2D Array - Array with two dimensions

Represents a table

Rows \ Cols	0	1	2	...
0	0	1	2	
1	3	4	5	
2	6	7	8	
3	9	10	11	
...				

Creating a 2-D Array

```
int[][] varName = new int[3][4];
```

Brackets

int — Type of array
[][] — Two sets of brackets
varName — Name of Variable
= — Assign op.
new — new keyword
int — Type
[3] — # of rows
[4] — # of cols

Two-dimensional arrays are structured in row-major order --> Means colums are stored in rows.

```
{{ 0, 1, 2},
 { 0, 1, 2},
 { 0, 1, 2}}
```

Outer Array stores rows

Inner arrays store colums

Accessing Elements

```
System.out.println(varname[0][1]);
```

Brackets

varname — Array Name
[0] — Row Index
[1] — Col Index

★ varname[#] accesses the entire row!

Editing Elements

```
varname[0][1] = 3;
```

Traversing 2-D Arrays

array.length → # of rows
array[0].length → # of cols

```
for(int r=0; r<array.length; r++) {
    for(int c=0; c<array[0].length; c++) {
        System.out.println(array[r][c]);
    }
}
```

Traverses array from top left to bottom right

```
for(int[] row: array) {
    for(int val : row) {
        System.out.println(val);
    }
}
```

Uses for-each loops