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INSTRUCTIONS

1. Follow university rules for exams during this assessment.
2. You are not allowed to use the textbook, the lecture slides, or any other external sheets. Any other material will be considered cheating.
3. Cheating is an academic violation according to Qatar University rules and regulations, and in some cases, it may result in final dismissal from the University. Students should not under any circumstances commit or participate in any cheating attempt or any act that violates the student code of conduct.
4. You have a total of **25 minutes to complete this assessment**. Use your time effectively.
5. All questions are compulsory. Answer all questions on the provided papers. No separate answer sheet or book sheet will be provided.
6. Calculators, mobile phones, any smart devices are NOT allowed.

<i>Question</i>	<i>Grade</i>	<i>Out of</i>
1		30
2.a		10
2.b		30
2.c		30
Total		100

Consider the following code in answering the questions of this quiz.

```
package quiz3;
import java.util.ArrayList;
public class Book {
    private String title;
    private int year;
    private int pages; // number of pages
    private String publisher;
    private ArrayList<Author> authors;

    public Book(String title, int year, int pages, String publisher,
                ArrayList<Author> authors) {
        setTitle(title);
        setYear(year);
        setPages(pages);
        setPublisher(publisher);
        setAuthors(authors);
    }

    @Override
    public String toString() {
        return String.format("title=%s, year=%s, pages=%s, publisher=%s,
                             authors=%s", title, year, pages, publisher,
                             authors);
    }
    /* Assume that all setters and getters are already coded */
}

package quiz3;
public class Author {
    private String name;
    private String email;
    public Author() {}
    public Author(String name, String email) {
        setName(name);
        setEmail(email);
    }
    @Override
    public String toString() {
        return String.format("name=%s, email=%s", name, email);
    }
    /* Assume that all setters and getters are already coded */
}

package quiz3;
public enum Cover {
    HARD, SOFT
}
```

1. A digital book is a book with the extra instance field **size** of type double representing the size of the book in MB. Assume that the full code of the class **DigitalBook** with the fully parametrized constructor and overriding the **toString** method of the super class **Book** is given and ready to use.

A printed book is also a book with the extra instance field **cover** of type **Cover**. Write the full code of the class **PrintedBook** with the fully parametrized constructor and overriding the **toString** method of the super class **Book**.

2. Consider the class **Tester** below and code the tasks described below.

```
package quiz3;
import java.util.ArrayList;
public class Tester {
    public static void main(String[] args) {
        new Tester();
    }

    public Tester() {
        ArrayList<Book> books = new ArrayList<Book>();

        /* Assume that we have already created different types of Book objects
           and them to the array list books. */

        /* a. Create an object of DigitalBook and add it to the books ArrayList*/

        m1(books, "McGraw Hill", 2020);
        ArrayList<String> r = m2(books, "Harvey Deitel");
    }

    /* b. code of method m1*/

    /* c. code of method m2*/
}
```

a. Create an object of **DigitalBook** and add it to the **books** ArrayList.

- b. Method **m1** that receives an ArrayList of Book **books**, a publisher name **p**, and a year **y**. This method displays the total sizes of digital books and the total number of pages of printed books that are published by **p** in the year **y**.

- c. Method **m2** that receives an ArrayList of Book **books**, and an author's name **a**. This method returns a String ArrayList of books' titles that are authored or co-authored by **a**.