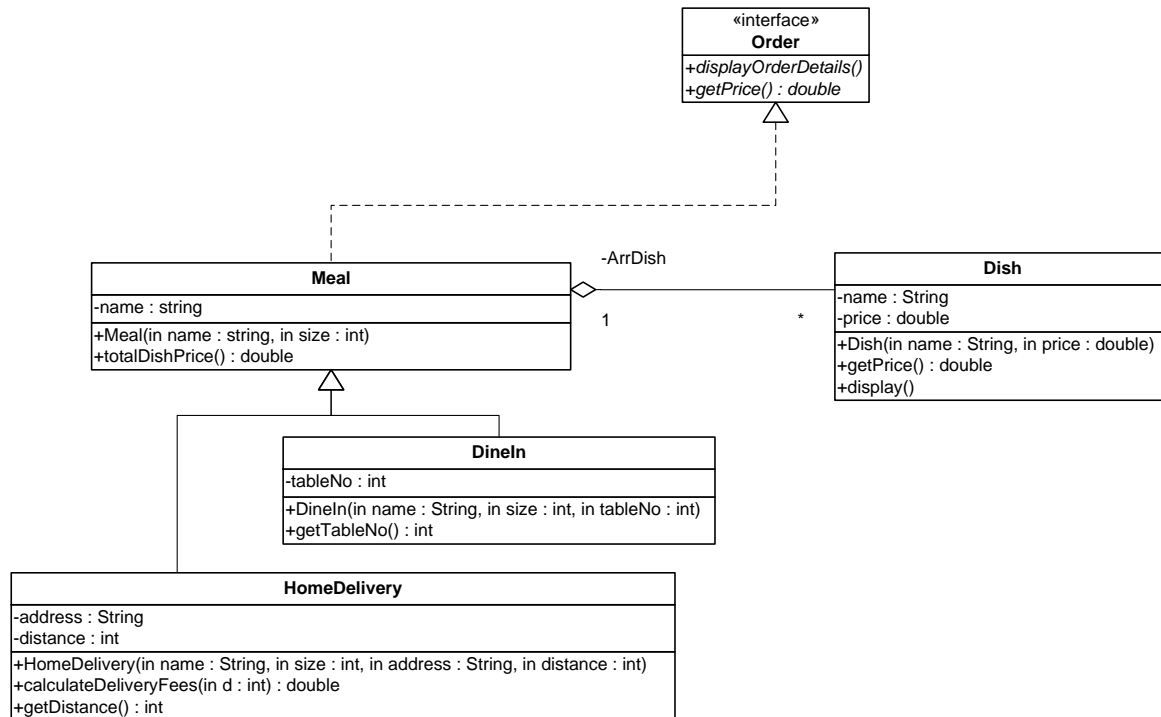


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College of Computer and Information Sciences
Department of Computer Science
CSC113 – Computer Programming II Midterm 2 Exam – Fall 2016

Exercise 1



Interface *Order*:

○ **Methods:**

- ***displayOrderDetails ()***: This method displays the details of the order. For ***Meal***, this method displays all the Dishes of the ***Meal***.
- ***getPrice()***: This method returns the price of the ***order***. The price of the ***Meal*** is computed as follows:
 - For ***DineIn***: The price of the meal = $1.05 * (\text{the total price of all Dishes of the } \mathbf{Meal})$.
 - For ***HomeDelivery***: The price of the meal = $(\text{the total price of all Dishes of the } \mathbf{Meal}) + (\text{delivery fee})$.

Class *Dish*:

○ **Attributes:**

- ***name***: The name of the ***Dish***.
- ***price***: The selling price of the ***Dish***.

○ **Methods:**

- ***Dish(name: String, price: double)***: Constructor
- ***getPrice()***: This method returns the price of the ***Dish***. If the price is negative or greater than 100 SAR, it throws an ***Exception*** with the following message "***Wrong price***".
- ***display()***: This method displays the name and the price of the ***Dish***.

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College of Computer and Information Sciences
Department of Computer Science
CSC113 – Computer Programming II Midterm 2 Exam – Fall 2016

Class *Meal*:

- Attributes:
 - *name*: The name of the *Meal*.
- Methods:
 - *Meal(name: String, size: int)*: Constructor.
 - *totalDishPrice()*: This method returns the total price of all Dishes of the *Meal*.

