**CS 1301**

**Exam 5**

**(50pts)**

**Name:**

1. Multiple Choice problems: (8 x 2 = 16pts)

*For the question below, assume an int array, candy, stores the number of candy bars sold by a group of children where candy[j] is the number of candy bars sold by child j. Assume there are 12 children in all.* Which of the following code could be used to compute the total number of bars sold by the children?

a. for (int j=0; j<12; j++) sum += candy[j];

b. for (int j=0; j<12; j++) candy[j] = sum;

c. for (int j=0; j<12; j++) sum = candy[j];

d. for (int j=0; j<12; j++) sum += [j];

e. for (int j=0; j<12; j++) [j] += sum;

To initialize a String array names to store the three Strings "Huey", "Duey" and "Louie", you would do

a. String names = {"Huey", "Duey", "Louie"};

b. String[ ] names = {"Huey", "Duey", "Louie"};

c. String[ ] names = new String{"Huey", "Duey", "Louie"};

d. String names[3] = {"Huey", "Duey", "Louie"};

e. String names; names[0] = "Huey"; names[1] = "Duey"; names[2] = "Louie";

If you declare an array double[ ] list = {3.4, 2.0, 6.5, 5.5}, the index of the largest item in array list is.

1. 4

b) 0

c) 2

d) 1

e) 3

To declare a three-dimensional int array called threeD, which of the following would you use?

a. int[3] threeD;

b. int[ , , ] threeD;

c. int[ ][ ][ ] threeD;

d. int [ [ [ ]]] threeD;

e. int[ ] threeD[3];

Which of the following statements are correct?

a. char[ ][ ] charArray = {'a', 'b'};

b. char[2][2] charArray = {{'a', 'b'}, {'c', 'd'}};

c. char[2][ ] charArray = {{'a', 'b'}, {'c', 'd'}};

d. char[ ][ ] charArray = {{'a', 'b'}, {'c', 'd'}};

Assume double[ ][ ] x = new double[4][3], what are x[1].length and x[2].length?

a. 4 and 4

b. 4 and 3

c. 3 and 4

d. 3 and 3

Which of the following is a correct method header for receiving a two-dimensional array as an argument?

a. public static void passArray(int[1,2] intArray)

b. public static void passArray(int [ ][ ] intArray)

c. public static void passArray(int[1],[2] intArray)

d. public static void passArray(int[ ], int[ ]intArray)

A ragged array is

a. A two-dimensional array for which the number of rows is unknown

b. A one-dimensional array for which the number of elements is unknown

c. A two-dimensional array when the rows are of different lengths

d. There is no such thing as a ragged array

1. True/False: (3pts)
2. The prerequisite of binary search is the array has to be sorted. (T)
3. Linear search could be faster than binary search in some cases. (T)
4. It is possible in some iterations of selection sort no swapping of values takes place. (T)
5. What is the output of the following code? (4pts)

int[][] matrix = {{1, 2, 3, 4}, {4, 5, 6, 7}, {8, 9, 10, 11}, {12, 13, 14, 15}};

for (int i = 0; i < 4; i++)

System.out.print(matrix[i][1] + " ");

2 5 9 13

1. *For the two questions below assume values is an int array that is currently filled to capacity, with the following values: (2pts)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 9 | 4 | 12 | 2 | 6 | 8 | 18 |

The statement System.out.println(values[7]); will

a. output 7

b. output 18

c. output nothing

d. cause an ArrayOutOfBoundsException to be thrown

What is the value of values.length?

a. 0

b. 5

c. 6

d. 7

e. 18

1. What is the output of the following code? (2pts)

double[] myList = {1, 5, 5, 5, 5, 1};

double max = myList[0];

int indexOfMax = 0;

for (int i = 1; i < myList.length; i++) {

if (myList[i] > max) {

max = myList[i];

indexOfMax = i;

}

}

System.out.println(indexOfMax);

1

1. What will be displayed by the following program? (2pts)

int[][] values = {{3, 4, 35, 1}, {33, 6, 34, 2}};

int v = values[0][0];

for (int row = 0; row < values.length; row++)

for (int column = 0; column < values[row].length; column++)

if (v < values[row][column])

v = values[row][column];

System.out.print(v);

35

1. What is the output of the following code? (6pts)

public class FigureOut {

public static void main (String [] args) {

int [] numbers = {20, 15, 10};

mystery1(numbers);

mystery2(numbers);

}

public static void mystery1(int [] numbers) {

int temp;

for (int i = numbers.length -2; i >= 0; i--) {

for (int j= 0; j <= i; j++) {

if (numbers [j] < numbers [j+1]) {

temp = numbers [j];

numbers [j] = numbers [j+1];

numbers [j+1] = temp;

}

}

}

} // method mystery1

public static void mystery2 (int[] list) {

for (int i = 0; i < list.length; i++)

System.out.print (list[i] + "\t");

}

}

20 15 10

1. What will be the value at x[5] after the following code is executed? (2pts)



150

9. What is the configuration of myList after the following code? (5pts)

int[] myList = {5, 4, 3, 2, 1};

for (int i = myList.length - 2; i >= 0; i--) {

myList[i + 1] = myList[i];

}

5 5 4 3 2

1. Write a program including the following functions:

/\*\* Return a two-dimensional array by assigning values from user inputs

\* @return two-dimensional integer array

\*/

**public static int [][] getArray(int row, int column)**

/\*\* Take a two-dimensional array as the parameter, and return the transpose of the input array

\* @parameter array two-dimensional integer array

\* @return two-dimensional integer array

\*/

**public static int [][] transpose(int [][] array)**

/\*\* Display a two-dimensional integer array as a matrix

\*/

**public static void display(int [][] array)**

/\*\* In main function,

\* call getArray() to generate a 3\*3 two-dimensional array,

\* display the generated array

\* call transpose function to generate a transposed array of the original array

\* display the transposed array

\*/

**public static void main(String [] args)**

Hint: the **transpose** of a two-dimensional array is simply a flipped version of the original array. We can **transpose** an **array** by switching its rows with its columns. (8pts)

import java.util.Scanner;

public class E18

{

public static int [][] getArray(int row, int column)

{

Scanner input = new Scanner(System.in);

System.out.println("Enter "+(row\*column)+" integers");

int [][] array = new int[row][column];

for(int i = 0; i < row; i++)

for(int j = 0; j < column; j++)

array[i][j] = input.nextInt();

return array;

}

public static int [][] transpose(int [][] array)

{

int rowT = array[0].length;

int columnT = array.length;

int [][] arrayT = new int[rowT][columnT];

for(int i = 0; i < array.length; i++)

for(int j = 0; j < array[0].length; j++)

arrayT[j][i] = array[i][j];

return arrayT;

}

public static void display(int [][] array)

{

for(int i = 0; i < array.length; i++)

{

for(int j = 0; j < array[i].length; j++)

System.out.printf("%5d", array[i][j]);

System.out.println();

}

}

public static void main(String [] args)

{

int [][] array = getArray(3, 3);

System.out.println("Original Array:");

display(array);

int [][] arrayTranspose = transpose(array);

System.out.println("Transposed Array:");

display(arrayTranspose);

}

}