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## University Examinations 2013/2014

SECOND YEAR, SECOND SEMESTER EXAMINATION FOR BACHELOR OF BUSINESS INFORMATION TECHNOLOGY , BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY AND BACHELOR OF SCIENCE IN COMPUTER SCIENCE

### ICS 2201: OBJECT ORIENTED PROGRAMMING II

DATE: APRIL 2014                                                  TIME: 2HOURS

**INSTRUCTIONS:** *Answer question **one** and any other **two** questions*

**QUESTION ONE – (30 MARKS)**

a)   Re write the following while loops as do-while loops.            (2 marks)
```
int count = 0,sum = 0;
while (count < 10 ){
sum + = count;
count ++;
}
```

b)   Explain the difference between a syntax for defining a class and subclass using examples.
                                                                    (4 marks)

c)   Define and illustrate using an example the following concepts:        (4 marks)
  (i)  For structure
  (ii) Switch

d)   Differentiate between concepts of class and interfaces using syntax.  (4 marks)

e)   Given class A extends B extends C:
    i.    Write a java code snippet for implementing the concept of multiple inheritance.
                                                                    (3 marks)
    ii.   Explain the concept of interface                          (2 marks)

f)   Discuss the following:
    i)    Multithreaded programming                                 (3 marks)
    ii)   Exception handling                                        (3 marks)

g)    Explain the concept and properties of a constructor.          (3 marks)

h)      Describe the concept of Scanner class using an example.          (2 marks)

## QUESTION TWO (20 MARKS)

a)      Discuss in detail the following:
       i)      Applet life cycle                                          (4 marks)
       ii)     Java Virtual machine                                 (3 marks)
       iii)    Types of  program errors                          (3 marks)
b)      Write an application that reads three integers and prints their average.      (4 marks)

c)      What is the output produced by the following statement? Explain.          (2 marks)
        System.output.println("He thrusts his fists\n\tagainst" + "the post\nand still insists\n\the
        sees the \"ghost\" ");
d)      Write a program that print the following output using for loop.          (4 marks)

    1

    22

    333

    4444

## QUESTION THREE (20 MARKS)

a)      Explain the following principles of OOP.                                  (4 marks)
       i.      Encapsulation
       ii.     Finalizer methods
       iii.    Inheritance
       iv.     polymorphism

b)      Using switch statement, write a Java program that determines whether entered letter is a
        vowel or not.                                                          (4 marks)

c)      Explain the relevance of the following keywords as used in Java programming, giving
        examples to support your answer.                                      (8 marks)
       i.      Super
       ii.     Extends
       iii.    Instanceof
       iv.     Throws

d)      Write a program that demonstrates the concept of a constructor.          (4 marks)

**QUESTION FOUR (20 MARKS)**

a)    Differentiate between the following.                                                      (8 marks)
        i.      Aggregation and composition
        ii.     Method overloading and method overriding
        iii.    This and new
        iv.    Try and catch

b)    Explain the methods of :                                                                 (4 marks)
        i.  Applets life cycle
        ii. Thread life cycle

c)    Convert the following class diagram into a implemented class in Java.      (4 marks)

| Glass |
| --- |
| Private int maxVolume |
| Private int currentVolume |
| Fill (int volume) |
| Pour (int volume) |
| int view() |

d)     Convert the following pseudo code into java code.                           (4 marks)

*If currentVolume equals zero*
   *Then*
     *Print "Empty"*
*Return errorCode*

*If currentVolume – volume is less than or equal to zero*
   *Then*
    *volume = CurrentVolume*
     *Set currentVolume to Zero*
      *Return volume*
  *Otherwise*
   *Remove volume from currentVolume*
   *Return volume*


**QUESTION FIVE (20 MARKS)**

a)  Create a class called Rectangle that has the following members:              (4 marks)
    1.  *Variables : length, width,area,perimeter*
    2.  *Methods : calculatearea and calculateperim,printRectangle.*
    3.  *Both methods require that you pass length and width.*

i. Create a class main that instantiate the above class and display the length, width, area and perimeter.

b) Describe the Thread Life Cycle. (4 marks)

c) Explain the process of writing and compiling Java code. (2 marks)

d) Java is said to be "compiled and interpreted language". Explain (2 marks)

e) Write a program to illustrate:
   i. all  escape sequence characters. (4 marks)
   ii. try-throw-catch block in exception handling (4 marks)