

PRACTICAL EXAMINATION

Subject code: PRO192 – Summer 2023

Duration : 85 minutes

Develop Vaccines management OOP application with following components and requirements

1. (2 marks) Define a class Vaccine with the following attributes and methods:

Attributes:

- name (String): Stores the name of the vaccine.
- code (String): Stores a unique code to identify the vaccine.
- quantity (int): Stores the quantity of the vaccine in stock.
- expirationDate (Date): Stores the expiration date of the vaccine.
- price (double): Stores the price of the vaccine.
- lastInjectedDate (Date): Stores the most recent date the vaccine was injected.

Methods:

- Constructors, getters and setters
- Implements toString, equals method.

2. Define a class VaccineManager with the following attributes and methods:

Attributes:

- vaccines (List<Vaccine>): Stores the list of vaccines.

Methods:

- a. (1 mark)** Loads the list of vaccines from a file “**vaccines_input.txt**” and displays to console all vaccines.

The format of the file “**vaccines_input.txt**” is as follows:

```
code=1, name=COVID-19, quantity=abc, expirationDate=abc, price=abc, lastInjectedDate=abc
code=2, name=Gam-COVID-Vac, quantity=200, expirationDate=15/07/2026, price=1.0, lastInjectedDate=11/02/2022
code=3, name=Vero-Cell, quantity=300, expirationDate=31/03/2024, price=1.0, lastInjectedDate=25/06/2021
code=4, name=Spikevax, quantity=500, expirationDate=22/06/2025, price=1.0, lastInjectedDate=30/12/2022
code=5, name=AstraZeneca, quantity=400, expirationDate=14/08/2026, price=1.0, lastInjectedDate=18/09/2022
code=6, name=SPUTNIK-V, quantity=700, expirationDate=18/05/2027, price=1.0, lastInjectedDate=21/04/2022
```

- b. (1 mark)** Adds a new vaccine to the list (if the vaccine code already exists in the list, a new vaccine is not added to the list).
- c. (1 mark)** Deletes a vaccine based on the vaccine code.
- d. (1 mark)** Sorts the list of vaccines by name.

- e. (1 mark) Saves the list of vaccines to a file “vaccines_output.txt”

3. Technical Requirements:

- (1 mark) Displays the menu of available functionalities for the user in question 2a,2b,2c,2d,2e

```
Vaccin Managerment System
1. Display All Vaccines From File
2. Add a Vaccine
3. Delete a Vaccine by code
4. Sort Vaccines by Name
5. Save to File
6. Exit
Enter selection: |
```

Hint: An abstract Menu class is provided for use in the application. Override method execute().

- (1mark) Ask the user to re-enter if
 - incorrect integer for **quantity** attribute.
 - incorrect real numbers for **price** attribute.
 - incorrect date format for **expirationDate** and **lastInjectedDate** attributes. The correct date format is: “dd/mm/yyyy”.
- (1 mark) Check to catch an exception when reading from a file if the format is not correct for
 - integer of **quantity** attribute
 - the real number of the **price** attribute
 - date format of **expirationDate** and **lastInjectedDate** attributes. The correct date format is: “dd/mm/yyyy”

Notice: Student must strictly follow all requirements as describe above for marking. Any modification the requirement detail is not allowed and will get no mark!