



**FINAL
ALTERNATIVE ASSESSMENT**

(COVER PAGE)

Session : April 2020

Programme : Diploma in Electrical & Electronic Engineering (DEEI)

Course : CSC2181: Object-Oriented Programming In Java

Date of Examination : 3 August 2020 (Monday)

Time : 8.00am – 11.00am Reading Time : Nil

Duration : 3 Hours

Special Instructions :

This paper consists of **FOUR (4)** questions. Answer **ALL** questions in the answer booklet provided.
All questions carry equal marks.

Material permitted : Non-Programmable Scientific Calculator

Materials provided : Nil

Examiner(s) : Ms Nadhrah Abdul Hadi

Chief Moderator : Ms Chern Huey Rong

This paper consists of 5 printed pages, including the cover page

INTI INTERNATIONAL COLLEGE PENANG

DIPLOMA IN ELECTRICAL & ELECTRONIC ENGINEERING PROGRAMME (DEED)
CSC2181: OBJECT-ORIENTED PROGRAMMING IN JAVA
FINAL ALTERNATIVE ASSESSMENT: APRIL 2020 SESSION

Instruction: This paper consists of **FOUR (4)** questions. Answer **ALL** questions in the answer booklet provided. All questions carry equal marks.

Question 1

a) Consider the following statements:

```
String oop = "Object Oriented Programming in Java.";
```

Analyze and trace the results of the following expressions:

- i. `System.out.println(oop.substring(16,27));`
- ii. `System.out.println(oop.substring(31,35));`
- iii. `System.out.println(oop.toUpperCase());`
- iv. `System.out.println(oop.toLowerCase());`
- v. `System.out.println(oop.replace('m', '*'));`

(5 marks)

b) Consider the following classes definition:

```
class Calculation {
    int c;

    public void addition(int a, int b) {
        // Operation: value of c is the sum of a and b
        // Output the value of c
    }

    public void subtraction(int a, int b) {
        // Operation: value of c is the difference between a and b
        // Output the value of c
    }
}
```

```
public class My_Calculation extends Calculation {  
  
    public void multiplication(int a, int b) {  
        // Operation: value of c is the product of a and b  
        // Output the value of c  
    }  
  
    public static void main(String args[]) {  
        int x = 30, y = 20;  
  
        // Create a myCalc object  
        // Call the addition() method on the myCalc object  
        // Call the subtraction() method on the myCalc object  
        // Call multiplication() method on the myCalc object  
  
    }  
}
```

- i. Write the definition of the method `addition()` and `subtraction()` of the class `Calculation` as described in the class definition.
(4 marks)
 - ii. Write the definition of the method `multiplication()` and `main()` method of the class `My_Calculation` as described in the class definition.
(6 marks)
- c) Given an array of integer that stored five numbers; 20, 30, 40, 50 and 60. Write a full program to calculate and display the average value of the array elements.
(10 marks)

Question 2

- a) Based on the following program, you need to write a Java method named `numberOfVowels()` to count all vowels in a string that is entered by the user.

```
public static void main(String[] args)
{
    Scanner input = new Scanner(System.in);
    System.out.print("Input the string: ");
    String str = input.nextLine();

    System.out.print("Number of Vowels in the string: " +
        numberOfVowels(str)+"\n");
}
```

(15 marks)

- b) Based on the following program, you need to write two methods. The first method is `showSum()` that will calculate and print the sum of the two numbers. The second method is `showProduct()` that will calculate and print the product of the two numbers.

```
public static void main(String[] args){
    double a = 5.6;
    double b = 7.5;

    showSum(a, b);
    showProduct(a, b);
}
```

(10 marks)

Question 3

Create an inheritance hierarchy of **Bird: Ostrich** and **Penguin**. In the base class, provide two methods that are common to all **Birds**, and override these in the derived classes to perform different behaviors depending on the specific type of **Bird**. In main method, create an array of **Bird**, fill it with different specific types of **Birds**, and call the base class methods.

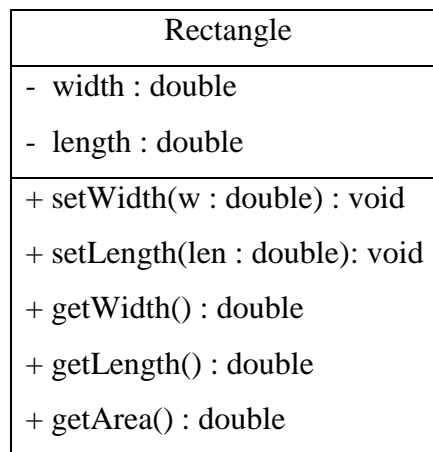
(25 marks)

Question 4

- a) Write a program that prompts user to enter a number in the range of 1 to 10. If the number entered by the user is correct, displays “The number is valid”. Otherwise, displays “The number is invalid” and prompts the user to enter a number again.

(10 marks)

- b) Convert the UML Diagram below to code.



(15 marks)

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