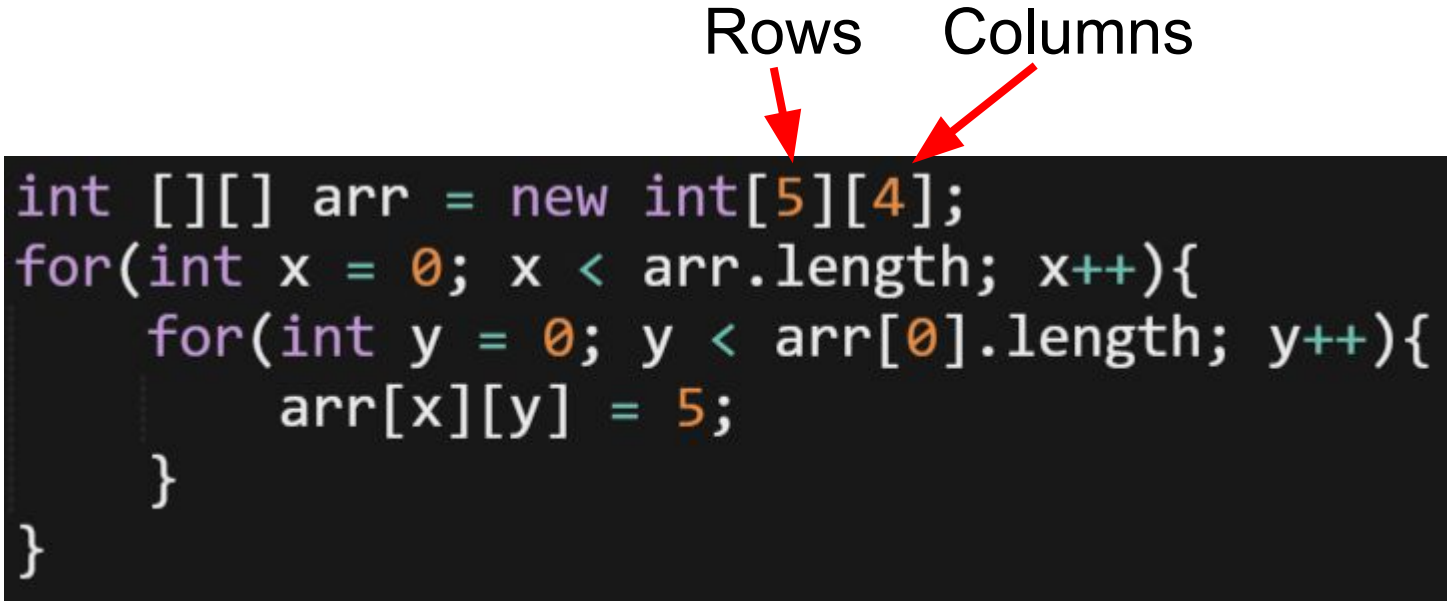
2D Arrays with Loops

Mr. Poole
Java

2D Array with Nested Loops



2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

x starts at 0

For all of **x** being 0

Go through all **y**

x	y	Array
0	0	5

	Y Coord			
X coord	**0**	**1**	**2**	**3**
0	5			
1				
2				
3				
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

x	y	Array
0	0	5
0	1	5 5

	Y Coord			
X coord	0	1	2	3
0	5	5		
1				
2				
3				
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

x	y	Array
0	0	5
0	1	5 5
0	2	5 5 5

	Y Coord			
X coord	0	1	2	3
0	5	5	5	
1				
2				
3				
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

At this point, **y** has gone to the length of 4.

We restart **y** with **x** now moving onto 1.

x	y	Array
0	0	5
0	1	5 5
0	2	5 5 5
0	3	5 5 5 5

	Y Coord			
X coord	0	1	2	3
0	5	5	5	5
1				
2				
3				
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

x	y	Array
1	0	5

	Y Coord			
X coord	0	1	2	3
0	5	5	5	5
1	5			
2				
3				
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

x	y	Array
1	0	5
1	1	5 5

	Y Coord			
X coord	0	1	2	3
0	5	5	5	5
1	5	5		
2				
3				
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

x	y	Array
1	0	5
1	1	5 5
1	2	5 5 5

	Y Coord			
X coord	0	1	2	3
0	5	5	5	5
1	5	5	5	
2				
3				
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

At this point, **y** has gone to the length of 4.

We restart **y** with **x** now moving onto 2.

x	y	Array
1	0	5
1	1	5 5
1	2	5 5 5
1	3	5 5 5 5

	Y Coord			
X coord	0	1	2	3
0	5	5	5	5
1	5	5	5	5
2				
3				
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

x	y	Array
2	0	5

	Y Coord			
X coord	0	1	2	3
0	5	5	5	5
1	5	5	5	5
2	5			
3				
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

x	y	Array
2	0	5
2	1	5 5

	Y Coord			
X coord	0	1	2	3
0	5	5	5	5
1	5	5	5	5
2	5	5		
3				
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

x	y	Array
2	0	5
2	1	5 5
2	2	5 5 5

	Y Coord			
X coord	0	1	2	3
0	5	5	5	5
1	5	5	5	5
2	5	5	5	
3				
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

At this point, **y** has gone to the length of 4.

We restart **y** with **x** now moving onto 3.

x	y	Array
2	0	5
2	1	5 5
2	2	5 5 5
2	3	5 5 5 5

	Y Coord			
X coord	0	1	2	3
0	5	5	5	5
1	5	5	5	5
2	5	5	5	5
3				
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

We continue this for all levels at x = 3

x	y	Array
3	0	5
3	1	5 5
3	2	5 5 5
3	3	5 5 5 5

	Y Coord			
X coord	0	1	2	3
0	5	5	5	5
1	5	5	5	5
2	5	5	5	5
3	5	5	5	5
4				

2D Array walk through

```
int [][] arr = new int[5][4];
for(int x = 0; x < arr.length; x++){
    for(int y = 0; y < arr[0].length; y++){
        arr[x][y] = 5;
    }
}
```

Finally it continues this for all levels at x = 4

The outer loop breaks out due to 5 not being less than 5.

x	y	Array
4	0	5
4	1	5 5
4	2	5 5 5
4	3	5 5 5 5

	Y Coord			
X coord	0	1	2	3
0	5	5	5	5
1	5	5	5	5
2	5	5	5	5
3	5	5	5	5
4	5	5	5	5

Lab: 2D Arrays with Loops

1. In main
    a. Create a 2D array of users choice in size and assign random numbers between 1-10
2. Create a method to calculate and print out the row number and average of that row
3. Create a method to get the average of all values
4. Create a method to print out all values in the 2D array.