



SOUTH EASTERN KENYA UNIVERSITY

UNIVERSITY EXAMINATIONS 2023/2024

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY

BIT 211: Advanced object oriented programming

DATE: 8TH APRIL, 2024

TIME: 1.30-3.30 PM

INSTRUCTIONS TO CANDIDATES

- a) Answer ALL questions from section A(Compulsory)**
- b) Answer ANY TWO questions from Section B**

SECTION A - Compulsory

Question ONE

- (a) Describe TWO types of constructors as used in java programming. [4 Marks]**
- (b) Using a in java code snippet, describe the following Wrapper class concepts:**
 - (I) Autoboxing. [3 Marks]**
 - (II) Unboxing. [3 Marks]**
- (c) With the aid of a program code illustrate how an ArithmeticException:/ divide by zero could be handled by a programmer. [5 Marks]**
- (d) Enumerate the steps required in using JDBC drive to connect to a database. [5 Marks]**
- (e) Outline ONE difference between an Exception and an Error in java. [2 Marks]**
- (f) Using a code snippet, illustrate inner and outer classes in java. [4 Marks]**
- (g) State TWO differences between an Interface and Abstract class. [4 Marks]**

SECTION B: Attempt TWO Questions

Question TWO

(a) Explain the difference between checked and unchecked exceptions. **[4 Marks]**

(b) Complete the generic class shown below by including a *constructor* and *getter* methods by adding constructor and getter methods. **[8 Marks]**

```
public class Pary<E, T> {  
    private E key;  
    private T value;  
    _____add constructor_____  
    _____add getter methods_____  
}
```

(c) A software developer uses a *HashMap* data structure to store students' registration numbers and name. Using sample data below, write a java program that stores and displays student's details. **[8 Marks]**

REG NO	NAME
100	John Mumo
101	George Otieno
102	Jane Kariuki
103	Nancy Mora

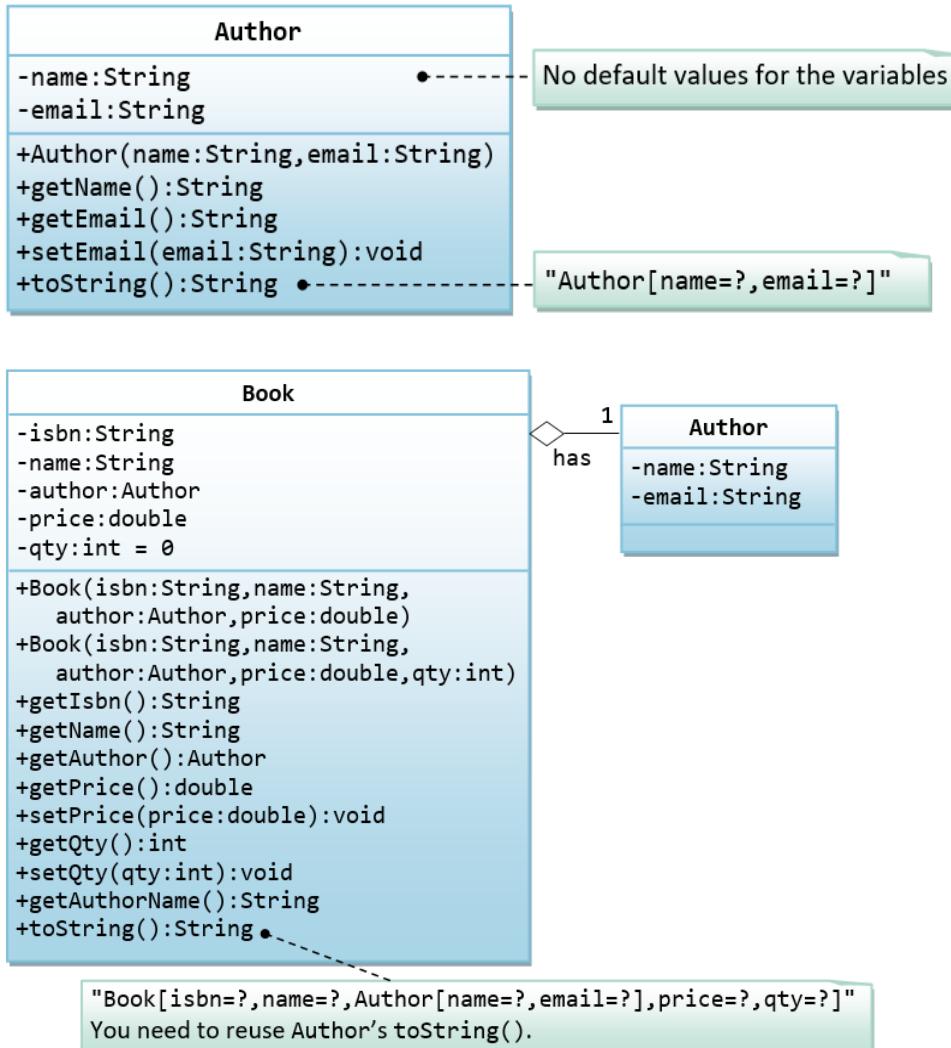
Table 1: Sample Data

Question THREE

(a) A class called **Author**, which models an author of a **book**, is designed as shown in the UML class diagram below. A class called **Book**, which models a book written by ONE author and composes an instance of Author as its instance variable, is also shown. Write the:

i) Author class **[7 Marks]**

ii) Book class. **[9 Marks]**



iii) Using the given partial JavaFX code create a user interface (UI) of a password field shown below in fig 2 below. **[4 Marks]**

```

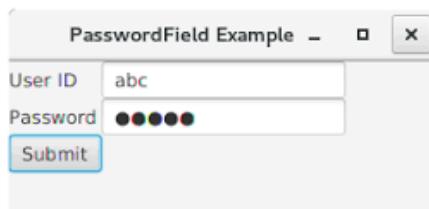
//all import statements here

public class PasswordFieldTest extends Application {
    public static void main(String[] args) {
        launch(args);
    }

    public void start(Stage primaryStage) throws Exception {
        .....
        .....
        .....

        primaryStage.setScene(scene);
        primaryStage.setTitle("PasswordField Example");
        primaryStage.show();
    }
}

```



Question FOUR

(a) Write a java program that inserts the values IDNO (integer), AccountName (String) and Branch(String) in a database table called Customer. **[10 Marks]**

(b) The code snippets below represent two interfaces named Apple and Orange.

```

interface Learn{
    void learning();
}

```

```

interface Work{
    void working();
}

```

Create a class **Student** that implements both **Learn** and **Work** interfaces **[6 Marks]**

(c) Explain FOUR differences between an abstract class and a concrete class. **[4 Marks]**