Introduction and structure

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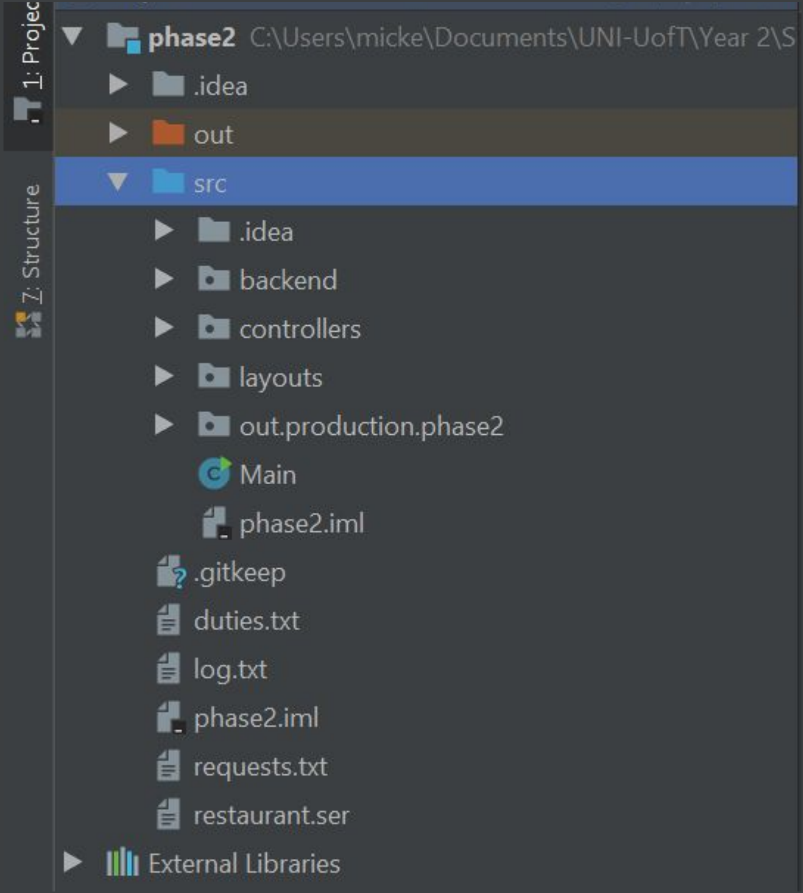
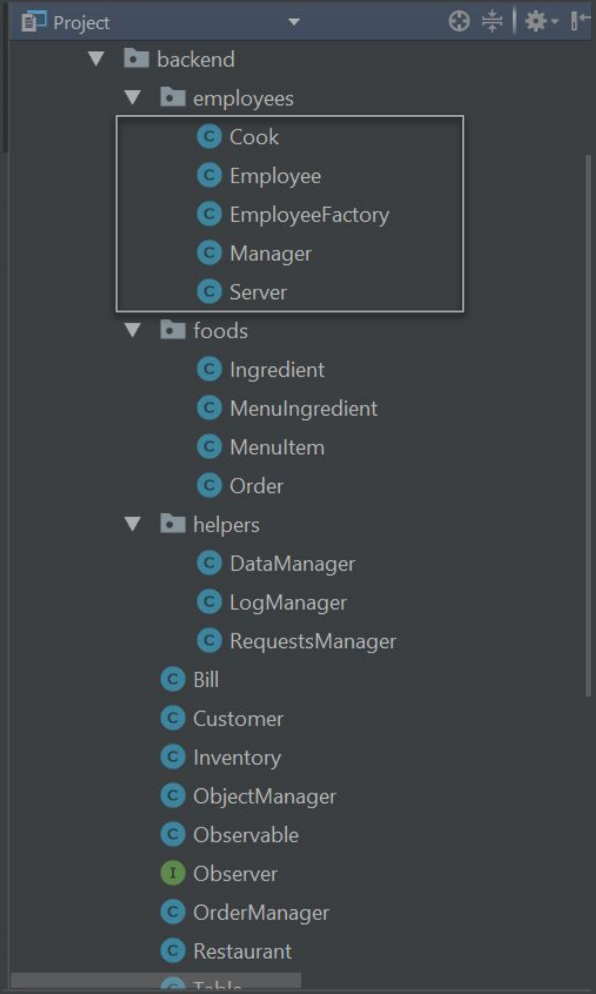
Abhishek

