TP/TD 04 Class and Object

Object-Oriented Programming (OOP)- 2nd Year CPI

Part One: ★★★★☆

Task 01 ➔ Answer the following questions (Not in your head):

1. In java when a class constructor called?
2. When you write a constructor, what return type do you write in constructor declaration?
3. Why do you use constructor?
4. What are constructor types that you know?, give an example for each one.

Task 02 ➔ Give a UML representation of the following classes and the association between them:

1. A road connects two cities.
2. A country has a capital.

Task 03 ➔ Write a program that would print the information (name, year of joining, salary, address) of three employees by creating a class named 'Employee'. The program should output the following information:

Name	Year of joining	Address
Amine	2002	24 rue Bt 5001-Oran
Aek	2012	29 rue – sba
Mahmoud	1999	59 Bt 5000 - Chlef

Task 04 ➔ Write a constructor in the Car class given below that:

a. Initializes the *car_Type* attribute with the string "Peugeot", of year 2007.
b. Check the Car year and if year < 2019 then edit the remark attribute by "This car needs scanner verification". Otherwise, edit the remark attribute by "This car doesn't need a scanner verification".
c. Add to the car class add a method to print car information.

```
1 public class Car{
2     String car_Type;
3     int year;
4     String remark;
5 }
```

Task 05 ➔ A student is characterized by his name, phone number, email address, id number, and average mark. Each student has two addresses. The address is characterized by a street name, city, postal code, and country.

1. Give the UML class representation of the above description, including the relation between classes.
2. Give the java code of classes.
3. Add method to print information for each student
4. Create a Main class that contain the main method and create a student object with his information and addresses

Task 06 ➔ Write a java program that asks continuously a user to create an object from a class and then each time prints the number of created instances. (See the program output sample)

```
Do you want to create an instance y/n ?
y
Number of the created instances is :1
Do you want to create an instance y/n ?
y
Number of the created instances is :2
Do you want to create an instance y/n ?
y
Number of the created instances is :3
Do you want to create an instance y/n ?
n
Number of the created instances is :3
Do you want to create an instance y/n ?
n
Number of the created instances is :3
Do you want to create an instance y/n ?
```

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Part Two: ★★★★★

In our country, there are 3 mobile phone operators (Djezzy, Mobilis, and Ooredoo). Each operator is characterized by its commercial name, number of covered states, and prefix number, for instance, Djezzy start with 07, 06 for mobilis and 05 for ooredoo. Complete the following tasks:

Task 01 ➔ Create class Operator (in java).

Task 02 ➔ Create 3 object instance for the operator, use and number for covered states.

Assuming that in Ramadhan. Each operator will provide new offers. Each offer is characterized by an offer description, offer price, and offer duration.

Task 03 ➔ Do the following:

1. Create class Offers.
2. Draw both classes Operator and Offers and the association between them.
3. Draw object diagram.

Task 04 ➔ Add a method that:

1. Displays operator information. Test it.
2. Gets an initial credit as a parameter and check if this client can benefit from this offer. Perform a partial test on class Offers.

Task 05 ➔ Add main class that contain a main method and create the following offer instances

Djezzy Offers			Mobilis Offers			Ooredoo Offers		
Price (Da)	Description	Duration	Price (Da)	Description	Duration	Price (Da)	Description	Duration
30	100 Mo/net	24H	40	200 Mo/net	24H	100	1G internet	24H
100	free calls	24H	100	free calls + net	24H	200	free calls + net	48H
200	free calls + net	7 Days	200	free calls + 1G	7 Days	500	free calls + 10 G	15 Days
500	free calls all + net	15 Days	500	free calls all + net	15 Days	1000	free calls all + 40 G	1Month
1000	free calls all + net	1 Month	1000	free calls all + net	1 Month	3000	free calls all + net	2 Month

Task 06 ➔ Edit operator class by:

1. Allow class constructor to initialize an operator with array of offers.
2. Add an method that displays All offers.

Task 07 ➔ Complete the following (in the main):

a. Allow user to enter his phone-number.
b. Allow user to enter his initial credit.
c. Check the number then show offer list according to his operator.
d. Check if he can benefit from this offer.

Output example

```
Enter your phone number
077878787
Enter your Credit :
1200
Your operator information:

operator name:Djezzy
operator covrage states:50
operator prefix:07
Choose an offer:
Choose an offer from the following :
0 100 Mo/net Price: 30.0 Duration24H
1 free calls Price: 100.0 Duration24H
2 free calls + net Price: 200.0 Duration7 Days
3 free calls + net Price: 500.0 Duration15 Days
4 free calls + net Price: 1000.0 Duration1 Month
4
You benefit form free calls + net valid until : 1 Month
```

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