CMSC 113: Computer Science I
Array Exercises

You will complete these exercises on paper, both to prepare for the upcoming exam and to give you and your partner practice reading and understanding code.

1. Write a function that returns the smallest element in an array. You may assume that the array has at least one element.

   public int minElement(int[] nums)
   {
   }

   Test your function on the array containing {8, 3, 1, 5, 9}.
2. Write a function that returns the index of the smallest element in an `ArrayList`. So, if the `ArrayList` contains the numbers \{8, 2, 9, 5, 1, 3\}, your function would return 4, the index of that 1.

```java
class Solution {
    public int minIndex(ArrayList<Integer> nums) {
        // Your implementation here
    }
}
```

Test your function on the `ArrayList` containing \{8, 3, 1, 5, 9\}.
3. Write a function that returns the sum of the elements in an array.

   public double sum(double[] nums)
   {

   }

Test your function on the array containing {8, 3, 1, 5, 9}. 
4. Write a function to append two ArrayLists by inserting all the elements from the second into the first, in order. So, if the first ArrayList contains {3, 9, 1} and the second contains {5, 7, 3, 6}, then the result will contain {3, 9, 1, 5, 7, 3, 6}.

```java
public ArrayList<Integer> append(ArrayList<Integer> a,
                                ArrayList<Integer> b)
{

```

Test your function on the inputs {9, 6} and {7, 1, 3}.
5. Write a function that finds the minimum in a two-dimensional array. So, for the input
\[ \{\{5, 3, 2\}, \{9, 4, 1\}, \{8, 9, 3\}\} \], your function would return 1. You may assume that the
array is rectangular (each row has the same length) and has at least one element.

```java
public int min2d(int[][] nums)
{
}
```

Test your function on the example given above.