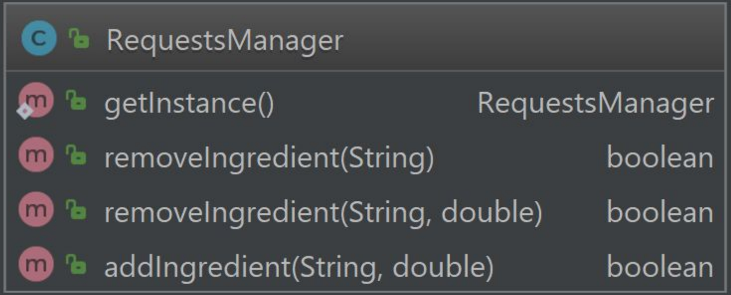


```
▼ phase2  C:\Users\micke\Documents\UNI-UofT\Year 2\S
  ▶ .idea
  ▶ out
  ▼ src
    ▶ .idea
    ▶ backend
    ▶ controllers
    ▶ layouts
    ▶ out.production.phase2
      Main
      phase2.iml
    .gitkeep
    duties.txt
    log.txt
    phase2.iml
    requests.txt
    restaurant.ser
▶ External Libraries
```

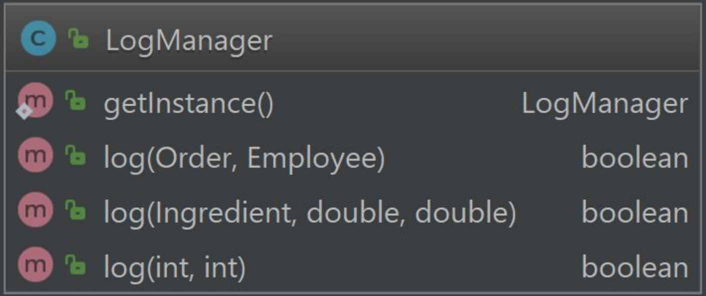


```
backend
    employees
        Cook
        Employee
        EmployeeFactory
        Manager
        Server
    foods
        Ingredient
        MenuIngredient
        MenuItem
        Order
    helpers
        DataManager
        LogManager
        RequestsManager
    Bill
    Customer
    Inventory
    ObjectManager
    Observable
    Observer
    OrderManager
    Restaurant
```

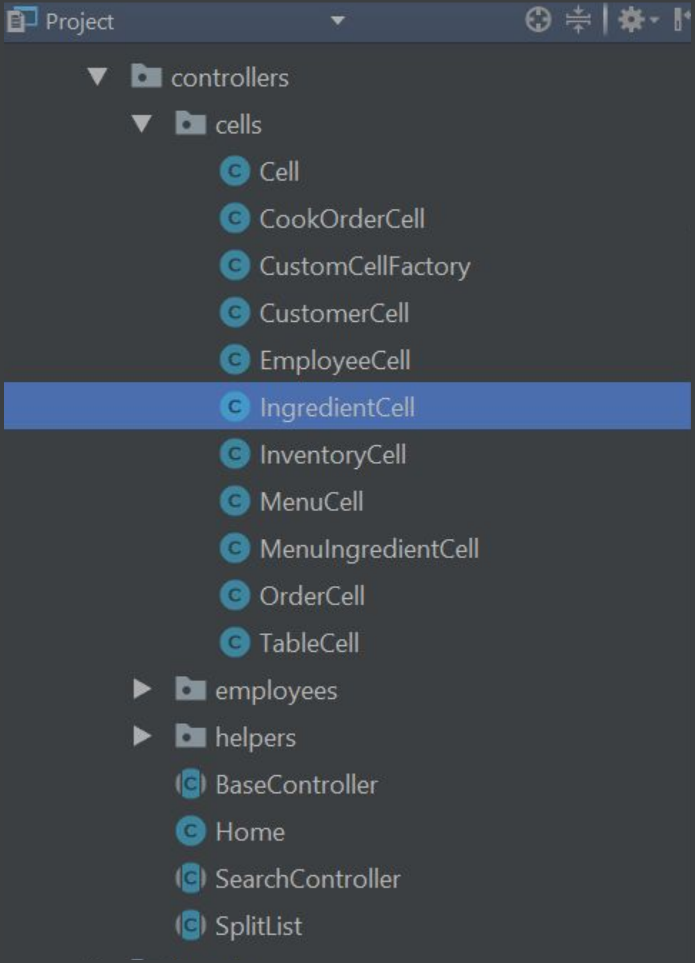
Singleton



RequestsManager	
getInstance()	RequestsManager
removeIngredient(String)	boolean
removeIngredient(String, double)	boolean
addIngredient(String, double)	boolean



