



THE UNIVERSITY OF ZAMBIA
School of Natural Sciences
Department of Computer Studies

COMPUTER PROGRAMMING
CSC 2000

2014-2015 FINAL EXAM

Date: 26th June 2015
Venue: API
Time: 09:00hrs – 12:00hrs
Duration: 3 Hours

Instructions

1. This exam has two (2) sections
2. Answer **all** questions in section A
3. Section B has three **three(3)** questions, answer any two (2) questions

SECTION A

Answer all the questions in this section [50 Marks]

1. Analyze the code below and answer the questions that follows;

```
public abstract class Person{
    private String name;
    private String nationality;
    private int age;

    public Person(String name, int age){
        this.name = name;
        this.age = age;
        nationality = "Zambian";
    } //end constructor

    public void computeSalary(){
        double salary = age/0.5;
        System.out.println(salary);
    } //end method

    public abstract void printInfo();
} //end class
```

person

name
nationality
age

method (salary)

printInfo

- a) Define the concepts Inheritance and Polymorphism. [2 Marks]
- b) Write a class called Jonathan that inherits from the Person class above. Jonathan must override the computeSalary method and calculate the salary as age divide by 0.1 and print the result. The Jonathan class must also override the abstract method and print the name, nationality and age. [10 Marks]
- c) Write a class called PersonTest with the main method. The class should create three Jonathan objects. You should then call the objects created to print the information they carry. [5 Marks]
- d) Demonstrate the concept of polymorphism using Jonathan and the Person class [8 Marks]

person

1

person

1

= new

person("Joseph", 20)

System.out.println

2. Explain the following java concepts and give example code in java to demonstrate the concept.

- a) Exception handling [5 Marks]
- b) Interface [5 Marks]
- c) Event handling [5 Marks]
- d) Arrays [5 Marks]
- e) Objects [5 Marks]

```
1 public class main {
    public static void main
```

```
    Scanner new = input
    Scanner input = new Scanner(System.in)
    // PC
```

```
    // PC
```

```
    public static void main
```

```
    public result
```

that an object can call
does not happen

pupipu
sasucia d
Budi
Budi
pupipu

page 1
mark 1

SECTION B

Answer any two (2) questions of your choice. Each question is worth 25 marks.

1. Write a program in Java that checks if a number is a multiple of 3. Example; A multiple of 3 is a number that 3 can go into without leaving a remainder. Your program must use the graphical user interface (GUI) for both getting input from the user and displaying the results. [25 Marks]
2. Analyze the java code given below;

```
public class A{

    public static void main(string args){

        for(int i=0; i => 10; i++){
            if(i == 2){
                continue;
            }
            System.out.print("i");
        }
    }
}
```

- a) What syntax errors will the above code generate when compiled? [5]
- b) Write the correct code without compilation errors [2]
- c) Assuming you have corrected the error(s), what will be the output? [3]
- d) Rewrite the class A using the while loop [5 Marks]
- e) Rewrite the class A using the do while loop [5 Marks]
- f) Define the following;
 - i. Attribute [1 Mark]
 - ii. Class [1 Mark]
 - iii. Primitive data type [1 Mark]
 - iv. Reference data type [1 Mark]
 - v. Method [1 Mark]

3. On Friday 14th November 2014, UNZA students rioted for BC payment and poor sanitation in the male hostels. The police used teargas to contain the situation. The teargas was too much making some students faint. A teargas has a date of expiry, amount of chemicals inside, whether its explosive or not and manufacturer's name. It can do the following; release gas and burn rooms.

Task

Represent teargas as a class in java. Include all its attributes and behaviors. Choose the appropriate data types for the attributes and for simplicity in its behaviors, just write a statement that prints the name of the behavior to the console. For each attribute, include the set and get methods. Clearly format and comment your code. [25 Marks]

name
expirydate
amountofchemical ---
Bo

TearGas