INTI International University & Colleges

FINAL
Examination Paper

(COVER PAGE)

Session	:	**AUGUST 2018**
Programme	:	Diploma In Information And Communication Technology (DICTN)
Course	:	**ICT2100: Object Oriented Programming**
Date of Examination	:	8 December 2018, (Saturday)
Time	:	5:00pm – 7:00pm Reading Time : Nil
Duration	:	2 Hours

Special Instructions :

SECTION A: Answer **FOUR (4)** questions.
SECTION B: Answer **THREE (3)** questions.

Materials permitted :
Non-programmable Calculator

Materials provided :
Nil

Examiner(s) : **Siti Hajar** and Lai Kim Min

Moderator : Siti Hawa

*This paper consists of **11** printed pages, including the cover page*

DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY
PROGRAMME (DICTN)
ICT2100: OBJECT-ORIENTED PROGRAMMING
FINAL EXAMINATION: AUGUST 2018 SESSION

Instruction: This paper consists of **SEVEN (7)** questions. Answer **ALL** questions in the answer booklet provided.

SECTION A (40%)

Question 1

(a) State **TWO (2)** reasons why comments in Java are encouraged to be applied in every program.

(2 marks)

(b) Apply escape sequences in phrase stated to achieve the text output shown. [Hint: Use only a single `System.out.print()`.]

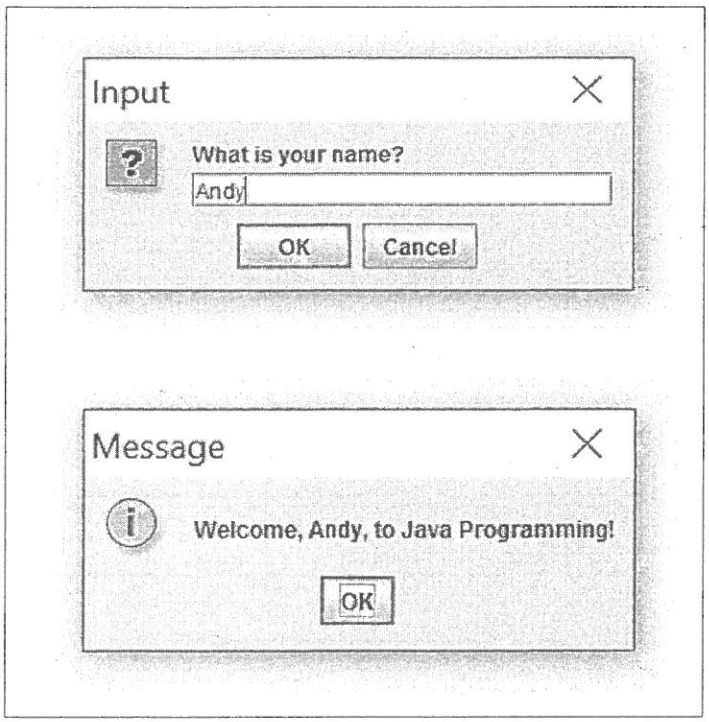
Phrase: One example of a BAD time management is "procrastination!"

Text output:

```
One example
    of a
B
A
D
    time management is
                "Procrastination!"
```

(3 marks)

(c) Complete the code snippets below to produce the dialog boxes. HINT: Use `String` variable and `String.format()` in your answer:



Code snippet:

```
//import statement
public class JOptionPane
{
  public static void main( String args[] )
   {
   // prompt user to enter name

   // display the message to welcome the user by name
   }
}
```

(5 marks)

Question 2

(a) Provide a proper type casting to convert `long num1 = 20` to another variable called `num2` of datatype:

(i) `int`

(ii) `double`

(2 marks)

(b) Trace the output for the program below:

(i)

```
public class ForLoop {

    public static void main(String[] args) {
       int i, sum = 0;
      for (i = 1; i <= 12; i++)
      {
       sum += i;
      }
      System.out.println("Sum is " + sum);
    }
    }
```

(ii)

```
public class DoWhileLoop {

    public static void main(String[] args) {
        int x = 1, sum = 0;
      do
     {
     sum += x;
     x++;
      }while (x <= 7);

 System.out.println("Sum of numbers from 1 through 7 is " +
sum);
    }
}
```

(4 marks)

(c) By using a `while` loop, write a code snippet to display a multiplication table for times 2 for number 1-12.

