# Algorithm - Minimum

Java
Mr. Poole

# Array Algorithm Examples

1. Find the minimum value of an array
2. Find the maximum value of an array
3. Add all the elements in an array together
4. Find the average of an array

# Find The Minimum

What is the minimum of this number set?

| 12 | 52 | 26 | 3 | 17 | 35 | 75 | 8 | 24 | 82 |
|---|---|---|---|---|---|---|---|---|---|

How did you get there?

*Think like you’re in kindergarten

# Find The Minimum

| 12 | 52 | 26 | 3 | 17 | 35 | 75 | 8 | 24 | 82 |
|---|---|---|---|---|---|---|---|---|---|

The answer is **3**.

To know that 3 is the answer, we in our heads **compared 3 against every other number.**

We **stored 3 away** as the smallest until we find something smaller.

# Find The Minimum - Code

We’re limited to only doing one operation at a time in Java

Meaning we must compare one number at a time to another.

# Find The Minimum - Code

```
int [] arr = new int[5];
int min = Integer.MAX_VALUE;
for(int i = 0; i < arr.length; i++){
    if(arr[i] < min){
        min = arr[i];
    }
}
System.out.println(min);
```

Assume that arr is filled of values.

# Find The Minimum - Code

```
int [] arr = new int[5];
int min = Integer.MAX_VALUE;
for(int i = 0; i < arr.length; i++){
    if(arr[i] < min){
        min = arr[i];
    }
}
System.out.println(min);
```

Try walking through the code above with the given array.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | 52 | 26 | 3 | 17 | 35 | 75 | 8 | 24 | 82 |

# Find The Minimum - Code

```
int [] arr = new int[5];
int min = Integer.MAX_VALUE;
for(int i = 0; i < arr.length; i++){
    if(arr[i] < min){
        min = arr[i];
    }
}
System.out.println(min);
```

Try walking through the code above with the given array.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 12 | 52 | 26 | 3 | 17 | 35 | 75 | 8 | 24 | 82 |

# Lab - Algorithms

1. Create an array of random integers
    a. Array size is between 51 and 200 (inclusive)
    b. All values between 1 and 100 (inclusive)
2. Find the minimum
3. Find the maximum
4. Find the average
5. Print out how many elements and all of the above