Java vs. C#

Array Type

Java

Java has two kinds of arrays:

- single-dimensional
- multi-dimensional or jagged arrays (arrays of arrays).

Note that the declaration has big difference from C#

```
int[] myIntArray = new int[5]; //create a single-dimensional array
int[] myIntArray = { 2, 4, 6, 8, 10 }; // initialize an array

int[,] myRectangularArray = new int[rows, columns]; //illegal
int[,] myRectangularArray =
{
    {0,1,2}, {3,4,5}, {6,7,8}, {9,10,11} //illegal
};

int [,,] array = new int [3, 4, 5];//illegal
int [1,1,1] = 5;//illegal
int [][][] array = new int [3][4][5]; // ok
int [1][1][1] = 5; //ok
```

```
class Test
{
    public static void main(String[] args) {
        int[] a1;      // single-dimensional array of int
        int[][] a2;    // 2-dimensional array of int
        int[][][] a3;  // 3-dimensional array of int
        int[][] j2;    // "jagged" array: array of (array of int)
        int[][][] j3;  // array of (array of (array of int))
    }
}
```

```
class Test
{
    public static void main(String[] args) {
        int[] a1 = new int[] {1, 2, 3};
        int[][] a2 = new int[][] {{1, 2, 3}, {4, 5, 6}};
        int[][][] a3 = new int[10][20][30];
        int[][] j2 = new int[3][];
        j2[0] = new int[] {1, 2, 3};
        j2[1] = new int[] {1, 2, 3, 4, 5, 6};
        j2[2] = new int[] {1, 2, 3, 4, 5, 6, 7, 8, 9};
    }
}
```

C#

C# has three kinds of arrays:

- single-dimensional
- multi-dimensional rectangular arrays
- jagged arrays (arrays of arrays).

Note that the declaration has big difference from Java

```
int[] myIntArray = new int[5]; //create a single-dimensional array
int[] myIntArray = { 2, 4, 6, 8, 10 }; // initialize an array

int[,] myRectangularArray = new int[rows, columns]; //create a rectangular array
int[,] myRectangularArray =
{
    {0,1,2}, {3,4,5}, {6,7,8}, {9,10,11} //intialize array
};

int [,,] array = new int [3, 4, 5]; // creates a 3x4x5 array
int [1,1,1] = 5;
int [][][] array = new int [3][4][5]; // creates 1+3+12=16 arrays
int [1][1][1] = 5;
```

```
class Test
{
    static void Main() {
        int[] a1;     // single-dimensional array of int
        int[,] a2;    // 2-dimensional array of int
        int[,,] a3;   // 3-dimensional array of int
        int[][] j2;   // "jagged" array: array of (array of int)
        int[][][] j3; // array of (array of (array of int))
    }
}
```

```
class Test
{
    static void Main() {
        int[] a1 = new int[] {1, 2, 3};
        int[,] a2 = new int[,] {{1, 2, 3}, {4, 5, 6}};
        int[,,] a3 = new int[10, 20, 30];
        int[][] j2 = new int[3][];
        j2[0] = new int[] {1, 2, 3};
        j2[1] = new int[] {1, 2, 3, 4, 5, 6};
        j2[2] = new int[] {1, 2, 3, 4, 5, 6, 7, 8, 9};
    }
}
```

```
class Test
{
    public static void main(String[] args) {
        int[] arr = new int[5];
        for (int i = 0; i < arr.length; i++)
            arr[i] = i * i;
        for (int i = 0; i < arr.length; i++)
            System.out.println("arr[" + i + "] = " + arr[i]);
    }
}
```

```
class Test
{
    static void Main() {
        int[] arr = new int[5];
        for (int i = 0; i < arr.Length; i++)
            arr[i] = i * i;
        for (int i = 0; i < arr.Length; i++)
            Console.WriteLine("arr[{0}] = {1}", i, arr[i]);
    }
}
```

```
int[][] jag = new int[][] {new int[] {1, 2, 3, 4}, new int[] {5, 6, 7, 8, 9, 10}};
//access elements
for (int i = 0; i < jag.length; i++)
     for (int j = 0; j < jag[i].length; j++)
         System.out.println(jag[i][j]);
```

```
int[][] jag = new int[][] {new int[] {1, 2, 3, 4}, new int[] {5, 6, 7, 8, 9, 10}};
for (int i = 0; i < jag.Length; i++)
     for (int j = 0; j < jag[i].Length; j++)
         System.Console.WriteLine(jag[i][j]);
or
for (int i = 0; i < jag.GetLength(0); i++)
     for (int j = 0; j < jag[i].GetLength(0); j++)
         System.Console.WriteLine(jag[i][j]);
```