Accesing, modifying and iterating over an array 2D

1. Accesing and modifying an array 2D
2. Length property
3. Iterating over an array 2D

Accesing and modifying an array 2D

1. Accessing and modifying an array 2D

	Kevin	Erik	Paula	Sandra	David
Maths	8.7	9.3	9.0	7.5	6.0
English	9.3	7.0	9.5	9.0	7.5
Biology	5.5	7.5	8.2	8.0	6.6
Arts	9.0	7.5	9.0	8.5	7.0

grades[row][col]

1. Accessing and modifying an array 2D

	Kevin	Erik	Paula	Sandra	David
Maths	8.7	9.3	9.0	7.5	
English	9.3	7.0	9.5	9.0	7.5
Biology	5.5	7.5	8.2	8.0	6.6
Arts	9.0	7.5	9.0	8.5	

col: 0 … numTotalColumnas-1

grades[row][col]

row: 0 … numTotalFilas-1

1. Accessing and modifying an array 2D

No valid index

```
float[][] grades= new float[4][5];
System.out.println(grades[0][50]);
```

ArrayOutOfBoundsException

1. Accessing and modifying an array 2D

```
int[][] a = {{10,20,30,40,50},{10,20,30,40,50}};
int[][] b = {{60,70,80,90,100},{60,70,80,90,100}};
int[][] c = a + b
```

Accesing an array 2D

```
float[][] grades= {
{8.7f,9.3f,9.0f,7.5f,6.0f},
{9.3f,7.0f,9.5f,9.0f,7.5f},
{5.5f,7.5f,8.2f,8.0f,6.6f},
{9.0f,7.5f,9.0f,8.5f,7.0f}
};
System.out.println(grades[1][2]);
//Prints: 7.0
```

Modifying an array 2D

```
float[][] grades= new float[4][5];
grades[1][2] = 9.99f;
```

Assignment operators:
=, +=, -=, *=, /=
++, --

Modifying an array 2D

```
float[][] grades= new float[4][5];
grades[1][2] = 9.99f;
System.out.println(grades[1][2]);
//Prints: 9.99
```

Length property

2. Length property

```
float[][] grades= {
{8.7f,9.3f,9.0f,7.5f,6.0f},
{9.3f,7.0f,9.5f,9.0f,7.5f},
{5.5f,7.5f,8.2f,8.0f,6.6f},
{9.0f,7.5f,9.0f,8.5f,7.0f}
};
```

Arrays fila

2. Length property

```
        float[][] grades= {
1       {8.7f,9.3f,9.0f,7.5f,6.0f},
2       {9.3f,7.0f,9.5f,9.0f,7.5f},
3       {5.5f,7.5f,8.2f,8.0f,6.6f},
4       {9.0f,7.5f,9.0f,8.5f,7.0f}
                    };
System.out.println(grades.length); //4
```

grades.length= numero de filas

2. Length property

```
float[][] grades= {
{8.7f,9.3f,9.0f,7.5f,6.0f},
{9.3f,7.0f,9.5f,9.0f,7.5f},
{5.5f,7.5f,8.2f,8.0f,6.6f},
{9.0f,7.5f,9.0f,8.5f,7.0f}
1      2      3      4      5
};
System.out.println(grades[0].length); //5
```

grades[row].length= numero de columnas

2. Length property

```
float[][] grades= {
{8.7f,9.3f,9.0f,7.5f,6.0f},
{9.3f,7.0f,9.5f,9.0f,7.5f},
{5.5f,7.5f,8.2f,8.0f,6.6f},
{9.0f,7.5f,9.0f,8.5f,7.0f}
};
System.out.println(grades[0].length); //5
System.out.println(grades[1].length); //5
System.out.println(grades[2].length); //5
System.out.println(grades[3].length); //5
```

