

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS
Information and Computer Science Department

2011/2012 Third Semester (Term 103)
ICS102: Introduction to Computing (2-3-3)

MIDTERM EXAM

Wednesday, July 20th 2011, 05:00 PM – 07:00 PM
120 MINUTES

Student Information

Name:	key			
ID:				
Section:				

Question No.	Maximum Score	Score
01	22	
02	14	
03	14	
04	12	
05	06	
06	12	
TOTAL	80	

```
import java.LuckStream;  
System.out.println(LuckStream.GoodLuck);
```

Question 1 (22 points):

Find the output of the following Java code snippets:

I)

```
int num1 = 8, num2 = 16;
double power = num1 / num2;
num1 = (int) Math.pow( num2 , power );
num2 = (int) Math.ceil( num2 + 0.01 );
System.out.println(num1 + "\t" + num2);
```

OUTPUT

1 17

II)

```
int x = 6, y = 10;
if ( x > 10 & x-- > 5 )
x = y;
if ( ++y < 10 && y++ > x )
y = x;
System.out.println(x + "\t" + y);
```

OUTPUT

5 11

III)

```
int a = 7, b = 8;
if ( b > a++ || b++ != 20 )
b *= 2;
System.out.println(a + "\t" + b);
```

OUTPUT

8 16

IV)

```
int k, m = 0, n = 0;
for(k = -17; k < 3; k += 5){
    n++;
    for(m = 6; m <= 10; m += 7)
        n -= 4;
    n += 2;
}
System.out.print(n + "\n" + k + "\n" + m);
```

OUTPUT

**-4
3
13**

V)

```
int i = 7, j = -8;
while(i < 11){
    while(0 > j){
        System.out.println(i + "\t" + j);
        j = j + 3;
    }
    i = i + 1;
    j--;
}
System.out.println(i + " \t " + j);
```

OUTPUT

**7 -8
7 -5
7 -2
9 -1
11 0**

VI)

```

Scanner input = new Scanner(System.in);
int k = 0, x = 7;
boolean done = false;
do{
    done = true;
    x = input.nextInt();
    for(k = x + 1; k < 10; k++)
        done = false;
} while(x != 7 && !done);
System.out.print(x + "\t" + k + "\n" + done);

```

USER INPUT

8	5	9	7
---	---	---	---

OUTPUT

9	10
true	

Question 2: (14 points)

Consider the following Java code snippet. What will be the output for the different values of x and y typed by the user?

```

Scanner input = new Scanner(System.in);
int x = input.nextInt();
int y = input.nextInt();
switch(x) {
    case 5: if ( y > x )
            y = y - x;
            x = x - y;
            break;
    case 4: x += 2;
    case 0: y -= 3;
    case 1: break;
    case 3: if ( !(x < y) || (y == 5) )
            y = x + y;
            else
            break;
    default: if ( x >= y )
            if ( x % 3 > 0 )
                y -= x % 3;
            else
                y = x--;
                x = y++;
}
System.out.println(x + "\t" + y);

```

User Input	Program Output
3 4	3 4
4 5	6 2
3 5	8 9
5 7	3 2
5 1	4 1
2 2	0 1
2 4	4 5

Question 3: (14 points)

Consider the following Java code snippet with the provided user input:

```
Scanner input = new Scanner(System.in);
double weight = input.nextDouble();
String unit = input.next();
String info = input.nextLine();
String level = input.next();
input.nextLine();
String str = input.nextLine().toUpperCase();
int period = input.nextInt();
input.nextLine();
String timeUnit = input.nextLine();
```

USER INPUT

120.0 kilo grams are
hard
to lift longer than
10
minutes
a day

I)

Write the scanned value for each variable/object in following table:

Variable/Object	Scanned Value
weight	120.0
unit	kilo
info	grams are
level	hard
str	TO LIFT LONGER THAN
period	10
timeUnit	minutes

II)

Write the value for String "description" after running the following statements involving above scanned value of "str":

```
String description = str.substring(3,5) + str.charAt(6) + str.charAt(6);
description += str.charAt(str.toLowerCase().lastIndexOf("long")) + "e";
description = description.toLowerCase();
```

description

little

III)

Write the output of the following Java code snippet, considering above values for variables/objects:

```
System.out.println(period + period + info);
System.out.print(description + " " + level);
System.out.println("\n" + str.substring(0));
System.out.print((int) weight);
System.out.print("\\" + timeUnit + "\\");
```

OUTPUT

20 grams are
little hard
TO LIFT LONGER THAN
120\minutes\

Question 4: (12 points)

Considering the following variable declarations:

```
boolean a , b;  
int x;
```

Convert the following nested if-else/if-else-if statements to their EXACTLY matching simple-if (if with no else) statements:

```
if (a || b)  
    if (x > 10)  
        System.out.println("First");  
    else if (x == 10)  
        System.out.println("Second");  
    else  
        System.out.println("Third");  
else  
    System.out.println("Fourth");
```

```
if (--- (a || b) && x > 10 ---)  
    System.out.println("First");  
if (--- (a || b) && x == 10 ---)  
    System.out.println("Second");  
if (--- (a || b) && x < 10 ---)  
    System.out.println("Third");  
if (--- !(a || b) ---)  
    System.out.println("Fourth");
```

Question 5: (6 points)

For the two String objects str1 and str2, write the Java matching boolean expression to perform needed test as shown in the table below:

Test	Boolean Expression
str1 and str2 reference the same object	str1 == str2
str1 and str2 have the same value and case	str1.equals(str2)
str1 and str2 have the same value, but may have different cases	str1.equalsIgnoreCase(str2)

Question 6: (12 points)

Write a Java program that:

1. Prompts and asks the user for a number that represents total quantity of seconds.
2. Converts the total quantity of seconds to corresponding quantities expressed in hours, minutes and seconds.
3. Writes the result into the file f:\exam\output.txt
4. Notify the user in case result

For example if the input is:

8125

The contents of the f:\exam\output.txt file should be:

8125 seconds = 2 Hours, 15 Minutes and 25 Seconds.

Notes:

- A. Your program shouldn't be limited to above example.
- B. Use meaningful variable names.
- C. Write your code in the best possible way, be neat and clear.
- D. Use proper INDENTATION!
- E. If you need more space for writing, then continue to next page.

```
import java.io.*;
import java.util.*;
public class SecondsConv {
    public static void main(String args[]) {
        int totalSeconds, hours, minutes, seconds;

        Scanner keyboard = new Scanner(System.in);

        System.out.println("Enter total quantity in seconds");

        totalSeconds = keyboard.nextInt();

        try{

            PrintWriter outputFile = new PrintWriter(new
                FileOutputStream("f:\\exam\\output.txt"));

            hours = totalSeconds/3600;

            minutes = (totalSeconds % 3600)/60;
```

```
seconds = (totalSeconds % 3600) % 60;

outputFile.print(totalSeconds + " seconds = " + hours
+ " Hours, " + minutes + " Minutes, " + seconds +
" Seconds.");

outputFile.close();

} //try

catch(FileNotFoundException e){

    System.out.println("File can't be created");

} //catch

} //main

} //class
```