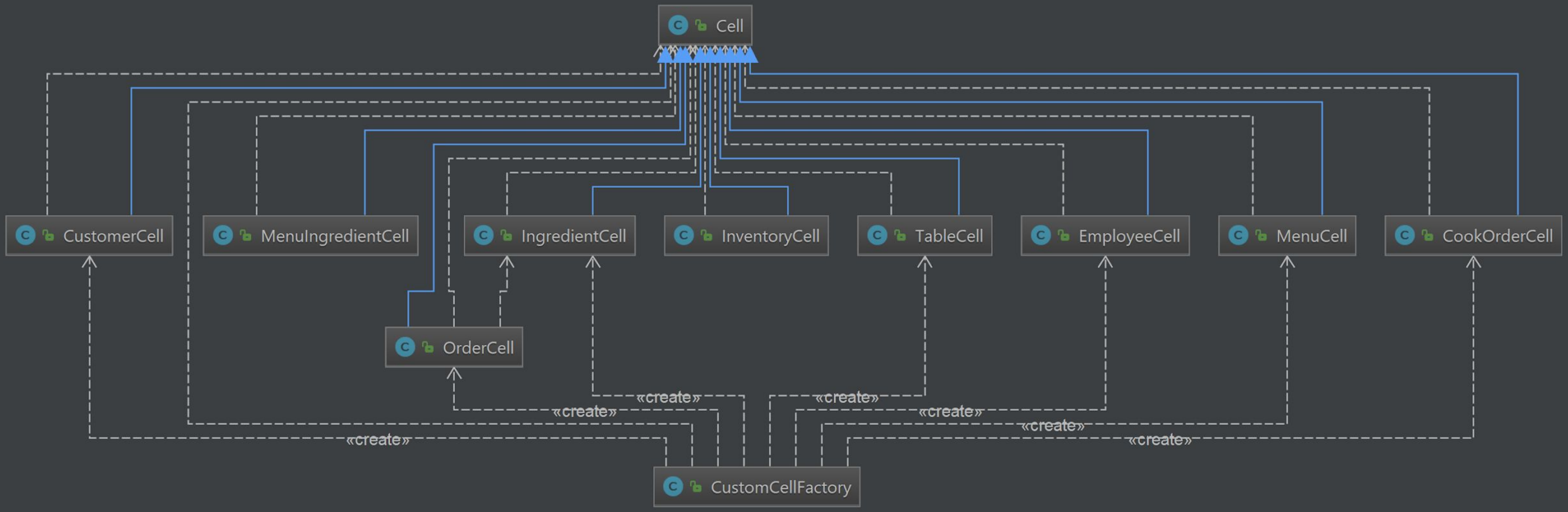
LogManager	
getInstance()	LogManager
log(Order, Employee)	boolean
log(Ingredient, double, double)	boolean
log(int, int)	boolean