2. Length property

	Kevin	Erik	Paula	Sandra	David
Maths	8.7	9.3	9.0	7.5	6.0
English	9.3	7.0	9.5	9.0	7.5
Biology	5.5	7.5	8.2	8.0	6.6
Arts	9.0	7.5	9.0	8.5	

grades[row][col]

row: 0 … grades.length-1

2. Length property

	Kevin	Erik	Paula	Sandra	David
Maths	8.7	9.3	9.0	7.5	
English	9.3	7.0	9.5	9.0	7.5
Biology	5.5	7.5	8.2	8.0	6.6
Arts	9.0	7.5	9.0	8.5	

col: 0 … grades[0].length-1

grades[row][col]

row: 0 … grades.length-1

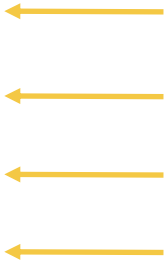
Iterating over an array 2D

3. Iterating over an array 2D

```
float[][] grades= {
{8.7f,9.3f,9.0f,7.5f,6.0f},
{9.3f,7.0f,9.5f,9.0f,7.5f},
{5.5f,7.5f,8.2f,8.0f,6.6f},
{9.0f,7.5f,9.0f,8.5f,7.0f}
};
System.out.println(grades[1][2]);
//Prints: 7.0
```

3. Iterating over an array 2D

```
float[][] grades= {
{8.7f,9.3f,9.0f,7.5f,6.0f},
{9.3f,7.0f,9.5f,9.0f,7.5f},
{5.5f,7.5f,8.2f,8.0f,6.6f},
{9.0f,7.5f,9.0f,8.5f,7.0f}
};
```



3. Iterating over an array 2D

```
float[][] grades= {{8.7f,9.3f,9.0f,7.5f,6.0f},
                   {9.3f,7.0f,9.5f,9.0f,7.5f},
                   {5.5f,7.5f,8.2f,8.0f,6.6f},
                   {9.0f,7.5f,9.0f,8.5f,7.0f}};

for ( loop counter ; loop condition ; loop increment) {
 //code block
 // will execute as long as loop condition is true
}
```

3. Iterating over an array 2D

```
float[][] grades= {{8.7f,9.3f,9.0f,7.5f,6.0f},
                   {9.3f,7.0f,9.5f,9.0f,7.5f},
                   {5.5f,7.5f,8.2f,8.0f,6.6f},
                   {9.0f,7.5f,9.0f,8.5f,7.0f}};

for ( int i=0 ; loop condition ; loop increment) {
 //code block
 // will execute as long as loop condition is true
}
```

3. Iterating over an array 2D

```
float[][] grades= {{8.7f,9.3f,9.0f,7.5f,6.0f},
                   {9.3f,7.0f,9.5f,9.0f,7.5f},
                   {5.5f,7.5f,8.2f,8.0f,6.6f},
                   {9.0f,7.5f,9.0f,8.5f,7.0f}};
```

4 = grades.length

```
for ( int i=0 ; i<grades.length ; loop increment) {
 //code block
 // will execute as long as loop condition is true
}
```

3. Iterating over an array 2D

```
float[][] grades= {{8.7f,9.3f,9.0f,7.5f,6.0f},
                   {9.3f,7.0f,9.5f,9.0f,7.5f},
                   {5.5f,7.5f,8.2f,8.0f,6.6f},
                   {9.0f,7.5f,9.0f,8.5f,7.0f}};

for ( int i=0 ; i<grades.length ; i++) {
 //code block
 // will execute as long as loop condition is true
}
```

3. Iterating over an array 2D

```
float[][] grades= {
{8.7f,9.3f,9.0f,7.5f,6.0f},
{9.3f,7.0f,9.5f,9.0f,7.5f},
{5.5f,7.5f,8.2f,8.0f,6.6f},
{9.0f,7.5f,9.0f,8.5f,7.0f}
};
```

3. Iterating over an array 2D

```
float[][] grades= {{8.7f,9.3f,9.0f,7.5f,6.0f},
                   {9.3f,7.0f,9.5f,9.0f,7.5f},
                   {5.5f,7.5f,8.2f,8.0f,6.6f},
                   {9.0f,7.5f,9.0f,8.5f,7.0f}};

for ( int i=0 ; i<grades.length ; i++) {
  for (loop counter ; loop condition ; loop increment) {
    //code block
    // will execute as long as loop condition is true
  }
}
```

