  
"9868454898", "Courier Manager", 70000.00);  
  
System.out.println("The Couriers assigned to specific Employee is Listed  
Below");  
System.out.println(service.getAssignedOrderMap(courier,employee1.getEmplo  
yeeID()));  
System.out.println(service.getAssignedOrderMap(courier1,employee1.getEmpl  
oyeeID()));
```

```
-----  
The Couriers assigned to specific Employee is Listed Below  
{101-15, Radhika S, Fani Nagar Chennai, Giriya, Trichy, 3.6, Delivered, TN1354784975, Sun Apr 13 01:36:20 IST 2025}  
{101-2, Vikram R, KK Nagar, Madurai, Tamil Nadu, Divya Shree, Sathyamangalam, Erode, Tamil Nadu, 1.75, Delivered, TN1354784976, Fri Dec 20 01:36:20 IST 2024}  
-----
```

Method Definition inside class CourierAdminService

1.Add Courier Staff

```
@Override
public int addCourierStaff(Employee emp) {

    Random random=new Random();
    int empid=random.nextInt(41)+120;
    return empid;
}
```

Main Class Method Calling

```
ICourierAdminService adminservice=new CourierAdminService();
```

```
//Adding new Courier Staff
```

```
Employee newemp= new Employee(0,"Ragavi S",null,"8403958498",null,0.0);
System.out.println("Employee ID for new Employee:
"+adminservice.addCourierStaff(newemp));
```

Employee ID for new Employee: 137