

King Fahd University of Petroleum and Minerals
 College of Computer Sciences and Engineering
 Information and Computer Science Department
First Semester 2010/2011 (101)
ICS 102 - Introduction to Computing I

Major Exam I
 Thursday, 28th October 2010
 Time: 100 minutes

Name:

Key Solution

ID#:

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G:

Please circle your section number below:

Section	02	04	06	08
Instructor	Almuhammadi	Almuhammadi	Zhioua	Ghouti
Day and Time	SM 08:00-08:50	SM 10:00- 10:50	SM 13:10 - 14:00	SM 09:00-09:50

Note:

1. This is a closed book, closed notes exam.
2. Calculators, laptops and cell phones are not allowed.
3. Please **switch off** your cell phones NOW.

Question #	Out Of	Score	Remarks
1	25		
2	25		
3	25		
4	25		
Total	100		

~Good Luck~

Q1. [25 marks, 5 each] Fill in the blanks in the table below by writing the equivalent expressions. **Do not use parentheses** in the mathematical expressions.

	Mathematical Expression*	Java Expression
a)	$\frac{2a}{b+c}$	<code>2 * a / (b + c)</code>
b)	$\frac{4}{a-1} + \frac{\pi}{3ab}$	<code>4 / (a - 1) + Math.PI / 3 / a / b</code>
c)	$\frac{ y-5 }{\sqrt{5x}} e^3$	<code>Math.abs(y - 5) / Math.sqrt(5 * x) * Math.pow(Math.E, 3)</code>
d)	$2r - \left\lceil \frac{93}{10}x \right\rceil$	<code>2 * r - Math.ceil(x * 9.3)</code>
e)	$\frac{r^2}{3} + \frac{ac^{\frac{3}{4}}}{2b}$	<code>Math.pow(r, 2)/3.0 + a * Math.pow(c, 3.0/4) / (2 * b)</code>

* Parentheses are not allowed in the mathematical expressions

Q2. [25 marks] Write a Java program that reads from the user a sentence containing four words separated by single spaces. Then, the program should discard the spaces and return the sentence with only the four words.

Example:

```
Please enter a sentence with four words:
The weather is beautiful
Your sentence without spaces is:
Theweatherisbeautiful
```

```
import java.util.Scanner;
public class RemoveSpaces {
    public static void main(String[] args) {

        Scanner keyboard = new Scanner(System.in);

        System.out.println("Please enter a sentence with four words:");
        String sentence = keyboard.nextLine();
        String result = "";    // to keep the output string

        //index of first space
        int index = sentence.indexOf(" ");
        result += sentence.substring(0,index);
        String subSentence = sentence.substring(index+1);

        //index of second space
        index = subSentence.indexOf(" ");
        result += subSentence.substring(0,index);
        subSentence = subSentence.substring(index+1);

        //index of third space
        index = subSentence.indexOf(" ");
        result += subSentence.substring(0,index);
        subSentence = subSentence.substring(index+1);

        //appending last word
        result += subSentence;

        System.out.println("Your sentence without spaces is: ");
        System.out.println(result);
    }
}
```

Q3. [25 marks] Write a Java program that reads the ID number and the first name from the user, and returns a password string that consists of the first four digits of the ID followed by the last three letters of the name.

Example:

```
Please enter your ID:
20098760
Please enter your name:
Ahmed
Your password is: 2009med
```

```
import java.util.Scanner;
public class MyPassword {
    public static void main(String[] args) {

        Scanner keyboard = new Scanner(System.in);

        // processing the ID
        System.out.println("Please enter your ID:");
        String id = keyboard.next();
        String password = id.substring(0,5);

        // processing the name
        System.out.println("Please enter your name:");
        String name = keyboard.next();
        password += name.substring(name.length()-3);

        System.out.println("Your password is: " + password);
    }
}
```

Q4. [25 marks] Determine the output of each of the following code fragments:

	Code Fragment	Output
a)	<pre>int a = 10, b = 4; System.out.println("x = " + a/b); double r = a/b; System.out.println("y = " + r);</pre>	<p>[3 marks]</p> <p>x = 2 y = 2.0</p>
b)	<pre>double a = 4.0, b = 0.0; b = a / 2 + 2 / 4 * 6.0; System.out.println("x = " + b); System.out.println("z = " + Math.pow(a,1/2));</pre>	<p>[4 marks]</p> <p>x = 2.0 z = 1.0</p>
c)	<pre>int x = 5, y = 5, z = 0; System.out.println(x++ + " and " + ++z); z = ++x + y-- % 3; System.out.println(x + "-" + y + "-" + z);</pre>	<p>[5 marks]</p> <p>5 and 1 7-4-9</p>
d)	<pre>Scanner scanObj = new Scanner(System.in); int i = scanObj.nextInt(); double d = scanObj.nextDouble(); String s1 = scanObj.next(); String s2 = scanObj.nextLine(); String s3 = scanObj.next(); System.out.println(i + " " + d); System.out.println("s1 =" + s1); System.out.println("s2 =" + s2); System.out.println("s3 =" + s3);</pre> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><u>Assuming the input is:</u> 57 1087.5 line to the End</p> </div>	<p>[5 marks]</p> <p>57 1087.5 s1 =line s2 = s3 =to</p>
e)	<pre>String s = "My-\"Java\"-is-Fun"; System.out.println(s.length()-4+s.substring(12)); System.out.println(s.substring(1,3) + 1 + 3); System.out.println(s.substring(4,8).toUpperCase()); System.out.println(s.substring(s.indexOf("M"), s.indexOf("Java")));</pre>	<p>[8 marks]</p> <p>12-Fun y-13 JAVA My-</p>