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SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

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(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Tourism and Hospitality Management

First year, second Semester Examination – 2016

HNDIT1209 Object Oriented Programming

Instructions for Candidates:

Answer only five questions

No. of questions : 6

No. of pages : 3

Time: 3 hours

Question 01

- (i) (2 marks)
Standard Edition, Enterprise edition and Micro edition
- (ii) Java Development Kit (1 marks)
- (iii) JVM(java Virtual Machine) (2 marks)
- (iv) Javac (2 marks)
- (v) What is the size of following data types? (3 marks)
- a. int 32 bit
 - b. long 64 bit
 - c. short 16 bit

- (vi) Write the output of following Java code segments? (6 marks)

a.

```
int count=1;
System.out.print("Counter value is :"+(++count));
```

 (2)

b.

```
System.out.print("\SLI\tA\tT\tE");
```

“SLI A T E”

- (vii) What is meant by garbage collection in Java? (4 marks)
- Automatically removing of objects created, which are not using anymore.

(Total 20 marks)

Question 02

- (i) What is meant by “control statement” in Java? (2 marks)

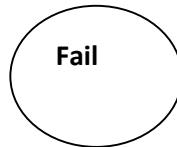
Control statements are the statements used to control the flow of execution of the program.

- (ii) What is the general syntax of **if – else** selection structure in Java? (3 marks)

```
if(Boolean_expression) {  
    // Executes when the Boolean expression is true  
}else {  
    // Executes when the Boolean expression is false  
}
```

- (iii) Write the output of following Java code segment? (3 marks)

```
int EM =10;  
int AM =60;  
if( (EM <40)|| (AM<40))  
    System.out.println("Fail ");  
else  
    Svsstem.out.println("Pass ");
```



- (iv) Write the Java code considering the following scenario? (10 marks)

A telecommunication company is offering a package for it's customers as follows. Monthly rental is Rs.300.00. First 1000 minutes is free of charge. But then, for any additional minutes they are charging Rs.1.00 per minute. The government taxes are as follows. The value added tax is 15%. Telecommunication levy is 10%.

Write the Java coding calculate the monthly bill value for number of minutes.

```
int minutes = 500;  
double charge = 300;  
if (minutes>=1000)  
    charge =charge + (minutes -1000);  
charge =charge * 1.25;  
System.out.println(charge);
```

- (v) What is the main different between while and do- while iterative structures? (2 marks)

Statements within the while loop execute only if the conational excretion is true since the conational expression is at the begning of the structure. But the statements within the do-while loop execute at least once, even if the conational expression is true or false, since the conational expression is at the end of the structure.

(Total 20 marks)

Question 03

- (i) What is an array in computer programming? (2 marks)

Container object that holds a fixed number of values of a same type

- (ii) What is the general syntax of declaring an array in Java? (3 marks)

`data_type[] array_name; or data_type array_name [];`

- (iii) What is the output of following code segment? (3 marks)

<pre>int index=10; long[] Student =new int[index];</pre>	nothing
--	---------

- (iv) Write the Java code segment to find a given String email like **user_name@mail_server.com**, is valid or not, as the given criteria. (10 marks)

- '@' symbol should appear before '.' symbol.
- The user name should be at least two characters.
- Mail server name should be at least two characters.
- Top level domain name should be at least two characters.

```
String x = "aa@bb.cc";
int atpos = x.indexOf("@");
int dotpos = x.lastIndexOf(".");
if (atpos< 2 || dotpos<atpos+2 || dotpos+2>=x.length())
System.out.print("Not a valid e-mail address");
```

- (v) What BufferedReader in java programming? (2 marks)

A class which reads text from a character-input stream

(Total 20 marks)

Question 04

- (i) (2 Marks)

- Through inheritance, we can eliminate redundant code and extend the use of existing classes.
- We can build programs from standard working modules that communicate with one another rather than, having to start writing the code from scratch. This leads to saving of development time and higher productivity.
- The principle of data hiding helps the programmers to built secure program that can't be invaded by code in other parts of the program.
- It is possible to have multiple objects to coexist without any interference.
- It is possible to map objects in the problem domain to those objects in the program.
- It is easy to partition the work in a project based on objects.

- The data-centered design approach enables us to capture more details of the model in an implementable form.
- Object-oriented systems can be easily upgraded from small to large system
- Message passing technique for communication between objects make the interface descriptions with external system much simpler.
- Software complexity can be easily managed.

(ii) Private protected and public (3 marks)

(iii) What is the output of following code segment? (3 marks)

```
class Student
{
    int IndexNo;
    String name;
    Student(int id,String name)
    {
        IndexNo = id;
        name = name;
    }
    void display()
    {
        System.out.println(IndexNo + " "+name);
    }
    public static void main(String args[])
    {
        Student Student1 = new Student(111,"Waruna");
        Student Student2 = new Student(321,"Thimira");
        Student1.display();
        Student2.display();
    }
}
```

111 null
321 null

(iv) Considering the following scenario and write expected Java code (10 marks)

(v) “ABC dairies” is a dairy products company located in Colombo. It markets two products, milk powder and fresh milk. The Fresh milk is contained in deferent size bottles and the milk powder is contained in packets of different sizes.

