

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)	$\frac{2a}{b+c}$	
b)		<code>4 / (a - 1) + Math.PI / 3 / a / b</code>
c)	$\frac{ y-5 }{\sqrt{5x}} e^3$	
d)		<code>2 * r - Math.ceil(x * 9.3)</code>
e)	$\frac{r^2}{3} + \frac{ac^{3/4}}{2b}$	

* 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) {
        (5 points) for the proper use of Scanner with nextLine
        Scanner scanObj = new Scanner(System.in);

        System.out.println("Please enter a sentence with four words");
        String s = scanObj.nextLine();
        String result = "";
        (5 points) for the proper use of indexOf(" ")
        (5 points) for substring use and the values of indices
        //index of first space
        int i1 = s.indexOf(" ");
        result += s.substring(0,i1);
        String s1 = s.substring(i1+1);
        (5 points) for repeating the procedure 3 times
        //index of second space
        int i2 = s1.indexOf(" ");
        result += s1.substring(0,i2);
        String s2 = s1.substring(i2+1);

        //index of third space
        int i3 = s2.indexOf(" ");
        result += s2.substring(0,i3);
        String s3 = s2.substring(i3+1);
        (5 points for composing the result)
        result += s3;

        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) {
        (5 points) for the proper declaration and use of Scanner
        String id, name, password;
        Scanner myKeyboard = new Scanner(System.in);
        (2 points) for the user prompt statement
        System.out.print("Please enter your ID: ");
        (5 points) for the proper use of next()
        id = myKeyboard.next();
        System.out.print("Please enter your name: ");
        name = myKeyboard.next();
        (10 points) for the proper use of the substring() method
        (03 points) for the correct use of indices in the substring() method
        password = id.substring(0, 4) + name.substring(name.length()-3);
        System.out.println("Your password is: " + password);
```

// SECOND SOLUTION

```
int id;
String name, password;
Scanner myKeyboard = new Scanner(System.in);

System.out.print("Please enter your ID: ");
id = myKeyboard.nextInt();
System.out.print("Please enter your name: ");
name = myKeyboard.next();
password = ""+ id/10000 + 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> <p>-1 if y = 2 -2 if y = 2.5 or other value</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> <p>-1 if 2 (same thing for 1) -2 for any other value</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> <p>-1 for each incorrect number</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> <p>-1 if 2 lines are printed in one line -1 if s2 = to the, s1 = end -2 for other values of s2 and s3</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 // -1 if not 12 y-13 // -1 if y-4 JAVA My-"" // -1 if My-\"</p> <p>-1 if 1 position off (before or after)</p>

