

P2 OOP Programming Task (2020-21)

Due 9 Feb by 20:45 **Points** 100 **Submitting** a file upload **File types** zip
Available 9 Feb at 18:15 - 9 Feb at 22:00 about 4 hours

This assignment was locked 9 Feb at 22:00.

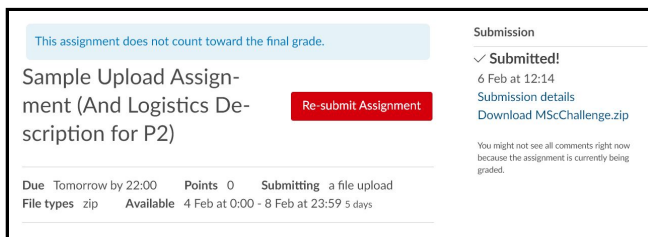
This task is to be completed as a new project in Eclipse (closed book, so no referring to/copying from other previously completed projects).

When you are done, put the entire project folder into a .zip file and upload to this Assignment on Canvas via the Submit Assignment button. After you submit, the button will change to "Re-submit" and a record of any files you have uploaded will be displayed in case you need to check/verify as in screenshot below.

It is your responsibility to keep an eye on your time and ensure you submit the required files on time.




Allocated Time: 2 hrs 30 mins so ending at 20:45 (deadline adjusted for those students entitled to extra time)

PLEASE INCLUDE YOUR NAME AND STUDENT NUMBER IN THE COMMENTS AT THE TOP OF EACH JAVA FILE YOU SUBMIT



Example of upload interface after submission

A pdf version of this page is available for download here if preferred: [problemSpec.pdf](https://canvas.qub.ac.uk/courses/11041/files/1567593/download?download_frd=1) 
https://canvas.qub.ac.uk/courses/11041/files/1567593/download?download_frd=1

Also links to download the provided sample csv files linked here at the top, as well as at the point in the spec where they are required: [OrderList-1-BasicOnly.csv](https://canvas.qub.ac.uk/courses/11041/files/1567133/download?download_frd=1) 
https://canvas.qub.ac.uk/courses/11041/files/1567133/download?download_frd=1 , [OrderList-2-PizzasOnly.csv](https://canvas.qub.ac.uk/courses/11041/files/1567134/download?download_frd=1) 
https://canvas.qub.ac.uk/courses/11041/files/1567134/download?download_frd=1 , [OrderList-3-Full.csv](https://canvas.qub.ac.uk/courses/11041/files/1567135/download?download_frd=1) 
https://canvas.qub.ac.uk/courses/11041/files/1567135/download?download_frd=1

Pizza Shop

Section 1 (55% of available marks)

The scenario to be implemented is a pizza/takeaway shop. The UML diagram below (fig 1.) and associated business rules represent the initial state of the program required, then some additional

tasks and expansions are detailed in the next section.

Implement the Classes outlined in the diagram and a driver class PizzaShop.java with a main method to test and demonstrate the functionality of those classes.

Some sample console output is given as an example at the end in fig 2. Layout/formatting should be tidy, but doesn't need to match perfectly.

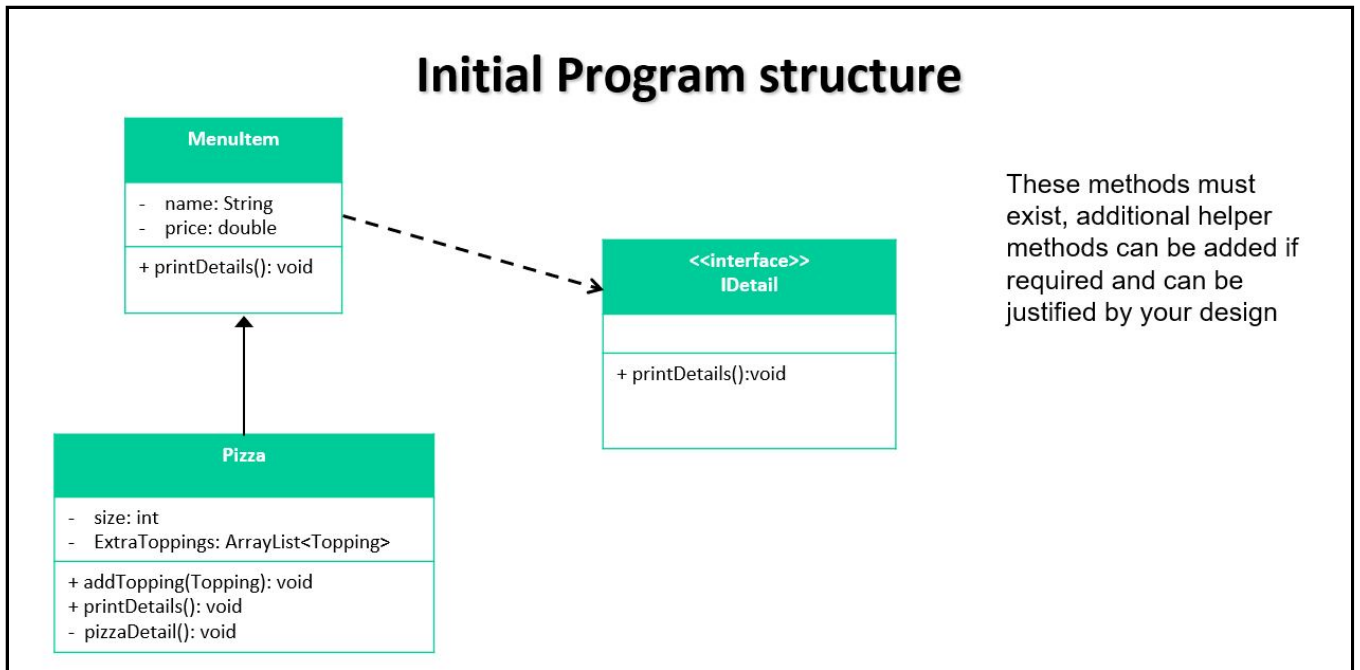


fig 1. UML Diagram for initial program structure

Business Logic:

