

Uganda Martyrs University

FACULTY OF SCIENCE

DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION SYSTEMS

UNIVERSITY EXAMINATIONS
YEAR I SEMESTER 1, 2013/2014
Supplementary/Special Examination

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

YEAR TWO - BSc IT & GEN.

CSC 2101 OBJECT PROGRAMMING METHOD II JAVA

DATE: 12TH AUGUST 2014

TIME: 02:00 - 05:00 PM

HOURS: 3

-
- (i) Answer ONLY FIVE questions.
 - (ii) Be brief and clear
 - (iii) Begin each question on a fresh page
 - (iv) Do not write on the question paper
 - (v) Space your work
-

Question One

(4 marks each)

Given the following code, use it to answer questions that follow.

```
import java.util.Scanner;
```

```
public class MinMaxAv {
```

```
/*
```

* The following program requires you to enter any five numbers and the system calculates the Sum and later Average

```
*/
```

```
public static void main(String[] args)
```

```
{
```

```
System.out.println("enter first number:\t");
```

```
Scanner in = new Scanner(System.in); // line 5
```

```
    int a = in.nextInt(); // line 6.
```

```
    System.out.println("enter second number:\t");
```

```
    int b= in.nextInt();
```

```
    System.out.println("enter third number:\t");
```

```
    int c= in.nextInt();
```

```
    System.out.println("enter fourth number:\t");
```

```
    int d= in.nextInt();
```

```
    System.out.println("enter fifth number:\t");
```

```
    int e= in.nextInt();
```

```
    int [] array={a,b,c,d,e }; // line 15
```

```
    int min=array[0];
```

```
    int max=array[0];
```

```
    int Sum=a+b+c+d+e;
```

```
    for(int index=0;index<array.length;index++)
```

```
    {
```

```
        if (array[index]<min)
```

```
            min=array[index];
```

```
        else if (array[index]>max)
```

```
            max=array[index];
```

```
    }
```

```
    System.out.println("The MIN mark is:"+min);
```

```
    System.out.println("The MAX mark is:"+max);
```

```
    double avg=Sum/5;
```

```
    System.out.println("The Average is:"+avg); // line 29
```

```
}
```

```
}
```

- (a) Assume that the user enters numbers 0, 2, 4, 6 and 8 as the program runs, write down the output of the program.
- (b) What is the purpose of line 5?
- (c) What is the purpose of line 6?
- (d) What is the purpose of line 15?
- (e) What is the purpose of line 29?

(5 marks each)

Question Two

Write a Java program called student that has the following static attributes: name, testOne, testTwo. In the same program, define a static method called calculateAverage that accepts the values of testOne and testTwo as actual parameters. Assume the values for testOne and testTwo to be 80 and 90 respectively.

You will get marks for:

- (a) Defining the class well
- (b) Defining the method well
- (c) Calling the static method well
- (d) Being professional in writing your program

Question Three

- (a) Differentiate between objects and classes, static variables and instance variables.

(4 marks)

- (b) Write a Java program called student2 that has the following instance attributes: name, tOne, tTwo. In the same program, define an instance method called calAverage that accepts the values of tOne and tTwo as actual parameters. Assume the values for tOne and tTwo to be 80 and 90 respectively. Do not use a constructor.

(8 marks)

- (c) Write down one for loop that calculates the sum of even numbers between 0 and 20 inclusive and outputs the sum on the screen. (8 marks)

(3 marks each)

Question Four

- (a) Define a class called circle that allows the user to input a value of radius as an integer. This class has the value of pi as a constant 3.14. The class should have a method called Area that calculates the area of the circle from the radius input. To implement this class, ensure that you have

(4 marks)

- (a) A constructor
- (b) An object instantiated
- (c) A method called Area that accepts one value of radius.
- (d) Used the key word **this** in your code

(e) Use the code fragment below to answer questions that follow.

```
public static void main (String args[ ])
{
    int score = 85;
    if (score == 70)
    {
        System.out.println("You did not receive a passing score!");
    }
    else if (score == 85)
    {
        System.out.println("You received a passing score!");
    }
    else if (score == 100)
    {
        System.out.println ("You received a perfect score!");
    }
    else
    {
        System.out.println ("I don't know your score!");
    }
}
```

- (i) Write down the output of the above code
- (ii) Rewrite the above code using a switch structure.

Question Five

- (a) What is a default constructor and what is its purpose? (2 marks)
- (b) Write down a well spaced Java program creating a class called Lecturer. Let that class have two attributes (Age and Name). Do not define any constructor in that class. Note the following
 - (i) Create an object called Lt (4 marks)
 - (ii) Assign a value 10 to the attribute Age and Eva to Name. (4 marks)
 - (iii) Create a function called CalYearOfBirth which takes the value of the current year i.e. 2014 as the parameter and then returns the year of birth. (4 marks)
 - (iv) Use an object created in (b)(i) above to call the function CalYearOfBirth (3 marks)
 - (v) Let your program contain relevant comments. (3 marks)

Question Six

(5 marks each)

```
import java.util.Scanner;
```

```
public class Exercise {
```

```
    static void main(String[] args) {
```

```
        Scanner scnr = new Scanner(System.in); //line 4
```

```
        int number1 = 0;
```

```
        int number2 = 0;
```

```
        int maximum = 0;
```

```
        System.out.print("Enter first numbers: ");
```

```
        number1 = scnr.nextInt();
```

```
        System.out.print("Enter second numbers: ");
```

```
        number2 = scnr.nextInt();
```

```
        maximum = (number1 < number2) ? number2 : number1; // line 12
```

```
        System.out.print("The maximum of "); //line 13
```

```
        System.out.print(number1);
```

```
        System.out.print(" and ");
```

```
        System.out.print(number2);
```

```
        System.out.print(" is ");
```

```
        System.out.println(maximum); //line 18
```

```
    }
```

```
}
```

- (a) Write down the output of the above code assuming that number1 is 10 and number2 is 20.
- (b) Rewrite line 12 in another way retaining the meaning it has now.
- (c) Write down line 13, 14, 15, 16, 17 and 18 as one programming statement use the concatenation operator.
- (d) Write short notes about the word **scnr** that appears in line 4?

Question Seven

(4 marks each)

- (a) How does a while loop differ from a do while loop?
- (b) Write down a complete program to output your name and registration number on the screen.
- (b) Write a while loop to output the following as it is on the screen:

```
2      4
6      8
10     12
```

- (c) Write a for loop to output the same information in 7(b) above
- (d) Write a do while loop to output the same information in 7(b) above

END