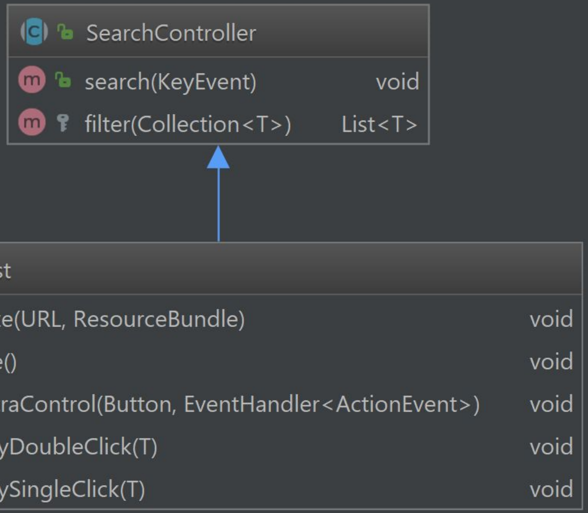
Project

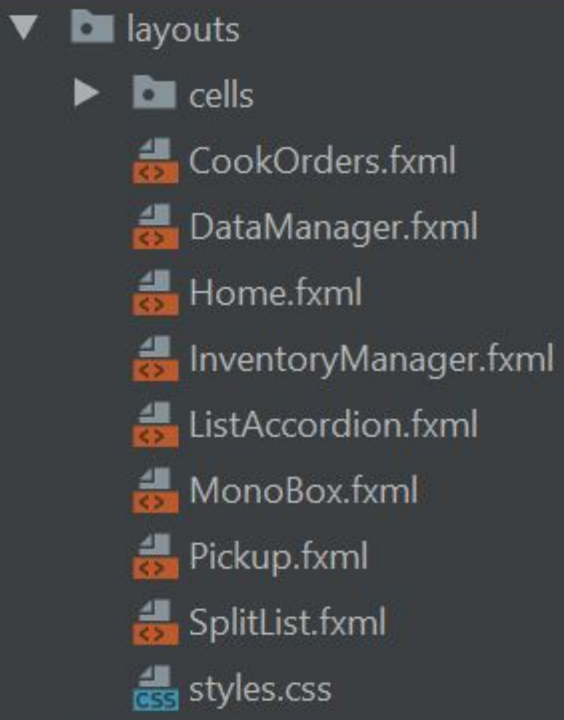
```
▼ controllers
    ▼ cells
        Cell
        CookOrderCell
        CustomCellFactory
        CustomerCell
        EmployeeCell
        IngredientCell
        InventoryCell
        MenuCell
        MenuIngredientCell
        OrderCell
        TableCell
    ▶ employees
    ▶ helpers
    BaseController
    Home
    SearchController
    SplitList
```