- Write Java code for Company class including following private data, company name, company address, country.
- Write the constructor of Company class to initialize company data.
- Write java code for Product class inheriting from Company class including following private data, Product type, net weight, and price.
- Write the constructor of Product class with parameters to initialize the class.
- Write displayData() in Product class to print all information from both super class and sub class.

```

class Main
{
    public static void main(String args[])
    {
        Products pack400g= new Products ("Milk Powder",400,375.00);
        pack400g.displayData() ;
    }
}
class Company
{
    private String companyName;
    private String companyAddress;
    private String country;
    Company()
    {
        companyName ="ABC dairies";
        companyAddress="Colombo";
        country="Newzeland";
    }
}
class Products extends Company
{
    private String productType;
    private int netWeight;
    private double productPrice;
    Products(String Type,int Weight, double Price)
    {
        productType=Type;
        netWeight=Weight;
        productPrice=Price;
    }
    public void displayData()
    {

```

```

        System.out.println(productType + netWeight + productPrice);
    }
}

```

- (vi) What is the use of this() in Java programming? (2 marks)
Invoke current class constructor.

Question 05

- (i) What is polymorphism in object oriented programming? (2 marks)
polymorphism is a feature that allows you to provide a single interface to varying entities of the same type.
- (ii) What are the methods to implement polymorphism in Java? (3 marks)
Overloading , Overriding
- (iii) Write the output of following Java code segments? (3 marks)

```

class Vehicle
{
    void run()
    {
        System.out.println("Vehicle is running");
    }
}
class Bike extends Vehicle
{
    void run()
    {
        System.out.println("Bike is running safely");
    }
    public static void main(String args[])
    {
        Bike obj = new Bike();
        obj.run();
    }
}

```

Bike is running safely

- (iv) What is meant by abstraction in Java object Oriented programming (2 marks)
Hiding the implementation details of objects from users.

- (v) What are the methods to achieving abstraction in Java programming (2 marks)
- a. Inherit Abstract class
 - b. Implement Interfaces
- (vi) What is an exception in Java programming? (2 marks)
- Unexpected behavior of program
- (vii) Consider following Java code segment with bugs, rewrite the code with additional coding to fix the bug. (6 marks)

```
int[] workingDay= new int[5];
workingDay[7]=8;
```

try

```
{
    int[] workingDay= new int[5];
    workingDay[7]=8;
}
```

catch(Exception E)

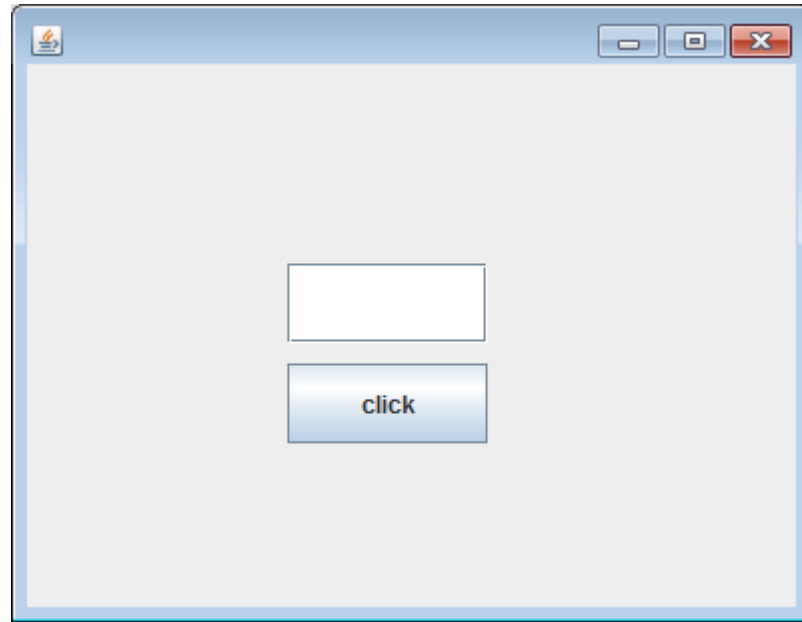
```
{ System.out.println("Error: " + E.toString()); }
```

Question 06

- (i) **Packages in Java** is a mechanism to encapsulate a group of classes, interfaces and sub **packages**. Many implementations of **Java** use a hierarchical file system to manage source and class files. It is easy to organize class files into **packages**. **Any 2 package names** (2 marks)
- Optional packages provided custom APIs available to all applications
- (ii) What is the use of **import javax.swing.*;** (3 marks)
- Add swing components to the application
- (iii) Explain the output of following Java code segments? (5 marks)

```
import javax.swing.*;
class testSwing
{
    public static void main(String[] args)
    {
        JFrame w=new JFrame();
        JButton b=new JButton("click");
        b.setBounds(130,100,100, 40);
        w.add(b);
        w.setSize(400,500);
        w.setLayout(null);
        w.setVisible(true);
    }
}
```

- (iv) Write the Java code to develop the following GUI (8 marks)



```
import javax.swing.*;
class testSwing
{
    public static void main(String[] args)
    {
        JFrame w=new JFrame();
        JButton b=new JButton("click");
        JTextField t=new JTextField();
        t.setBounds(130,100,100, 40);
        b.setBounds(130,150,100, 40);
        w.add(b);w.add(t);
        w.setSize(400,500);
        w.setLayout(null);
        w.setVisible(true);
    }
}
```

- (v) What is the difference between JFrame and JWindow? (2 marks)

JWindow does not have the title bar, window-management buttons.
JFrame border is sizable

(Total 20 marks)