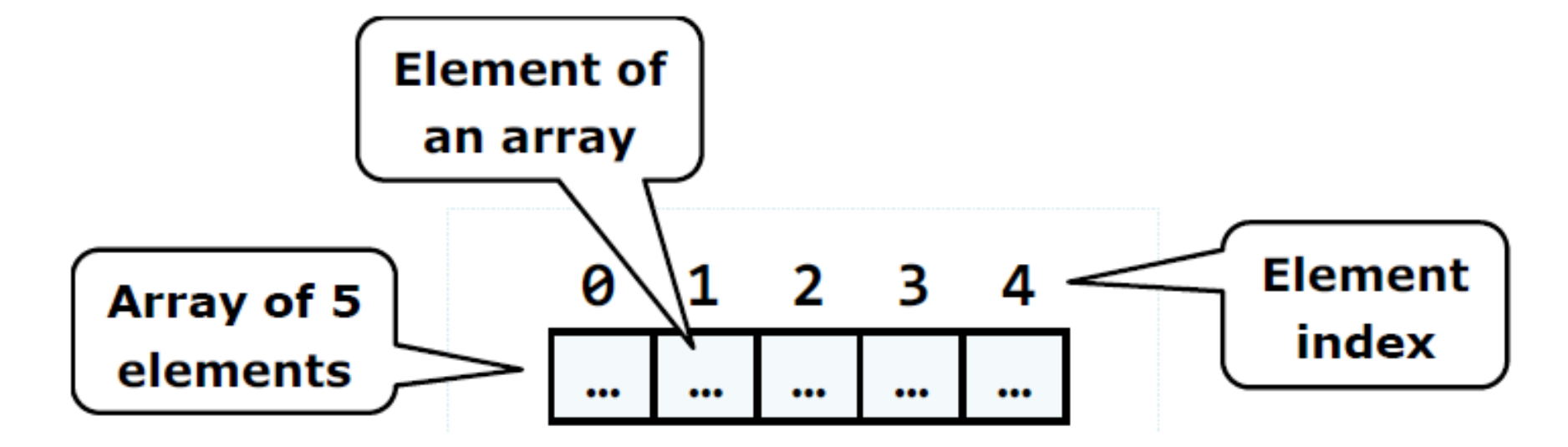
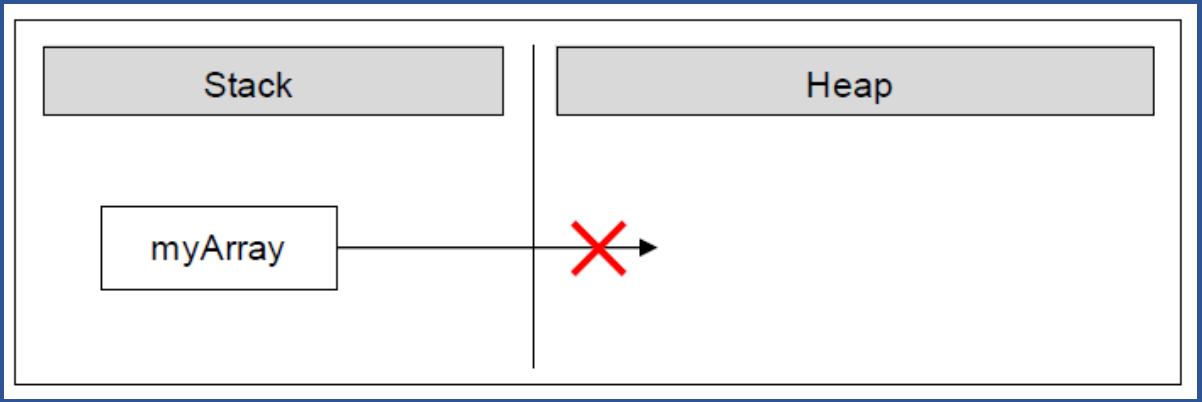
Array and List

