Institute of Software Engineering

Graduate Diploma in Software Engineering

Programming fundamentals – Assignment 08

01. Consider a two-by-three integer array t.

a. Write a statement that declares and creates t.
b. How many rows does t have?
c. How many columns does t have?
d. How many elements does t have?
e. Write access expressions for all the elements in row 1 of t.
f. Write access expressions for all the elements in column 2 of t.
g. Write a single statement that sets the element of t in row 0 and column 1 to zero.
h. Write individual statements to initialize each element of t to zero.
i. Write a nested for statement that initializes each element of t to zero.
j. Write a nested for statement that inputs the values for the elements of t from the user.
k. Write a series of statements that determines and displays the smallest value in t.
l. Write a single printf statement that displays the elements of the first row of t.
m. Write a statement that totals the elements of the third column of t. Do not use repetition.
n. Write a series of statements that displays the contents of t in tabular format. List the column in dices as headings across the top, and list the row in dices at the left of each row.

02. Perform the following tasks for an array called table:

a. Declare and create the array as an integer array that has three rows and three columns. Assume that the constant ARRAY_SIZE has been declared to be 3.
b. How many elements does the array contain?
c. Use a "for" statement to initialize each element of the array to the sum of its indices. Assume that the integer variables x and y are declared as control variables.

03. Given the following:

```
double[][] things =
{ {1.2, 9.0}, {9.2, 0.5, 0.0}, {7.3, 7.9, 1.2, 3.9} } ;
```

a. What is the value of things.length ?
b. What is in values[2][1] ?
c. What is the value of `things[2].length` ?

04. Given the following,

```
1. class Test{
2.    public static void main(String args[]){
3.       byte [][] big=new byte [7][7];
4.       byte [][] b = new byte [2][1];
5.       byte b3 =5;
6.       byte b2 [][][][]=new byte [2][3][1][2];
7.       ……..insert cord here
8.    }
9. }
```

which of the following lines of code could be inserted at line 7 and still allow the code to compile?(**choose four that would work)**

a. b2 [0][1] = b;
b. b [0][0] = b3;
c. b2[1][1][0]=b[0][0];
d. b2[1][1][0]=b;
e. b2[0][1][0][0]=b[0][0];
f. b2[0][1] = big;

05. Which of the following constructs and assigns to array a 2D array with 7 rows, but does not yet construct the rows?

```
a. int[][] array = new int[7][];
b. int[][] array = new int[7];
c. int[][] array = new int[][7];
d. int[] array[7] = new int[];
```

06. Which of the following statements replaces the 99 with 77?

```
int[][] items = { {0, 1, 3, 4},   {4, 3, 99, 0, 7 },   {3, 2} };
a. items[1][2] = 77;
b. items[2][1] = 77;
c. items[ 99 ] = 77;
d. items[2][3] = 77;
```

07. What is the result of attempting compile & to run the above program?

```
class A {
   public static void main(String[] args) {
        int[][] a = {{1,2},{3,4,5},{6,7,8,9},{}};
        for (int i = 0; i < a.length; i++) {
           System.out.print(a[i].length+",");
        }
    }
}
```

a. Prints: 2,3,4,0, b. Prints: 1,2,5,0,
.c Compiler Error. d. Runtime Error.

08. A company has four sales people (1 to 4) who sell five different products (1to5). Once a day, each sales person passes in a slip for each type of product sold. Each slip contains the following:

a. The salesperson number
b. The product number
c. The total dollar value of that product sold that day.

Thus, each salesperson passes in between 0 and 5 sales slips per day. Assume that the information from all the slips for last month is available. Write an application that will read all this information for last month's sales and summarize the total sales by salesperson and by product. All totals should be stored in the two-dimensional array sales. After processing all the information for last month, display the results in tabular format, with each column representing a salesperson and each row representing a particular product. Cross-total each row to get the total sales of each product for last month. Cross-total each column to get the total sales by salesperson for last month. Your output should include these cross-totals to the right of the totaled rows and to the bottom of the totaled columns.

09. Student grade table (Marks Analytical Report)

StNo	Sub1	Sub2	Sub3	Sub4	Max	Min	Total	Avg	Grade
1001	89	89	98	67	98	67	343	85.75	A
1002	67	78	98	76	98	67	319	79.75	A
1003	78	67	87	56	87	56	288	72.00	B
1004	56	78	87	67	87	56	288	72.00	B
1005	56	67	78	45	78	45	246	61.50	C
1006	67	45	45	45	67	45	202	50.50	C
1007	78	89	78	78	89	78	323	80.75	A
1008	90	98	89	87	98	87	364	91.00	A
1009	89	56	87	56	89	56	288	72.00	B
1010	9	34	56	34	56	9	133	33.25	D
1011	78	78	67	45	78	45	268	67.00	B
1012	89	89	87	76	89	76	341	85.25	A
Max	90	98	98	87					
Min	9	34	45	34					
Total	846	868	957	732					
Avg	84.6	86.8	95.7	73.2					
Grade	A	A	A	B					

10. Solving a 3 x 3 Magic Square

```
Place the numbers 1-9 in a 3 by 3 grid, one number per box, so that
the vertical, horizontal, and diagonal sums are all the same.


+---+---+---+
| 2 | 9 | 4 |
+---+---+---+
| 7 | 5 | 3 |
+---+---+---+
| 6 | 1 | 8 |
+---+---+---+
```