Hierarchy and avoiding duplication

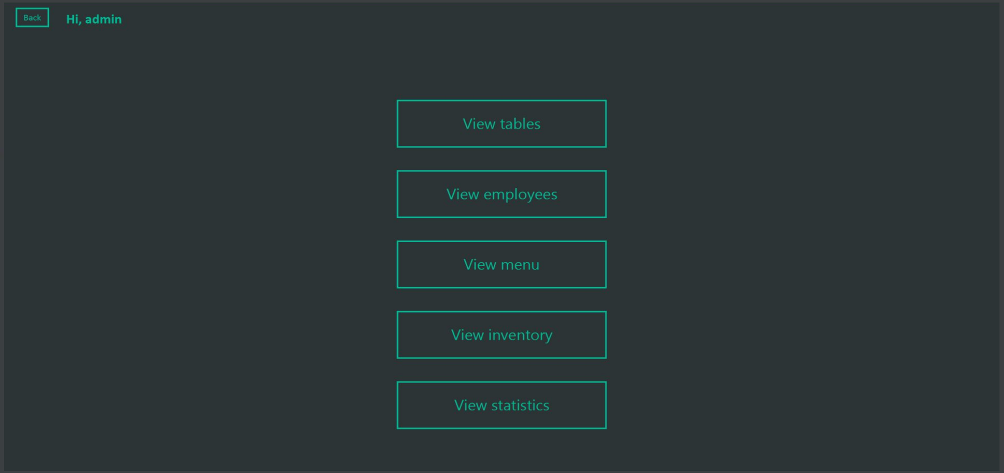


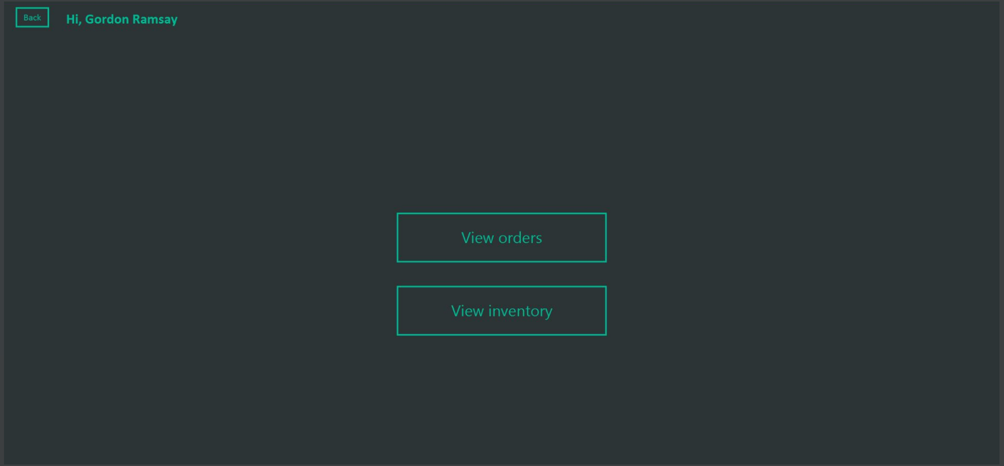
More composite design


SearchController
search(KeyEvent) void
filter(Collection<T>) List<T>
SplitList
initialize(URL, ResourceBundle) void
update() void
addExtraControl(Button, EventHandler<ActionEvent>) void
primaryDoubleClick(T) void
primarySingleClick(T) void



```
layouts
  cells
  CookOrders.fxml
  DataManager.fxml
  Home.fxml
  InventoryManager.fxml
  ListAccordion.fxml
  MonoBox.fxml
  Pickup.fxml
  SplitList.fxml
  styles.css
```

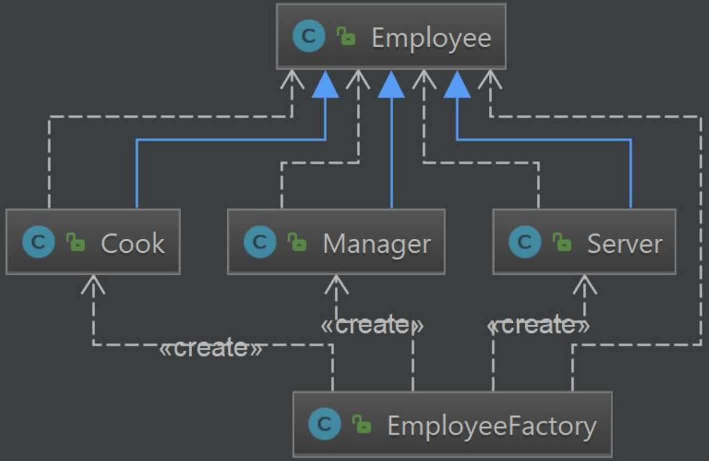


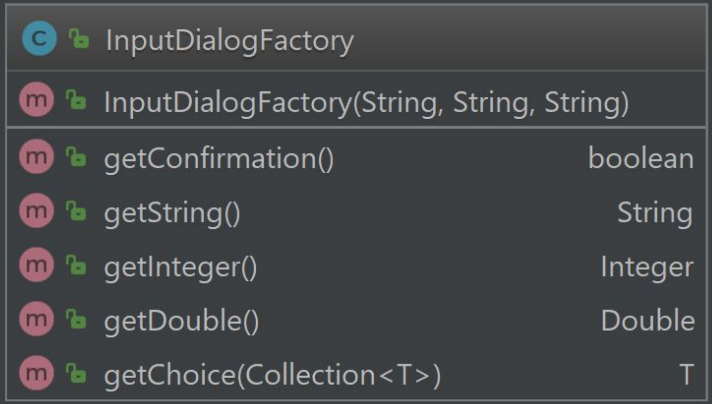


Design patterns

Vinit

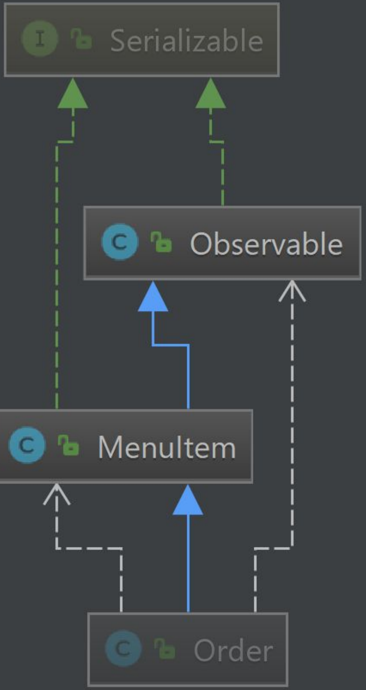
Factory (⇒ dependency injection)