Topping - can be String or enum (Developer choice, enum preferred)

Menuitem - represents simple non customisable items with just a name and price eg Drinks/Burgers etc.

- Name must be non empty String. Letters and Spaces only and must not begin with a space. (otherwise "INVALID NAME")
- Price: non negative, zero if invalid

Pizza - represents Pizzas which could be plain with no additional toppings or with a choice of toppings added which affects the price

- Main required constructor for `Pizza(int size)` - creates a plain pizza of a given size. Additional constructor(s) as developer sees fit.
- base price should equal size and name standardised e.g. size: 8, price: £8.00, name: Pizza
- Size between 8 and 16 - set to 8 if smaller value given, 16 if bigger
- Base price, then 50p for each additional Topping. Only 1 of each topping possible.

Some example toppings which could be used:

Extracheese
Pepperoni
Beef

Chicken
Ham
Pineapple
Peppers
Onions
Mushrooms
Olives

Section 2 (45% of available marks)

Next Steps and Expansions

- Add a static method **printReceipt** to PizzaShop which receives an ArrayList of MenuItem objects and prints a summarised receipt to the console, itemising items and a total price.
(layout should be tidy, but doesn't need to be perfect)
- Add a method **isVegetarian()** to the Pizza class which will return true if none of the Toppings are Meat based and false otherwise
- Add a static method **findVeggies** to PizzaShop which receives an ArrayList of MenuItem objects and counts the number of Vegetarian pizzas which are in that list and prints the details of each.
- Add a static method to PizzaShop which will read from an appropriately formatted csv file (samples provided) and return an ArrayList of MenuItems – consideration for invalid values in file/handling exceptions appropriately
 - Sample files: [OrderList-1-BasicOnly.csv](https://canvas.qub.ac.uk/courses/11041/files/1567133/download?download_frd=1) ↓
(https://canvas.qub.ac.uk/courses/11041/files/1567133/download?download_frd=1) -
 - [OrderList-2-PizzasOnly.csv](https://canvas.qub.ac.uk/courses/11041/files/1567134/download?download_frd=1) ↓
(https://canvas.qub.ac.uk/courses/11041/files/1567134/download?download_frd=1) -
 - [OrderList-3-Full.csv](https://canvas.qub.ac.uk/courses/11041/files/1567135/download?download_frd=1) ↓ (https://canvas.qub.ac.uk/courses/11041/files/1567135/download?download_frd=1)

****Initial Tests****

Test simple item
Burger £5.50

Test Validation rules
INVALID NAME £0.00

Test pizza 1
Custom Pizza (8) £9.50
with toppings:
* PEPPERS
* PINEAPPLE
* EXTRACHEESE

Test pizza 2
Plain Pizza (8) £8.00

Test pizza 3
Topping already on pizza, skipping
Custom Pizza (10) £11.00
with toppings:
* BEEF
* CHICKEN

****Expansions and searches Tests****

Test receipt method

ORDER DETAILS

Burger £5.50
Custom Pizza (8) £9.50
with toppings:
* PEPPERS
* PINEAPPLE
* EXTRACHEESE
Plain Pizza (8) £8.00
Custom Pizza (8) £9.50
with toppings:
* MUSHROOMS
* OLIVES
* EXTRACHEESE

Total cost: £32.50

Test veggie search method

Veggie 1)
Custom Pizza (8) £9.50
with toppings:
* PEPPERS
* PINEAPPLE
* EXTRACHEESE

Veggie 2)
Plain Pizza (8) £8.00

Veggie 3)
Custom Pizza (8) £9.50
with toppings:
* MUSHROOMS
* OLIVES
* EXTRACHEESE

A total of 3 Veggie Pizzas in this list

Test file read method (by printing receipt)

ORDER DETAILS

Burger £2.50
Custom Pizza (12) £14.00
with toppings:
* CHICKEN
* EXTRACHEESE
* PEPPERS
* BEEF
Coke £0.80
Chicken Nuggets £1.50
Custom Pizza (14) £14.50
with toppings:
* EXTRACHEESE
Custom Pizza (8) £9.50
with toppings:
* EXTRACHEESE
* HAM
* PINEAPPLE
Cheeseburger £2.95
Coke £0.80
Plain Pizza (14) £14.00
Chips £2.50
Chips £2.50
Plain Pizza (10) £10.00
Custom Pizza (13) £14.00
with toppings:
* PEPPERS
* ONIONS

```
Plain Pizza      (15) £15.00
Burger           £2.50
-----
Total cost: £107.05
-----
```

fig 2. Sample console output