

Arrays

A byte size lesson in Java programming.

What is an array?

- In Java, an array is a collection of similar data types
- Here is an array to store the names of 100 people

```
String[] names = new String[100]
```

Breaking it down

- This is how we declare an array

```
dataType[] arrayName;
```

- And this is how we tell it how many elements it can hold

```
double[] arrayName;
```

```
arrayName = new double[10]
```


Let's test your understanding!

- How many numbers can I fit in the following arrays?

```
int[] scores = new int[10];
```

```
String[] surnames = new String[20];
```

- What is wrong with the following declaration?

```
int[] scores = new double[10];
```

Initializing arrays

- Sometimes we want to fill an array with data immediately. In this case the Java compiler automatically sets the size to 4

```
int[] ages = {5, 12, 8, 7};
```

Array index

- In an array, each memory location is associated with a number (or index).

```
int[] ages = {12, 4, 5, 2, 5};
```

- The index starts from 0. here are the indexes of the array declared above.

age[0]	age[1]	age[2]	age[3]	age[4]
12	4	5	2	5

Array index

- If we want to get a particular element from an array, we can use the index

```
int[] ages = {12, 4, 5, 2, 5};  
  
System.out.println("First Element: " + ages[0]);  
System.out.println("Second Element: " + ages[1]);
```

- If the number of elements is **n**, then the last position is **n-1**. If we try and access beyond that, we will get an error!

Let's test your understanding!

- Complete the following code

```
double[] prices = {5.20, 2.4, 37.2, 5.00};
```

```
System.out.println("Second Element: " + prices[]);
```

```
System.out.println(" Element: " + prices[3]);
```

- What would be the output of:

```
System.out.println(prices[4]);
```


Looping through arrays

- One of the most common uses of arrays is to loop through them and perform a function for each element in the array:

```
// create an array
int[] age = {12, 4, 5};

// loop through the array
// using for loop
System.out.println("Using for Loop:");
for(int i = 0; i < 3; i++) {
    System.out.println(age[i]);
}
```

Output

```
Using for Loop:
12
4
5
```

Let's test your understanding!

- Give the output of the following

```
// create an array
String[] name = {"John", "Karl", "Max", "Jane"};

System.out.println("Using for Loop:");
for(int i = 2; i < 4; i++) {
    System.out.println(name[i]);
}
```