Sample output:

```
1 x 2 is 2
2 x 2 is 4
3 x 2 is 6
4 x 2 is 8
5 x 2 is 10
6 x 2 is 12
7 x 2 is 14
8 x 2 is 16
9 x 2 is 18
10 x 2 is 20
11 x 2 is 22
12 x 2 is 24
```

(4 marks)

Question 3

(a) Based on the program below, identify the variables and methods based on their types:
(i) Local variable
(ii) Instance variable
(iii) Instance method
(iv) Static method

```
public class soccer {

    private static int venueID;
    private int playerID;

public void printGame() {
       int gameNo=23;

    }
public static void setPlayerID(int value){
        playerID = value;
    }
}
```

(2 marks)

(b) Create a main method to call the two methods of class `Difference` below:

```
class Difference {

  //main method

  static void display() {
    System.out.println("Programming is amazing.");
  }

  void show(){
    System.out.println("Java is awesome.");
  }
}
```

(3 marks)

(c) Based on the code snippet below, create a parameterized constructor to initialize the variables in class `Employee`. Next, create an object reference in the main method to call the constructor.

```
public class Employee {

    public String name;
    public static int id;
    private double salary;
    public String address;

    public static void main (String args [])
{
  ...
}}
```

(5 marks)

Question 4

(a) Based on the statements below, answer the questions by displaying the output using `System.out.println()`:

```
String str1="Please bring your umbrella, its the rainy
seasons";

String str2="We have two semesters every year";

String str3="Final exam is the last assessment for students";
```

i. Determine the length of `string str1`
ii. Compare `str1` and `str2` for equality of contents
iii. Convert `str2` string to uppercase
iv. Print the 8th character in `str3`
v. Print the word '`semesters`' in `str2` by using `getChars()` method.
vi. Compare `str3` with "`Study hard`" by using `compareTo()` method.

(6 marks)

(b) Complete the code snippet below to generate 10 random numbers between 1 and 20 [Hint: Use for loop].

```
void randomNo()
      {
       Random randomNumbers = new Random();
       int saveRandom; // stores each random integer
generated
       // for loop
       {
          // pick random integer from 1 to 20

          // display generated value
       }
      }
```

(4 marks)

SECTION B (60%)

Question 5

(a) Trace the output for the following fragment of code:

```
int[] list = new int[5];
list[0] = 5;
for (int count = 1; count < 5; count++)
{
    list[count] = 5 * count + 10;
    list[count - 1] = list[count] - 4;
}

for (int count = 0; count < 5; count++)
    System.out.print(list[count] + " ");
```

(5 marks)

(b) Consider the following class definition:

```
class Item {
      private String name;
      private double price;

}
```

i) Create appropriate getter methods for the Item class.

(3 marks)

ii) Create a class called `Store` that contains a two-dimensional array (6 × 5 dimension) of type `Item` called `itemArray`. Assign the array with protected access modifier.

(3 marks)

iii) Implement a public accessor method called `getItem` in `Store` class that take in two integer values (row and column) and returns the instance of type `Item` at that position. Return `null` value if the row and column values are out of range.

(5 marks)

iv) Implement a public method called `increasePrice` that takes in a double `x` and increase all the price of each instance on `Item` in `itemArray` by `x`. Assume that all the setter methods (e.g. `setPrice()`) are already defined in the `Item` class. Use the following method header in your implementation:

```
public void increasePrice(double x)
```

(4 marks)

Question 6

(a) Briefly explain **TWO (2)** situations in which you would use the `super` keyword in Java implementation.

(4 marks)

(b) Consider the following class definition:

```
abstract class Vehicle {
    protected String name;
    protected int numOfWheels;

    public Vehicle(String n, int nw) {
        name = n;
        numOfWheels = nw;
    }

    public abstract void drive();
}

class Engine {
    private String type;  //e.g. Lotus MV
    private double power; //1.6 cc

    public Engine(String t, double p) {
     type = t;
     power = p;
    }
}
```

i) Create a public interface called `MoveableListener` with a method called `isMovable` that return a boolean value.

(2 marks)

ii) Define a class called `MotorCar` that has the following characteristics:

- Inherits the properties of the `Vehicle` class.
- Implement the `MoveableListener` interface.
- Define a `String` typed instance variable called `owner` and an instance variable called `engine` as `Engine` type. Accessibility should be restricted to the members of the immediate class only.
- A constructor that accepts appropriate arguments and initialize all the instance variables accordingly.
- Overrides the drive methods that print out a message saying "*Car is moving*".

(11 marks)

iii) Write a fragment of code to create an object called `myCar` of `MotoCar` type with the following details:

Car Name : Mazda 1.5
Wheels : 4
Car Owner : Lai Kim Min
Engine Type: SkyActive
Engine CC : 1.5

(3 marks)

Question 7

(a) Briefly explain the difference between checked exception and unchecked exception with an appropriate example.

(6 marks)

(b) Write a Java program to allow user to enter a line of text. Write a recursive method to print a string backward. Use appropriate parameters in your recursive method.

Sample Output:

```
Please enter a line of text: INTI College
egelloC ITNI
```

(14 marks)

~THE END~

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