

CS171 Introduction to Computer Science

Array Gymnastics

1. Using a loop, initialize a 10 element integer array with the first ten natural numbers (1, 2, ..., 10). Then in a separate loop, print the values in the array out to the console, one per line.
2. Using a loop, initialize a 20 element integer array with the first twenty even integers (0, 2, 4, ..., 38). Then in a separate loop, print the values in the array out to the console on a single line with spaces in between.
3. Declare and initialize an array of integers with the values 10, 15, 6, -2, 23, -10. Then write a loop to decrement each value in the array. Finally, in a separate loop, print the values in the array out to the console on separate lines.
4. Repeat the above, but make the array of doubles and halve each element in the loop processing.
5. Create and initialize a character array with the letters from your last name, and then create a String object using the character array in the constructor (see the constructors for the String class). Then print the newly created string to the console.
6. Declare and initialize a String using a constant string expression with your last name. Then retrieve the characters from the string as an array of bytes (`byte[]`). See the String class documentation to find the correct method. Finally, use a loop to print the individual bytes with both the integer and character version of the byte, one per line. So if the constant string were "Hello", the resulting output would be:


```
72 H
101 e
108 l
108 l
111 o
```
7. Repeat the above, but instead of using a hard coded constant string, use the first element of the String array passed to the main method.
8. Query the user for an array size and then declare and create an integer array of the given size. Then use a loop to initialize the elements of the array from values supplied by the user. Use a separate loop to print out, one per line, all the elements of the array.
9. Query the user for an array size and then declare and create an integer array of the given size. Then use a loop to initialize the elements of the array from values supplied by the user. Use a separate loop accumulate the total of the values. Finally, print out the total and the average of the values. Note that the average should be an accurate real-valued number.
10. Create a two-dimensional array with 3 rows and 4 columns. Using loops, initialize each element with the value of its row index times the value of its column index. Finally, print values of the entire array out with one row per line and each line consisting of the set of column values for that row.