# Arrays

## Multidimensional Arrays

```
int[][] a = {{-1, 17}, {3}, {5, 103, 11}, {4, 9, -6, 8}};

// this is array of arrays:

int[][] a = {
  0{-1, 17},
  1{3},
  2{5, 103, 11},
  3{4, 9, -6, 8}
};
```

```java
// accessing elements with traditional for loop
int[][] a = {{-1, 17}, {3}, {5, 103, 11}, {4, 9, -6, 8}};
for (int i = 0; i < a.length; i++)
   for (int j = 0; j < a[i].length; j++)
      System.out.println("a(%d, %d) = %d".formatted(i, j, a[i][j]));
```

```
a(0, 0) = -1
a(0, 1) = 17
a(1, 0) = 3
a(2, 0) = 5
a(2, 1) = 103
a(2, 2) = 11
a(3, 0) = 4
a(3, 1) = 9
a(3, 2) = -6
a(3, 3) = 8
```

```java
// access elements with for-each loop (no control over indices)
int[][] a = {{-1, 17}, {3}, {5, 103, 11}, {4, 9, -6, 8}};
for (int[] row : a)
    for (int element : row)
        System.out.println("element = " + element);
```

```
element = -1
element = 17
element = 3
element = 5
element = 103
element = 11
element = 4
element = 9
element = -6
element = 8
```