

List no2

Arrays

1. Declare a one-dimensional array of size $n=100$ that can store integers.
2. Write a function that takes an array of integers and the number of elements as arguments and fills the array with numbers from 1 to 100.
3. Write a function that prints the numbers in the array.
4. Write your own implementation of the maximum function that finds the value of the largest element in an int array and returns it.
5. Write your own implementation of the dominant function that returns the most frequent value in an array.
6. Write your own implementation of a sorcery function that implements a bubble sorting algorithm on an array passed to the function as an argument.
7. Write your own implementation of standard deviation that returns the standard deviation value of the elements in the array.
8. Write your own implementation of the Pearson function that takes two arrays of equal size and returns the correlation value of these sets.

The game of life is an example of a cellular automatus. It was invented by John Horton Conway, a British mathematician, in 1970. It takes place on a square grid of cells, where each cell can be either alive or dead. Their behavior is governed by the following rules:

- A cell comes alive when it has exactly three living neighbors.
- A cell survives when it has two or three living neighbors (it dies when it has fewer than two - from loneliness, or when it has more than four - from overcrowding).

Try to develop your own implementation of the game into reality.

References:

<https://docs.oracle.com/javase/tutorial/java/nutsandbolts/arrays.html>

https://www.w3schools.com/java/java_arrays_multi.asp

https://en.wikipedia.org/wiki/Bubble_sort

https://en.wikipedia.org/wiki/Pearson_correlation_coefficient