Arrays

Things you need to know:

- how to declare an array

  ```
  Ball[]  balls;
  ```

- how to declare an array and set the size at the same time

  ```
  Alien[] aliens = new Alien[5000];
  ```

- How to create an array and put things in it when it is created (using {})

  ```
  String[] animals = { "cat", "cat", "cat", "cat", "turnip","dog" };
  ```

- How to access a certain element in the array:
  - numbers[5] = 12345;
  - System.out.print(numbers[13]);
  - if (numbers[2] > numbers[3]) …
  - Note that you can use “i” to be the index of the array so that you can get each element one after the other (in a for loop)

- How to find the length of an array and print it out.

- How to print out an array:
  - using Arrays.toString()
  - using a for loop
  - using a for-each loop

IMPORTANT

When you print out an array, please do it in a separate for loop. *Not nested for loops*
Do not print the array in the same for loop that you create the data in - otherwise it gets hard to find bugs.

Example of what not to do:

```
int[] numbers = new int[14];
//FILL THE ARRAY WITH RANDOM NUMBERS FROM 1 to 100
for (int i = 0; i < numbers.length; i++) {
        int r = (int) (Math.random()*100)+1;
        System.out.print(r + " ")
        numbers[0] = r;
}
```

→ It looks like the array is filled with random numbers (from the output), but it really is not.

Next up: 2D arrays

TO DO:

A. Array1.java

1. Make an array of doubles (size 16)
2. Put the square root of each index into the array - using Math.sqrt()

   [0, 1, 1.414, 1.732, 2 , ….]
   0 1 2 3 4

3. Print it out (as a table of values, if possible)

   ……

B. Array2.java

1. Make an array of int, size 20.
2. Fill it with random numbers that go from 21-40
3. Print it out
4. Set the first 5 numbers (elements) to be zero.
5. Set any numbers that are more than 35 to be -1.