INTI
INTERNATIONAL COLLEGE PENANG (507232-U)
LAUREATE INTERNATIONAL UNIVERSITIES

**Final Examination Paper**

(COVER PAGE)



Session : Aug 2012

Programme : DIPLOMA IN INFORMATION TECHNOLOGY

Course : CSC 2100: OBJECT ORIENTED PROGRAMMING

Date of Examination : 10 December 2012

Time : 2p.m. – 4p.m. Reading Time : Nil

Duration : 2 Hours

Special Instructions :

This paper consists of SIX (6) questions. Answer any FOUR (4) questions in the answer booklet provided. All questions carry equal marks.

**Materials permitted** : Nil

**Materials provided** : Answer Booklet

Examiner(s) : **Lim Chai Kim**

Moderator : Chern Huey Rong

*This paper consists of _8__ printed pages, including the cover page.*

INTI INTERNATIONAL COLLEGE PENANG

DIPLOMA IN INFORMATION TECHNOLOGY
CSC2100: OBJECT-ORIENTED PROGRAMMING
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**Question 1**

(a) Correct FIVE (5) syntax errors found in the following code. Circle or highlight the changes made:

```
Float[5] floatArray = new float[];
for(int i=0; i<floatArray.length(); i++)
    floatArray = 1.0;
```

(5 marks)

(b)
```
1 - 1
2 - 1 2
3 - 1 2 3
4 - 1 2 3 4
5 - 1 2 3 4 5
```

Write code to produce the output above. Use a nested "while" loop control structure.

(5 marks)

(c)
```
int a[ ] = new int[5];
int i;
for ( i = 0; i <= 5; i++) {
      a[i] = Integer.parseInt(JOptionPane.showInputDialog("Enter
                                    number"));
}
```

Identify TWO (2) possible exceptions that can be triggered by the code above. Then, write the try catch statement to catch these exceptions.

(6 marks)

(d) Write a full Java program that prompts the user to enter marks for a test and then displays the grade according to the following grade scale:

| Score | Grade |
|---|---|
| Less than 40 | F |
| 40 – 44 | D |
| 45 – 59 | C |
| 60 – 89 | B |
| 90 or above | A |



Use JOptionPane and assume marks are whole numbers (integers). Use the "**if-then-else**" control structure.

(9 marks)

## Question 2

(a) List the **EIGHT (8)** primitive data types in Java.

(4 marks)

(b) List any **SIX (6)** reserved words in Java.

(3 marks)

(c) Write a full Java program to display which quarter of a year is a given month. Example:

```
Enter a month in number (1-12): 4
Quarter: 2
```

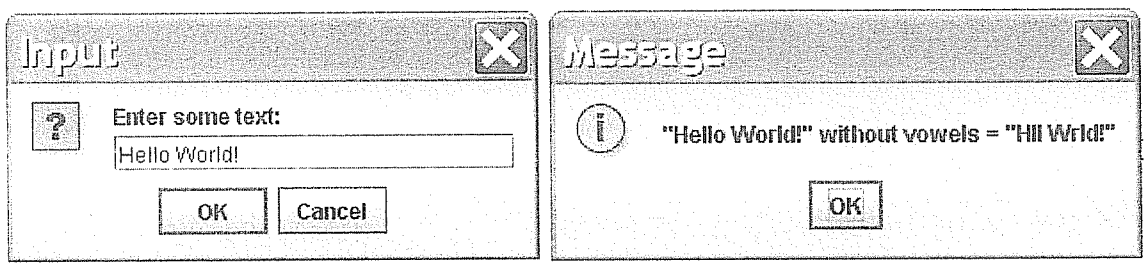
Use **java.util.Scanner** to get user input. Also, use the "**switch**" control structure to write the code. The switch structure should also handle invalid month (out of the given 1-12 range).

(8 marks)

(d) (i) Write a static method "**removeVowels**" that receives a String and returns the String without the vowels ('a', 'e', 'i', 'o' and 'u'). This method should remove both lowercase and uppercase vowels.

(5 marks)

(ii) Write a main method to call the method created in question **2(d)(i)** above. The main method should prompt the user to enter text. Then display the text without the vowels. This is what your code should produce:




(5 marks)

Question 3

(a) Write code to show an example of **method overloading**.

(5 marks)

(b) Trace the output of the following code:

```
for (int i=0; i<15; i++)  {
      if(i%3==0) {
          System.out.print(i+" ");
      }
      else {
          System.out.print("_ ");
          continue;
      }
      System.out.print("* ");
}
```



(6 marks)

(c)

```
public class Q3c {
     public String greet() {
            System.out.println("Hello");
     }
}
```

Find the error in the code above and list **TWO (2)** ways of correcting it.

(4 marks)

(d) Assume there is an interface called Money defined as the following:

```
public interface Money {
   public float conversionRate(String country);
}
```

Write code for defining a class MyMoney that implements the Money interface. Implement the conversionRate method to return a conversion rate of 4.3 if the input country is "my" and 1.0 otherwise.