Array's anatomy

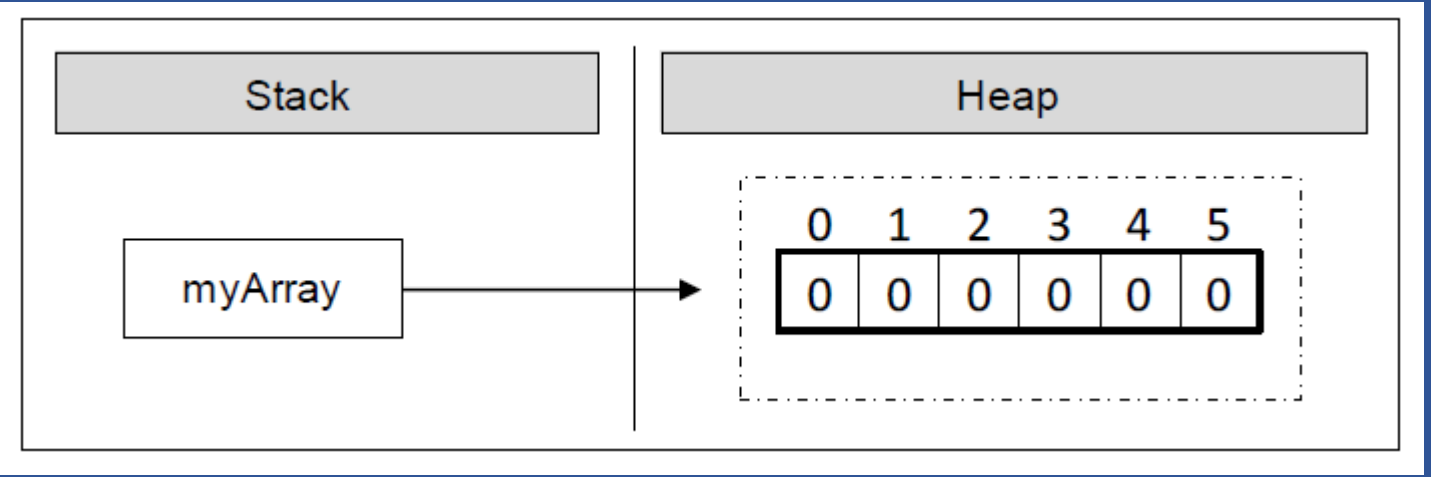


Declaring an Array

```
int[] myArray;
```

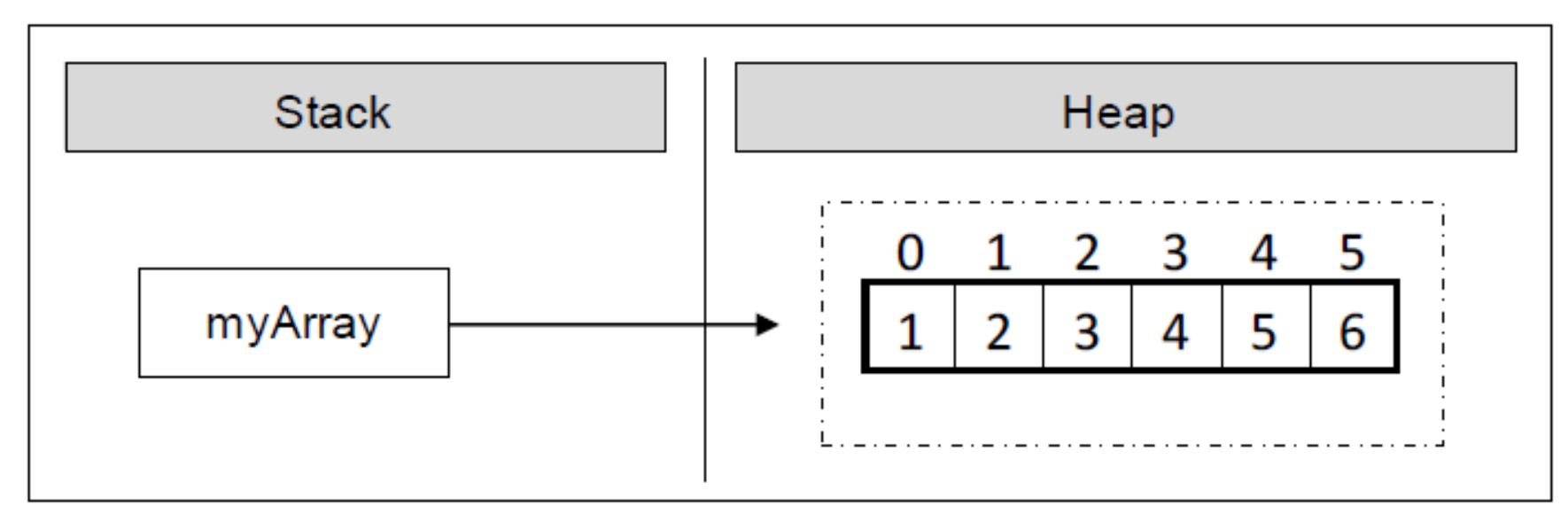