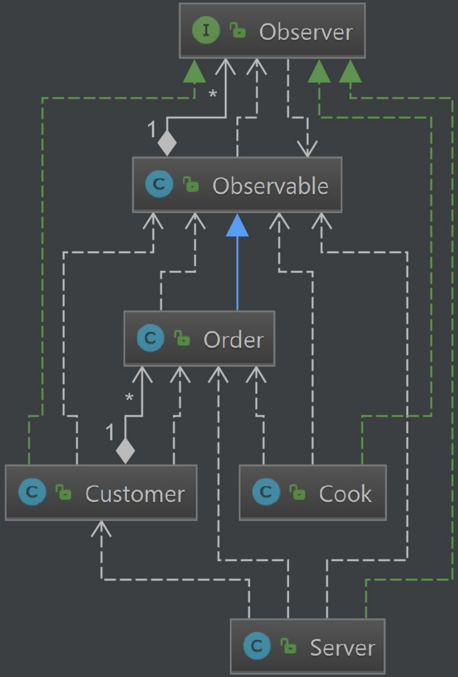


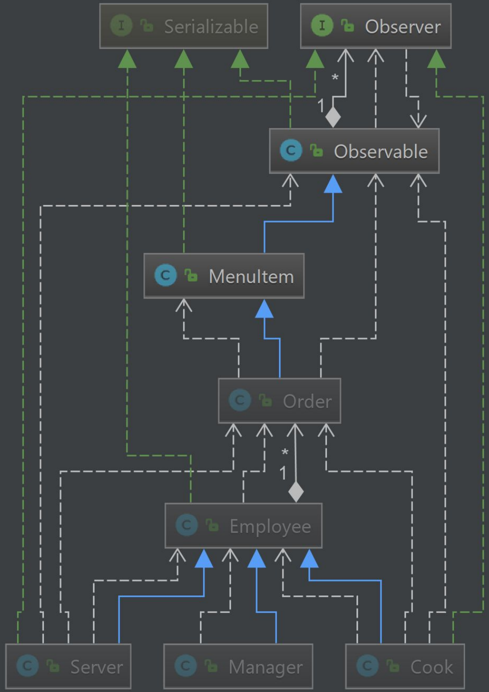


InputDialogFactory	
InputDialogFactory(String, String, String)	
getConfirmation()	boolean
getString()	String
getInteger()	Integer
getDouble()	Double
getChoice(Collection<T>)	T

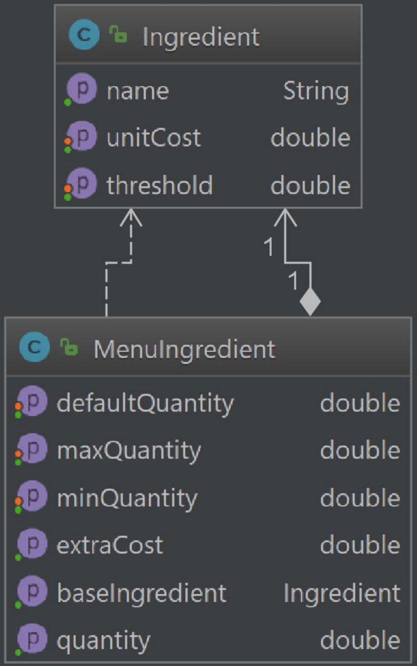
Observer (and who stores what)

