Task Distribution - Group Name: Struggle Bus

Final Class Diagram

Project Overview

Tasks will be divided into individual components that each team member will implement while collaborating with others. Each member will ensure that OOP principles are demonstrated throughout their portion of the project design.

Core OOP Principles Focus

- Polymorphism
- Abstraction
- Inheritance
- Encapsulation

Project Component Distribution

1. Order Processing and Validation (Ryan)

Focus Areas

- Polymorphic validation in Order and MenuItem classes
- Observer Pattern implementation for order updates and notifications
- Order lifecycle management

Key Responsibilities

- Implement Order class with polymorphic attributes and behaviors
- Develop OrderTracker and notification mechanisms
- Manage OrderStatus and OrderNotification classes
- Implement OrderObserver and OrderSubject interfaces

OOP Principles Implementation

- Inheritance: Order, OrderStatus, and OrderNotification classes
- Abstraction: Complex order processing details
- Encapsulation: Order state and transitions

Primary Task

Implement polymorphic order processing with validation and notification system for customers and drivers

2. User and Interaction Management (Gigi)

Focus Areas

- User interaction systems
- Rating and feedback implementation

Key Responsibilities

- Create OrderBuilder with validation
- Develop Person base class
- Implement Customer and Driver inheritance

OOP Principles Implementation

- Inheritance: Base Person class extension
- Encapsulation: User data protection
- Abstraction: User interaction interfaces

Primary Task

Design and implement user-related classes with builder pattern and inheritance structures

3. Menu and Item Management (Selena)

Focus Areas

- Abstract and concrete menu implementations
- Factory methods for item creation
- Price calculation and inventory management

Key Responsibilities

- Implement MenuItem abstract class
- Create concrete classes (Hamburger, Drink)
- Develop menu item factory
- Implement availability logic

OOP Principles Implementation

- Abstraction: MenuItem base class
- Polymorphism: Menu item type utilities
- Encapsulation: Menu item properties

Primary Task

Create a flexible menu item system with polymorphic behavior

4. System Infrastructure and Performance (Nick)

Focus Areas

- Order queue management
- Rating system implementation

Key Responsibilities

- Implement notification system
- Develop ratings queue collections
- Manage order queue operations

OOP Principles Implementation

- Dependency Inversion: Rating and notification interfaces
- Interface-based design
- Encapsulation: System operations

Primary Task

Design core infrastructure focusing on modular design and input validation

Learning Objectives for each task

Order Processing Task: Ryan

- Event-driven programming
- Observer pattern implementation
- State management

User and Interaction Task: Gigi

- Object-oriented design patterns
- Builder pattern implementation
- Inheritance hierarchies

Menu and Item Task: Selena

- Abstract class design
- Polymorphic validation
- Factory method pattern

System Infrastructure Task: Nick

- Design pattern implementation
- System architecture principles