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| **PRACTICAL EXAMINATION** | **Code:** | **PRO192 – Fall2024** |
| **Duration:** | **85 minutes** |

**Title**

Develop Magazine Management System OOP application with the following components and requirements.

**Requirements**

**1.** (**2 marks**) Define a class Magazine with the following attributes and methods

**Attributes:**

* String title: The title of the magazine.
* String publisher: The publisher of the magazine.
* Date publishDate: The date the magazine was published (in the format dd/MM/yyyy).
* int issueNumber: The issue number of the magazine.
* int pages: The number of pages in the magazine.

**Methods:**

* Constructors, get/set() methods, and toString().
* getAge(): Calculate and return the age of the magazine in years, based on the publish date..

**2. (3.5 marks)** Define the MagazineList class contain list of magazines and the following methods:

a**.** Read file "magazines\_input.txt" and stores in List <Magazine> (if wrong data skip is not added to the list).

The format of the file "magazines\_input.txt" is as follows and the magazines input.txt file is provided with this exam.

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| National Geographic| NatGeo Society|15/06/2020|101|120  Time|Time Inc.|10/09/2019|210 |90  Forbes|Forbes Media|05/03/2021|307 |150  Scientific American|Springer Nature|22/12/2018|402 |110  Vogue|Conde Nast|02/02/2022|80|95 |

b. Add a new magazine to the list.

c. Sort **magazines** by the number of pages in ascending order.

d. **Search magazines** by title, publisher, or issue number.

e. **Delete magazines** where the magazine's age is 5 years or older.

**3.** **(4 marks)** Define the MagazineManagement class contains main method for execute the program and the input and output-related methods as the following:

* Display menu with options “Add a new magazine, Display all magazines, Display sorted magazines by the number of pages, Search magazines, Delete magazines.” Use the given Menu class to write the main menu is required.
* Add a new magazine from the console. Validate for date published following the format “dd/mm/yyyy”. Example: 12/02/2014. If the user inputs wrong data, it must require user input again.
* Display all magazines.
* Display sorted magazines by the number of pages.
* Search magazines by title, publisher, or issue number.
* Delete magazines where the magazine’s age is 5 years or older.

***Program design (0.5 mark)*:** following the MVC pattern

* Package model contains the Magazine and Magazine List classes
* Package controller contains the MagazineManagement class (this class needs to contain the main function to run the program)
* Package view contains the Menu class

If the student wants to separate the input and output-related methods from the MagazineManagement class and move them into the MagazineListView class, *this is acceptable*. In that case, the view package will contain both the Menu and MagazineListView classes.

Notice:

1. An abstract Menu class is provided for use in the development this application.
2. Students must strictly follow all requirements as described above for marking. Any modification of the requirement details is not allowed and will receive no marks!
3. Students must submit the project folder (that created in Netbean), submitting any other file formats (such as .doc, .txt…) will receive 0 points.

***Expectation of User interface:***

***A screenshot of a computer program

Description automatically generated***

***A screenshot of a computer

Description automatically generated***

***A close-up of a document

Description automatically generated***

***A screenshot of a computer program

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