FINAL Exam: OOP

WEP 2024

{3h00}

11th April 2024

- All documents allowed during practice time.
  - Search google allowed.
  - Artificial Intelligence (AI) are forbidden.
- Chatting and talking to other students are forbidden.

EXERCICES	POINTS
THEORY	20
EXERCICE 1	30
EXERCICE 2	50
TOTAL	**100**

You need to return on Google classroom:

✓ **A ZIP file containing all necessary files**

✓ **The ZIP file should be named:**

<YOU FIRST NAME>-<YOU LAST NAME>.ZIP

THEORY - 20 POINTS

Students, please ensure you have completed the theoretical aspects before proceeding to practical exercises.

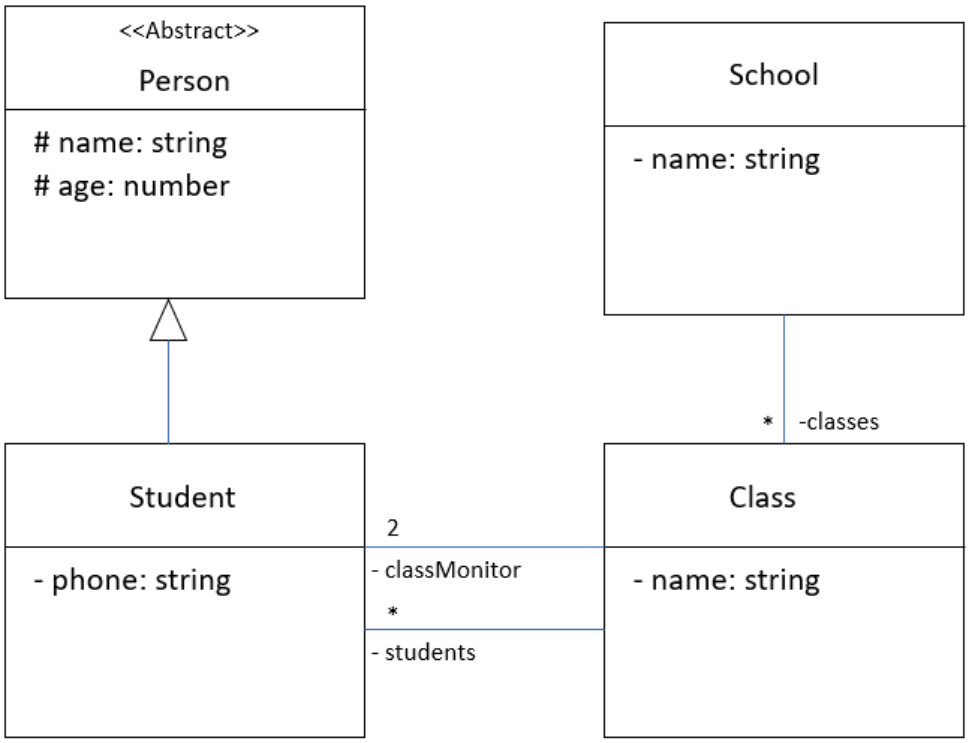
EXERCICE1 - 30 POINTS

Open the START CODE / EXERCICE-1

Convert the bellow diagram below to **TypeScript** code, including:

- Attributes (visibility, type)
- Constructors …

This model represents a school system, consisting of schools, classes within each school, and students assigned to each class.



EXERCICE2 - 50 POINTS

"We're setting up a system to run our restaurant smoothly. Customers can come to our restaurant and pick what they want to eat, like pizza or a meal, and order it easily."

1. **MenuItem**
    - In a restaurant, this class represents the different dishes available on the menu.
    - Each MenuItem object has a name, description, and price.
    - Customers can view the menu, which includes all MenuItem objects.

For example,

name	description	price
Big Meal	A delicious burger with fries and a drink.	$9.99
Crispy Snack	Crunchy chips served with a dip.	$7.99

2. **Customer**
   - Each Customer object has an ID, name, and a list of orders they've placed.
   - Customers can place orders, selecting items from the menu.
   - One customer can make multiple orders, but each order is placed by only one customer.

   For example,

ID	name	Orders
101	John	[Order 1]
102	Alice	[Order 2, Order 3]

3. **Order**
   - Each Order object contains a list of MenuItem objects and calculates the total price of the order

   For example,

Order Items	Total Price	customer
[Big Meal, Crispy Snack]	$17.98	John
[Big Meal, Big Meal, Crispy Snack]	$29.97	Alice

4. **Restaurant**
   - In the restaurant, we store items and orders, such as MenuItem and Order objects.
   - We can let people order menu items directly, without needing a customer.

Q1 – 10 POINTS

On DIAGRAMS, write the UML diagram corresponding to your solution

Q2 – 10 POINTS

On exercise 2 folder, write classes attributes and constructors corresponding to your solution for this problem

Q4 – 05 POINTS
In the restaurant, write a method to add item to restaurant.

```
addItem(item: MenuItem): void
```

Q5 – 10 POINTS
In the restaurant, write a method to order item by customer.

```
placeOrder(customer: Customer, items: MenuItem[]): void
```

Q6– 10 POINTS
In the restaurant, write a method to get order by customer

```
getOrdersByCustomer(customer: Customer): Order[]
```

Q7– 05 POINTS
Let's create an instance of the Restaurant class and test.