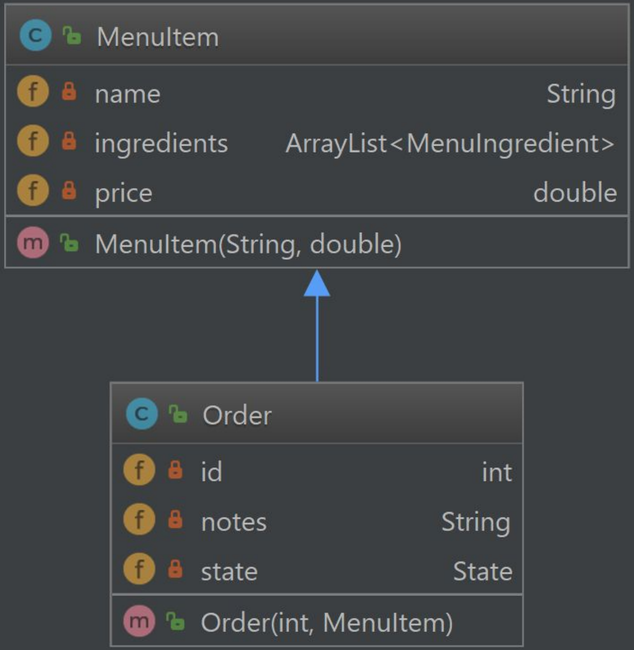




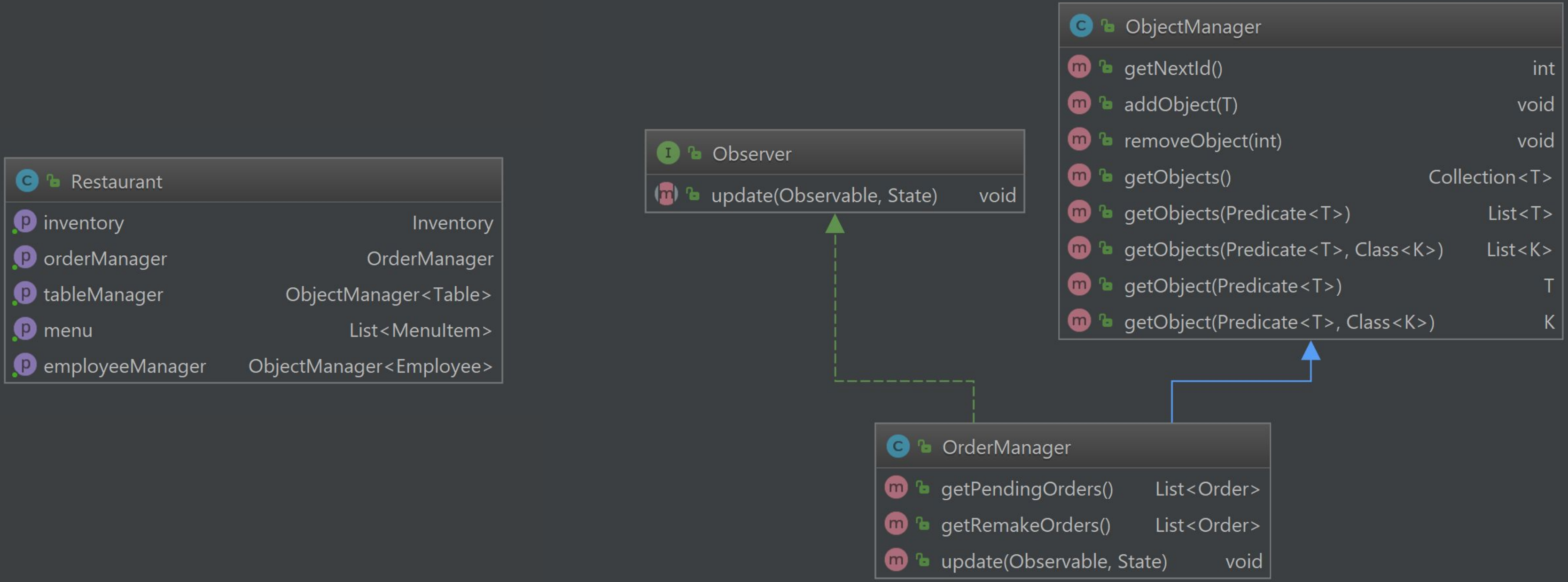


Decorator versus Inheritance





Generic object management



Restaurant	
inventory	Inventory
orderManager	OrderManager
tableManager	ObjectManager<Table>
menu	List<MenuItem>
employeeManager	ObjectManager<Employee>

Observer	
update(Observable, State)	void

ObjectManager	
getNextId()	int
addObject(T)	void
removeObject(int)	void
getObjects()	Collection<T>
getObjects(Predicate<T>)	List<T>
getObjects(Predicate<T>, Class<K>)	List<K>
getObject(Predicate<T>)	T
getObject(Predicate<T>, Class<K>)	K