(5 marks)

(e) Trace the output of the following code:

```
public class A{

   private int field1;

   public A(int field1){
      this.field1 = field1;
   }

   public void methodA(){
      System.out.println("A field1: "+field1);
   }
}

public class A1 extends A{

   private int field2;

   public A1(int field1, int field2){
      super(field1);
      this.field2 = field2;
   }

   public void methodA(){
       super.methodA();
       System.out.println("A1 field2: "+field2);
   }

}

public class Test{
    public static void main(String[] args){
       A a1, a2, a3;

       a1 = new A(1);
       a2 = new A1(2,3);

       a1.methodA();
       a2.methodA();
    }
}
```



(5 marks)

Question 4

(a) Questions 4(a)(i) to (iv) are related. You may combine your answers in ONE (1) class definition.

```
public class Player{

    private String name;
    private int health;
    private int score;

}
```

(i) Define a constructor method that receives no input parameter and initializes the `name` variable to "NoName", `health` variable to 10 and the `score` variable to 0.

(2 marks)

(ii) Write further code to implement **constructor overloading**.

(2 marks)

(iii) Write the **accessor/get methods** for each field in Player.

(3 marks)

(iv) Write the **mutator/set methods** for each field in Player. If health is set to a value NOT within the range of 0 to 10 (inclusive), reject it and print an error message. If score is set to a value less than zero, reject it and print an error message.

(6 marks)

(b) (i) In a class called **Game**, write a static method, **getWinner()**, that receives an array of Player objects (created in question 4(a) above) then return the Player with the highest score.

(6 marks)

(ii) Write a main method in Game to test the getWinner() method. Create an array of **THREE (3)** Player objects. You may hardcode the player's name and score. Display the name of the winner.

(6 marks)

Question 5

(a) Questions 4(a)(i) to (iii) are related. You may combine your answers to these questions into ONE(1) answer.

```
public class Pet {
     private String name;
     private int age;

     public Pet(String name, int age)
     {
        this.name = name;
        this.age = age;
     }
}
```

(i) Based on the code above, write the code for subclass of "Pet", "Cat". The class Cat has its own private field "isSleeping" of type boolean.

(2 marks)

(ii) Write the contructor for Cat that receives THREE (3) input parameters. Call the parent class' constructor in this constructor.

(3 marks)

(iii) Add code to show **method overriding**.

(5 marks)

(b) Write a statement to create an instance of the Pet class given in question 5(a).

(2 marks)

(c) Write a snippet of code to create an array of THREE(3) Cat objects using the class created in question 5(a). Populate the array with the following cats:

Cat 1: Garfield, 10, true
Cat 2: Felix, 5, false
Cat 3: Heathcliff, 11, false

(4 marks)

(d) List any FIVE(5) Java Swing (JFC) basic controls.

(5 marks)

(e) List any FOUR(4) Layout Managers for organizing GUI components in a container.

(4 marks)

Question 6

(a)
```
public class Person {

        public String name;
        public int age;
        public String gender;

}
```

Write the main method of a class **TestPerson** to demonstrate how the object of Person can be initialized WITHOUT using a mutator method.

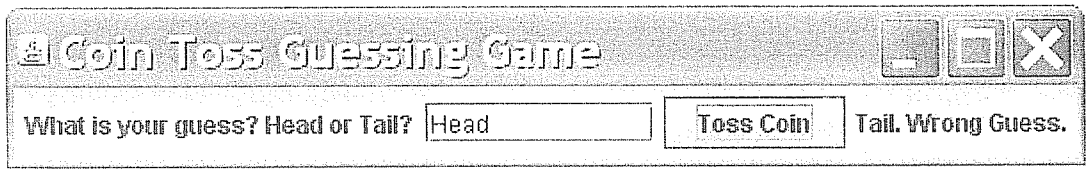
(5 marks)

(b) Write code for a public class **CoinTosser** that has a public static method **tossCoin()**. This method receives no input parameter and returns a random boolean value: true (for head) or false (for tail). Call the **Math.random()** method in this method.

(5 marks)

(c) Questions **6(c)(i) and (ii)** are related. Write your answer in **ONE (1)** class definition.

(i) Write code for class **CoinTossGuessingGame** that extends JFrame. This is how the frame should look like:




Write the main method to create the frame and display it.

(10 marks)

(ii) Add an ActionListener to the "Toss Coin" button so that the click of the button simulates the tossing of a coin and the result label (far right of the frame) will show an appropriate message. In the overriding actionPerformed() method of the ActionListener, call the **tossCoin()** method created in question **6(b)** above.

The result label should display the result of the toss whether it is a "Head" or "Tail" and a message whether the user's guess is correct or wrong (see example of the frame given in question **6(c)(i)**).

(5 marks)

**--THE END--**