

Task 8: Collections & Service implementation

Scope: ArrayList/Hashmap

Task: Improve the Courier Management System by using Java collections:

Create a new model named CourierCompanyCollection in entity package replacing the Array of Objects with List to accommodate dynamic updates in the CourierCompany class

Create a new implementation class CourierUserServiceCollectionImpl class in package dao which implements ICourierUserService interface which holds a variable named companyObj of type CourierCompanyCollection

Create CourierUserServiceImpl class which implements ICourierUserService interface which holds a variable named companyObj of type CourierCompany.

This variable can be used to access the Object Arrays to access data relevant in method implementations.

Create CourierAdminService Impl class which inherits from CourierUserServiceImpl and implements ICourierAdminService interface.

Create CourierAdminServiceCollectionImpl class which inherits from CourierUserServiceCollectionImpl and implements ICourierAdminService interface

Code:

CourierUserServiceImpl.cs:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using CMS.Exceptions;

namespace CMS.Services
{
    public class CourierUserServiceImpl : ICourierUserService
    {
        protected CourierCompany companyObj;
        private static int userIdSeed = 1;

        public CourierUserServiceImpl()
```

```

{
    companyObj = new CourierCompany("MyCourierCompany");
}

public string PlaceOrder(Courier courierObj)
{
    companyObj.CourierDetails.Add(courierObj);
    return courierObj.TrackingNumber;
}

public string GetOrderStatus(string trackingNumber)
{
    var courier = companyObj.CourierDetails.FirstOrDefault(c => c.TrackingNumber ==
trackingNumber);
    if (courier == null)
    {
        throw new TrackingNumberNotFoundException("Tracking number not found.");
    }
    return courier.Status;
}

public bool CancelOrder(string trackingNumber)
{
    var courier = companyObj.CourierDetails.FirstOrDefault(c => c.TrackingNumber ==
trackingNumber);
    if (courier == null)
    {
        throw new TrackingNumberNotFoundException("Cannot cancel. Tracking number not
found.");
    }

    if (courier.Status == "Delivered")
    {

```

```

        return false;
    }

    courier.Status = "Cancelled";
    return true;
}

public List<Courier> GetAssignedOrders(int courierStaffId)
{
    var assignedOrders = companyObj.CourierDetails.Where(c => c.UserId ==
courierStaffId).ToList();
    return assignedOrders;
}

public int RegisterUser(User user)
{
    user.UserID = userIdSeed++;
    companyObj.UserDetails.Add(user);
    return user.UserID;
}

public List<User> GetAllUsers()
{
    return companyObj.UserDetails;
}
}
}

```

CourierAdminServiceImpl.cs:

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

```

```

namespace CMS.Services
{
    public class CourierAdminServiceImpl : CourierUserServiceImpl, ICourierAdminService
    {
        private static int employeeIdSeed = 1;

        public int AddCourierStaff(Employee obj)
        {
            obj.EmployeeID = employeeIdSeed++;
            companyObj.EmployeeDetails.Add(obj);
            return obj.EmployeeID;
        }

        public List<Employee> GetAllEmployees()
        {
            return companyObj.EmployeeDetails;
        }
    }
}

```

CourierCompanyCollection.cs:

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

```

```

namespace CMS.Entities
{
    public class CourierCompanyCollection
    {

```

```

    public List<Courier> CourierOrders { get; set; }
    public List<Employee> Employees { get; set; }
    public CourierCompanyCollection()
    {
        CourierOrders = new List<Courier>();
        Employees = new List<Employee>();
    }
}

```

CourierUserServiceCollectionImpl.cs:

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using CMS.Entities;
using CMS.Exceptions;

namespace CMS.Services
{
    public class CourierUserServiceCollectionImpl : ICourierUserService
    {
        protected CourierCompanyCollection companyObj;

        public CourierUserServiceCollectionImpl()
        {
            companyObj = new CourierCompanyCollection();
        }

        public string PlaceOrder(Courier courierObj)

```

```

{
    companyObj.CourierOrders.Add(courierObj);
    return courierObj.TrackingNumber;
}

public string GetOrderStatus(string trackingNumber)
{
    var order = companyObj.CourierOrders.FirstOrDefault(o => o.TrackingNumber ==
trackingNumber);
    if (order == null)
        throw new TrackingNumberNotFoundException("Order with this Tracking number not
found!");

    return order.Status;
}

public bool CancelOrder(string trackingNumber)
{
    var order = companyObj.CourierOrders.FirstOrDefault(o => o.TrackingNumber ==
trackingNumber);
    if (order == null)
        throw new TrackingNumberNotFoundException("Tracking number not found!");

    if (order.Status != "Delivered")
    {
        order.Status = "Cancelled";
        return true;
    }

    return false;
}

public List<Courier> GetAssignedOrders(int courierStaffId)

```

```

        {
            return companyObj.CourierOrders.Where(o => o.UserId == courierStaffId).ToList();
        }

    }
}

```

CourierAdminServiceCollectionImpl.cs:

```

using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace CMS.Services
{
    public class CourierAdminServiceCollectionImpl : CourierUserServiceCollectionImpl,
    ICourierAdminService
    {
        private static int employeeIdSeed = 1;

        public int AddCourierStaff(Employee obj)
        {
            obj.EmployeeID = employeeIdSeed++;
            companyObj.Employees.Add(obj);
            return obj.EmployeeID;
        }
    }
}

```