



Open University *of* Mauritius

BSc (HONS) APPLIED ICT [OUbs017]

EXAMINATION FOR: January - February 2022

MODULE : Object Oriented Programming [OUbs017214]

DATE : Saturday 05 February 2022

DURATION : 2 Hours

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of **FOUR (5) QUESTIONS**.
2. Answer **ALL Questions**.
3. Always start a new question on a fresh page.
4. Total marks: **100**

This question paper contains 4 questions and 6 pages.

ANSWER ALL QUESTIONS

QUESTION 1 [25 MARKS]

a) How is Object Oriented Programming different from Structured Programming?

(5 marks)

b) Differentiate between the following Object-Oriented concepts:

- i. no-argument constructor v/s overloaded constructor
- ii. public v/s private variables
- iii. concrete class v/s abstract class
- iv. getters v/s setters
- v. method overloading v/s method overriding

(5 x 2 marks)

c) Write a Java program that performs a Linear Search in an Array to find a user-inputted integer.

(10 marks)

QUESTION 2 [25 MARKS]

a) Write down the parent class *Calculate* to contain the two data members: value1 and value2, constructor, set methods and get methods.

(7 marks)

b) Write down the child class *Sum* from the *Calculate* class. Add a method *Show* that sum two values, and display the result.

(7 marks)

c) Write down a main method that creates an object of type *Sum*, and calls the method *Show* to display the result of the addition of two values.

(7 marks)

d) Mention the OO concepts used inside the program.

(4 marks)

QUESTION 3 [25 MARKS]

The following shows a Java program that works with Files.

```
1. package hw2;
2.
3. import java.io.File;
4. import java.io.FileNotFoundException;
5. import java.util.InputMismatchException;
6. import java.io.PrintWriter;
7. import java.util.Scanner;
8.
9. public class hw2 {
10.     public static void main(String args[]){
11.
12.         Scanner input = new Scanner(System.in);
13.
14.         int age = 0;
15.         String name;
16.
17.         File folder = new File("C:/Staff");
18.         folder.mkdir();
19.
20.         File text = new File("/C:/Staff/Names.txt");
21.         PrintWriter pw1 = null;
22.
23.
24.         do{
25.             System.out.print("Enter name: ");
26.             name = input.nextLine();
27.         }while(name.length() == 0);
28.
29.
30.         try{
31.
32.             do{
33.                 System.out.print("Enter age: ");
34.                 age = input.nextInt();
35.             }while(age < 18 || age > 100);
36.
37.         }
38.
39.         catch(InputMismatchException e){
```

```

40.                System.out.println("InputMismatchException : Enter numbers
    only.");
41.
42.                }
43.
44.                try{
45.                    pw1 = new PrintWriter(text);
46.                    pw1.println("Name = " + name);
47.                pw1.println("Age = " + age);
48.                }
49.
50.                catch(FileNotFoundException e){
51.                    System.out.println(e);
52.                }
53.
54.
55.                finally
56.                {
57.
58.                    pw1.close();
59.                    input.close();
60.                }
61.
62.
63.        }
64.    }

```

a) Explain the lines 1, 3, 12, 14, 20, 26, 27, 35, 58 and 59.

(10 x 2 marks)

b) What is the purpose of the Try – Catch – Finally block? Name two other situations where it can be used.

(3 marks)

c) What happens if several Catch blocks match the type of the thrown object?

(2 marks)

QUESTION 4 [25 MARKS]

- a) Write a Java program that creates an array of 2 book objects with the following information:

	Book1	Book2
ISBN	111-222-333	222-333-444
BookTitle	Mystery Island	The Crime
Author	John Smith	Louis Paul
Pages	100	250

(10 marks)

- b) Arrays and ArrayList are Data Structures used in Java. List their features.

(6 marks)

- c) Explain why multithreading is preferred to single thread in a client-server application?

(2 marks)

- d) Name the two classes that allow multithreading programming in Java.

(2 marks)

- e) Every Java thread has a feature that helps the operating system determine the order in which threads are scheduled. Explain how you can change this scheduling order.

(5 marks)