3. Iterating over an array 2D

```
float[][] grades= {{8.7f,9.3f,9.0f,7.5f,6.0f},
                   {9.3f,7.0f,9.5f,9.0f,7.5f},
                   {5.5f,7.5f,8.2f,8.0f,6.6f},
                   {9.0f,7.5f,9.0f,8.5f,7.0f}};

for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; loop condition ; loop increment) {
    //code block
    // will execute as long as loop condition is true
  }
}
```

3. Iterating over an array 2D

```
float[][] grades= {{8.7f,9.3f,9.0f,7.5f,6.0f},
                   {9.3f,7.0f,9.5f,9.0f,7.5f},
                   {5.5f,7.5f,8.2f,8.0f,6.6f},
                   {9.0f,7.5f,9.0f,8.5f,7.0f}};

for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; loop increment) {
    //code block
    // will execute as long as loop condition is true
  }
}
```

3. Iterating over an array 2D

```
float[][] grades= {{8.7f,9.3f,9.0f,7.5f,6.0f},
                   {9.3f,7.0f,9.5f,9.0f,7.5f},
                   {5.5f,7.5f,8.2f,8.0f,6.6f},
                   {9.0f,7.5f,9.0f,8.5f,7.0f}};

for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
    //code block
    // will execute as long as loop condition is true
  }
}
//more code
```

3. Iterating over an array 2D

```
float[][] grades= {{8.7f,9.3f,9.0f,7.5f,6.0f},
                   {9.3f,7.0f,9.5f,9.0f,7.5f},
                   {5.5f,7.5f,8.2f,8.0f,6.6f},
                   {9.0f,7.5f,9.0f,8.5f,7.0f}};

for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
     System.out.println( grades[i][j] );
  }
}
//more code
```

Loop counter i: 0, 1, 2, 3
Loop counter j: 0, 1, 2, 3, 4

3. Iterating over an array 2D

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Maths	8.7	9.3	9.0	7.5	6.0
English	9.3	7.0	9.5	9.0	7.5
Biology	5.5	7.5	8.2	8.0	6.6
Arts	9.0				

```
for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
      System.out.println( grades[i][j] );
  }
}
```

3. Iterating over an array 2D

	Kevin	Erik	Paula	Sandra	David
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Arts	9.0				

```
for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
      System.out.println( grades[i][j] );
  }
}
```

3. Iterating over an array 2D

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Arts	9.0				

```
for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
      System.out.println( grades[i][j] );
  }
}
```

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```
for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
      System.out.println( grades[i][j] );
  }
}
```

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Arts	9.0				

```
for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
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```

3. Iterating over an array 2D

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Arts	9.0				

```
for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
      System.out.println( grades[i][j] );
  }
}
```

3. Iterating over an array 2D

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Arts	9.0				

```
for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
      System.out.println( grades[i][j] );
  }
}
```

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	Kevin	Erik	Paula	Sandra	David
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Arts	9.0				

```
for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
      System.out.println( grades[i][j] );
  }
}
```

3. Iterating over an array 2D

	Kevin	Erik	Paula	Sandra	David
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```
for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
      System.out.println( grades[i][j] );
  }
}
```

3. Iterating over an array 2D

	Kevin	Erik	Paula	Sandra	David
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Arts	9.0				

```
for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
      System.out.println( grades[i][j] );
  }
}
```

3. Iterating over an array 2D

	Kevin	Erik	Paula	Sandra	David
Maths	8.7	9.3	9.0	7.5	6.0
English	9.3	7.0	9.5	9.0	7.5
Biology	5.5	7.5	8.2	8.0	6.6
Arts	9.0				

```
for ( int i=0 ; i<grades.length ; i++) {
  for ( int j=0 ; j<grades[i].length ; j++) {
      System.out.println( grades[i][j] );
  }
}
```

“Siempre estoy haciendo cosas que no sé hacer, de manera que tengo que aprender cómo hacerlo.“

Pablo Picasso