Object Oriented Programming set-1 Mid Semester Exam

Instructions

1. This is a **closed book online proctored** exam.
   a. You should not refer to books, notes or online resources.
   b. You should not discuss questions or answers with anyone (including outsiders)
   c. You should have your camera and microphone **ON** at at all times and no headphones
2. Write the solutions clearly and legibly in A4 sheets, using pen (NOT pencil) and at the end of the exam you should submit the scanned copy of your solutions as explained by the faculty
3. Follow all other instructions given by the faculty during the exam

Descriptive Questions (10 Marks each)

Note: For programs add comments for any assumptions made

1. Create a class Doctor with instance variables (name, doctorid, no-patients). The attribute no-patients is an integer to keep track of the number of patients registered with the doctor. Create another class DoctorMain which will contain the public static void main method. In main, you should create at least three doctor instances (random names and no-patients hardcoded). Create one or more static variable(s) in Doctor class. You should keep track of all instances created in that static array. Create another static method in Doctor class, for computing the average no-patients based on the instances in the array.

2. Write a java program that implements the following classes:
   Class Book:

   Fields: Title (String), author, isbn (int), available (Boolean - default is true), borrowedBy (int - default is 0)

   Constructor: with arguments to initialize books

   Methods:

   ▪ toString - to print book details

Class Library:

Fields: Array of Books

Constructor (default / parameterized) : initialize the array of Books with hard coded inputs

Methods:

- borrowBook (isbn, userid) – to implement a user with the given id borrowing the book with the given isbn Eg.: if borrowBook (1001, 5) is invoked, the borrowedBy field of the book with isbn = 1001 should be set to 5. Also, the available status of the book should become false.
- returnBook (isbn, userid) – set available status of book with given isbn to true and set borrowedBy field to 0.
- showBooks() – print the details of all available books
- Other methods can be added as required

Note: Main method need not be written.