Class *DineIn*:

- Attributes:
 - *tableNo*: The number of the table.
- Methods:
 - *DineIn(name: String, size: int, tableNo: int)*: Constructor.
 - *getTableNo()*: This method returns the table number of the *DineIn*.

Class *HomeDelivery*:

- Attributes:
 - *address*: The address where the meal should be delivered.
 - *distance*: The distance to the delivery address in *Km*.
- Methods:
 - *HomeDelivery(name:String, size: int, address:String, distance: int)*: Constructor.
 - *calculateDeliveryFees(d: int)*: This method returns the delivery fee computed as follows:
 - The delivery fee is 5 SAR when the distance is less or equal than 10 Km.*
 - Otherwise the delivery fee of the distance $d = 1.05 * \text{delivery fee of the distance } (d-1)$.*
 - *getDistance()*: This method returns the distance.

QUESTION:

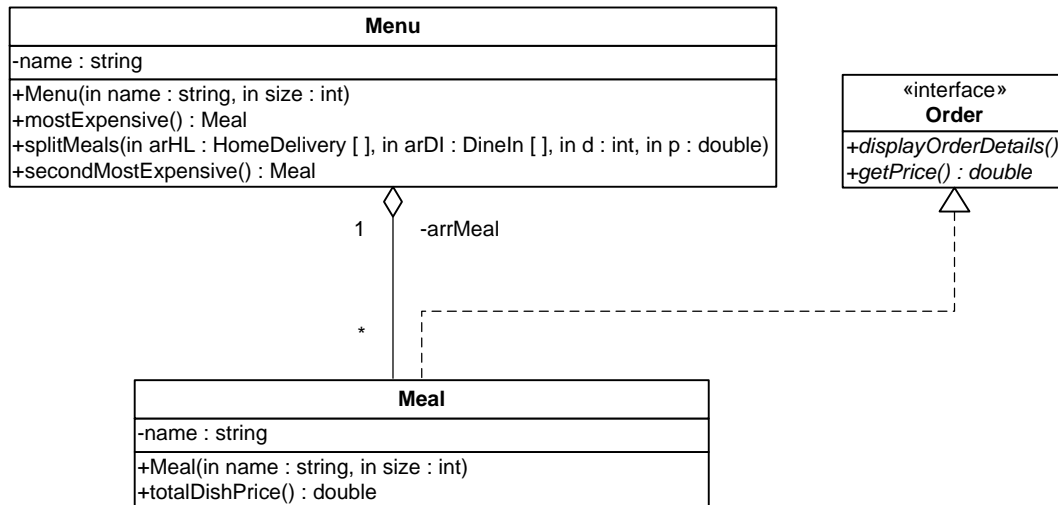
Translate into Java code the interface *Order* and the classes *Meal* and *HomeDelivery*.

- For the method *calculateDeliveryFees* , give 2 solutions (an **iterative solution** and a **recursive solution**).

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CSC113 – Computer Programming II Midterm 2 Exam – Fall 2016

Exercise 2:

Let's consider the same class *Meal* described in exercise 1.



Class *Menu*:

- Attributes:
 - **name**: The name of the *Menu*.
- Methods:
 - **Menu(name: String, size: int)**: Constructor.
 - **MostExpensive()**: This method returns the most expensive *Meal* of the menu.
 - **SplitMeals(arHL: HomeDelivery[], arDI: DineIn[], d: int, p: double)**: This method splits the array of *Meals* into two arrays:
 - (i) **arHL** includes the *HomeDelivery* meals which the distance to the delivery address is equal to **d**. If the array **arHL** is full, this method throws an *Exception* with the following message “**Number of Home Delivery exceeded!**”.
 - (ii) **arDI** includes *DineIn* meals which the price is greater than **p**. If the array **arDI** is full, this method throws an *Exception* with the following message “**Number of DineIn exceeded!**”.
 - **secondMostExpensive()**: This method returns the second most expensive *Meal*.

QUESTION: Translate into Java code the class *Menu*.