CS-200: Programming I
Fall 2017
Northeastern Illinois University
PLTL: Week of 04/12/17
2D Arrays

Problem #1

- Write a program that has the class name `Problem1` and that has the `main` method. Leave the `main` method empty for now.
- Write a method named `deepReverse` that takes one parameter, a 2-dimensional (2D) integer array named `arr` and returns a new 2D integer array.
- The method should create a new array `a` such that rows and columns are the reverse of the array `arr`, such that first row of the array `arr` is the last row of the new array, second row is the second last row of the new array and so on.
- Similarly, the first column in the array `arr` is the last column in the new array, second column is the second last column in the new array and so on. See sample usage below.
- Create a `printArray` method that takes a 2D integer array as a parameter and prints out the elements of each row on its own line separated by spaces.
- Several sample usages are provided for you below. Use the sample usages in the `main` method to test your code (and use the `printArray` method to print out the results of calling the `deepReverse` method!).

Sample Method Usage	Return Value

`int[][] arr1 = { { 1, 2 , 4, 0},`
`{ 3, 4, 5, 6 },`
`{ 7, 8, 9, 12 } };`
`int[][] a1 = deepReverse(arr1);`
	`{ { 12, 9, 8, 7 },`
	`{ 6, 5, 4, 3 },`
	`{ 0, 4, 2, 1 } };`

`int[][] arr2 = { { 2, 8 },`
`{ 7, 20 },`
`{ 9, 3 },`
`{ 5, 12 } };`
`int[][] a2 = deepReverse(arr2);`
	`{ {12, 5 },`
	`{ 3, 9 },`
	`{20, 7 },`
	`{ 8, 2 } };`

Problem #2

- Write a program that has the class name `Problem2` and that has the `main` method. Leave the `main` method empty for now.
- Write a method named `isPrime` that takes one parameter, a 2-dimensional (2D) integer array named `arr` and returns a new 2D boolean array.
- The method checks for every element in 2D array if it is a prime number or not. If it is a prime, then element in boolean array at that index would be `true` else `false`.

- Create a `printArray` method that takes a 2D boolean array as a parameter and prints out the elements of each row on its own line separated by spaces.
- Several sample usages are provided for you below. Use the sample usages in the `main` method to test your code (and use the `print2DArray` method to print out the results of calling the `isPrime` method!).

Sample Method Usage	Return Value

`int[][] a = { { 4, 13, 10, 3, 9 },`
`{ 14, 19, 43, 5 },`
`{ 31, 17, 40, 11 } };`
`boolean[][] a1 = isPrime(a);`
	`{ { false, true, false, true, false },`
	`{ false, true, true, true },`
	`{ true, true, false, true } };`

`int[][] b = { { 89, 7, 9 },`
`{ 25, 39 },`
`{ 133, 29, 41 } };`
`boolean[][] b1 = isPrime(b);`
	`{ { false, true, false },`
	`{ false, false },`
	`{true, true, true } };`