King Fahd University of Petroleum and Minerals College of Computer Science and Engineering Information and Computer Science Department Second Semester 2005/2006 (052) ICS 102 – Introduction to Computing

> Final Exam Tuesday, 06 June 2006 Time: 100 minutes

Name:						
ID#:						

Please *circle* your section number below:

Section	01	02	03	04	06	07	08	09
Instructor Name	Salahadin	Sukairi	Sukairi	Alvi	Salahadin	Sebakhy	Sebakhy	Sukairi
Day and	UT	SM	SM	UT	UT	UT	SM	SM
Time	8-8:50	9-9:50	11-11:50	9-9:50	9-9:50	10-10:50	1:10-2	1:10-2

Question #	Maximum Marks	Obtained Marks
1	6 + 9	
2	15	
3	10	
4	10	
Total	50	

1 (a) [6 marks] Design and implement a program that

- creates an array of the first 100 even integers i.e., {2, 4, 6, 8, 10, 12, 14, 16, ...}.
- then prints all the elements of the array that are not divisible by 4, so the output is: 2, 6, 10, 14,

1 (b) [9 marks] Design and implement a method public static boolean sameSet(int[] a, int[] b). This method should check whether two arrays have the same integers (irrespective of the order in which the integers appear or the number of times they appear).

For example, the two arrays: $int[] a = \{1, 4, 9, 16, 9, 7, 4, 9, 11\}$ and $int[] b = \{11, 11, 7, 9, 16, 4, 1\}$ would be considered to have the same set, so the method call sameSet(a, b) will return true.

2. **[15 marks]** The following array sales[4][7] represents the sales of various products for seven days of the week at a particular superstore:

	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
Clothing	200	300	250	400	300	500	600
Food	100	200	250	200	300	400	600
Electronics	400	500	300	200	100	1000	650
Stationery	45	35	65	75	45	25	15

Design and implement a program that does the following. First, the array **sales** is initialized inside the program. Then the program calculates and prints the following:

- A 1-D array of 7 elements representing the *total* sales for each day (for all types of products combined).
- A 1-D array of 4 elements representing the *average* sales for each type of product (for all days of the week combined).

3. [**10 marks**] Design and implement a program that reads in a text file ("input.txt") and prints and returns the following result in a separate file "output.txt":

- The number of vowels in the file. [A vowel is one of the letters {a, e, i, o, u}].
- The number of sentences in the file [A sentence is a group of words that ends with a period(.), question mark (?) or exclamation mark(!).]

4. [**10 marks**] Write a program that finds and prints the maximum and the minimum integer from a set of positive integers entered by the user as follows:

- Initially the program prompts the user to enter a postive integer.
- If the user enters a positive integer, the program prompts the user again to enter another positive integer. Each time the user enters a positive integer, the program prompts the user to enter another positive integer.
- If the user enters an integer that is negative or zero, the program stops prompting for further input and finds and prints the maximum and the minimum integer from all the positive integers entered by the user.
- If the user enters a non-integer (for example, a string or a double-precision number), the program prints the message ("A non-integer") and prompts the user to enter a positive integer again.

Use exception handling mechanism in your program wherever applicable.