OrderManager	
getPendingOrders()	List<Order>
getRemakeOrders()	List<Order>
update(Observable, State)	void

Model-like behaviour

- Queries

```
employeeManager.getObjects(employee -> employee.getOrders().size() > 10);
employeeManager.getObjects(employee -> employee.getName().length() < 12 && employee.getId() > 2);
```

- Centralized downcasting

```
Server server = employeeManager.getObject(employee -> employee.getId() == 2, Server.class);
Cook cook = employeeManager.getObject(employee -> employee.getId() == 1, Cook.class);

public <K extends T> K getObject(Predicate<T> predicate, Class<K> type)
```

- Less duplication (counting, storing, retrieving)

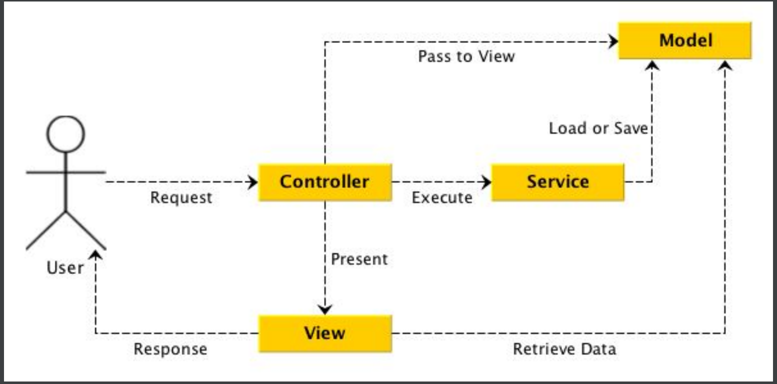
```
private int count = 0;  // Static counts don't get serialized
```

To MVC or not to MVC

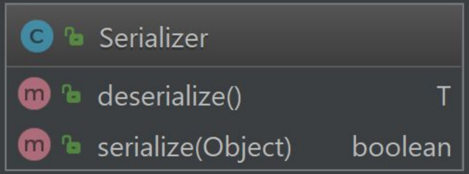
- Why our design is *partially* MVC
  - + Segregation between backend, layouts and controllers
  - + "Templating"-kind structure used for layout reusability
  - - MVC typically more useful when some form of database involved
  - - Application logic at backend, not controller
    - interaction between backend classes
    - but less duplication in controller classes
    - more extendable - new controllers require less effort

To MVC or not to MVC

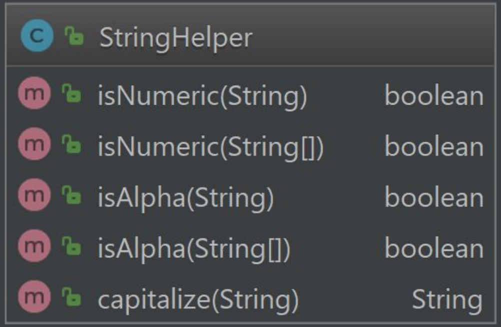
- Real world apps - layer between model and controller
  - Model-View-Controller-Service: business logic in service
  - Think MEAN stack
  - Model-Service as our *backend*, serves as an API



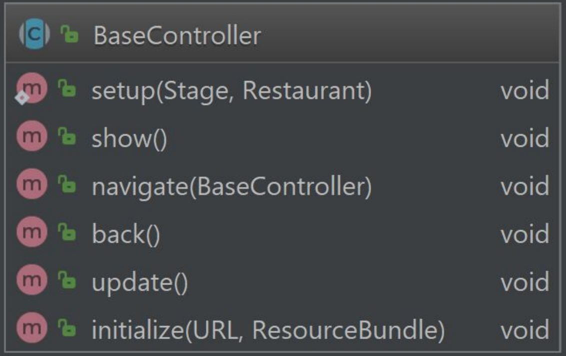
Other features



Serializer	
deserialize()	T
serialize(Object)	boolean



StringHelper	
isNumeric(String)	boolean
isNumeric(String[])	boolean
isAlpha(String)	boolean
isAlpha(String[])	boolean
capitalize(String)	String



BaseController	
setup(Stage, Restaurant)	void
show()	void
navigate(BaseController)	void
back()	void
update()	void
initialize(URL, ResourceBundle)	void

Application demo

Steven