DispatchGenius

Speedy Deliveries for Northeastern's Finest!

CSYE6200

Concepts of Object Oriented Design

Professor: **Chen-Hsiang (Jones) Yu**

Team Members:
- **Tirdesh** Pettugani
- **Abhishek** Sagar Sanda
- **Rohan** Ashok Biradar

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Problem Statement

International students often encounter several challenges when it comes to accessing necessities and sending gifts, including:

- **Distance**: Overcoming geographic barriers to access essential items.

- **Culture**: Navigating new cultural environments can complicate finding familiar products.

- **Time**: Limited availability due to busy academic and personal schedules.

- **Cost**: Financial constraints make shipping fees prohibitive, making free delivery crucial.

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Solution: How DispatchGenius Addresses These Challenges

DispatchGenius is designed to tackle these issues effectively through:

- **Accessibility**: Features a user-friendly, colorful interface that simplifies the process of booking deliveries.

- **Cost-Efficiency**: Offers free delivery services, alleviating financial burdens for students.

- **Time Management**: Streamlines the scheduling process, minimizing the time spent arranging shipments.

- **Feedback System**: Includes a robust rating system, enabling continual service improvement based on student feedback.

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Our Tech Stack

Dev Tools

eclipse

Java 21

Core concepts

OOD Principles:

- Class Definition

- Inheritance

- Abstract Classes

- Interface

Data Structures Used:

- Lists

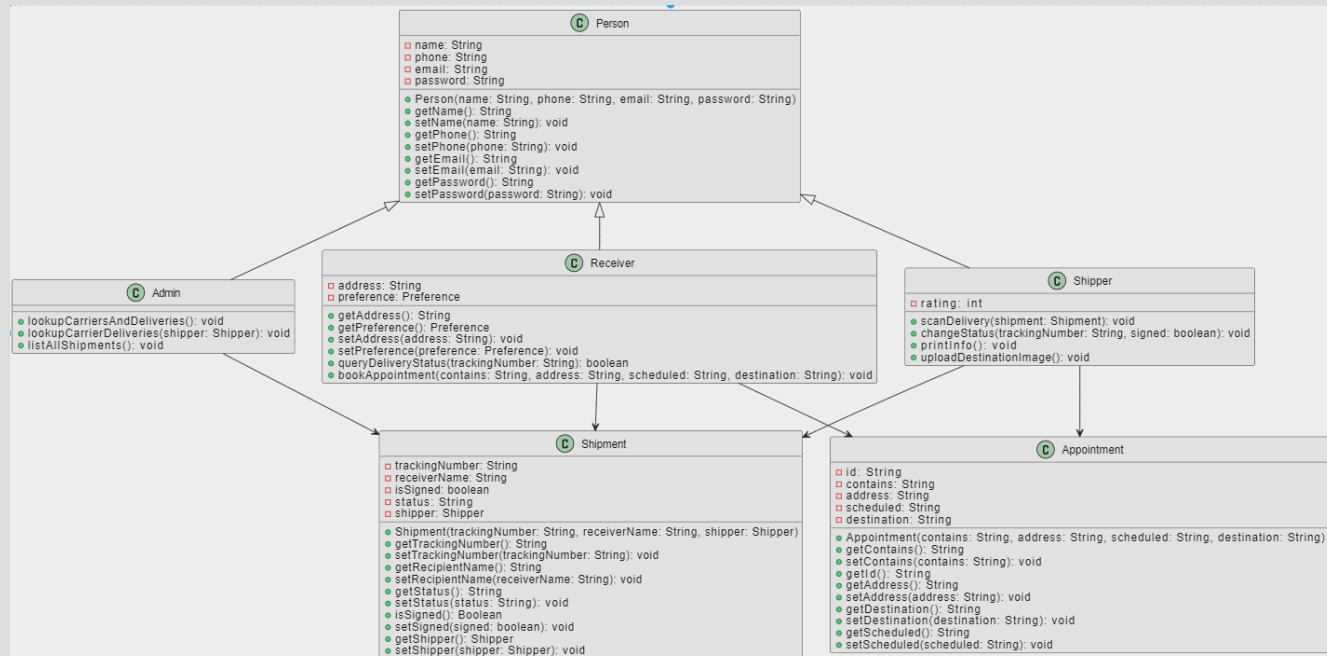- Collections

- Map, HashMaps

Tech Used

Java

JavaFx

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System Design - UML Diagram

System Design - Architecture Overview

High-Level Modules:

app: Core functionalities, UI styling.

app.admin: Administrative functions, view statistics.

app.login: User authentication and management.

app.model: Data models for entities.

app.receiver: Package receiver functionalities.

app.shipper: Functionalities for shippers.

app.system: System-wide utilities.

app.tools: Database and utilities

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System Design – Login and User Management

Purpose: Manages user sessions and secure access for various roles.

Components:

- Controllers - AdminLoginViewController, ForgetViewController, MainViewController, ReceiverLoginViewController, RegisterViewController, ShipperLoginViewController.

- Views - AdminLoginView.fxml, ForgetView.fxml, MainView.fxml, ReceiverLoginView.fxml, RegisterView.fxml, ShipperLoginView.fxml.

Functionality: User authentication, registration, password recovery.

System Design - Receiver and Shipper Interaction Design

Receiver Module:

- Controllers - PackageStatusPageController, RatePageController.
- Views - PackageStatusView.fxml, RateView.fxml.
- Functionality - Track package status, set preferences, rate services.

Shipper Module:

- Controllers - ShipperAddPackageViewController, ShipperChangeStatusViewController.
- Views - ShipperMainView.fxml, ShipperAddPackageView.fxml.
- Functionality - Add packages, update shipment status, manage appointments.

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Difficulties Encountered

During development, the team faced several technical difficulties:

1. Implementing a pie chart in the admin panel to accurately display data for each shipper.

2. Designing and populating a dynamic table in the Shipper dashboard.

3. Resolving mismatches between action listeners and component IDs in the JavaFX environmen.

4. Creating a user-friendly, interactive rating panel with star ratings.

5. Managing event handling between JavaFX controllers and Scene Builder-designed UI elements in

    Eclipse was tricky.

6. Ensuring seamless integration of JavaFX UI designs created in Scene Builder with the Eclipse IDE.

Future Scope

Looking forward, DispatchGenius plans to introduce several new features to enhance user experience and operational efficiency:

- **Notification Services**: Implementing email and SMS notifications to keep users informed about their delivery status.

- **Live Package Tracking**: Enabling real-time tracking for packages to provide accurate and timely location updates.

- **Delivery Executive Login Page**: Developing a secure login portal for delivery personnel to access and share delivery details, enhancing transparency and communication with customers.

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