```
int[] myArray = new int[6];
```

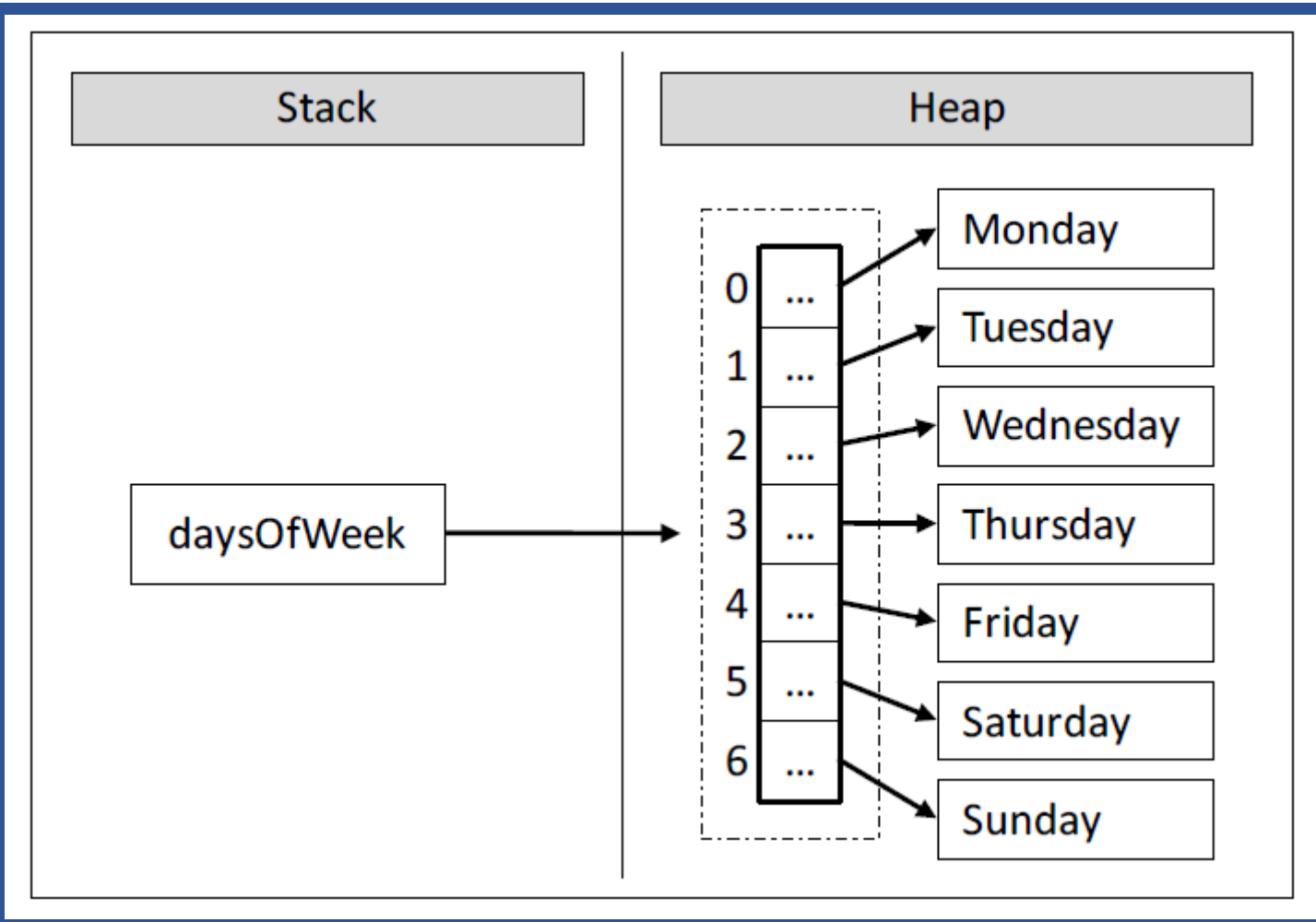


Array Initialization

```
int[] myArray = { 1, 2, 3, 4, 5, 6 };
```

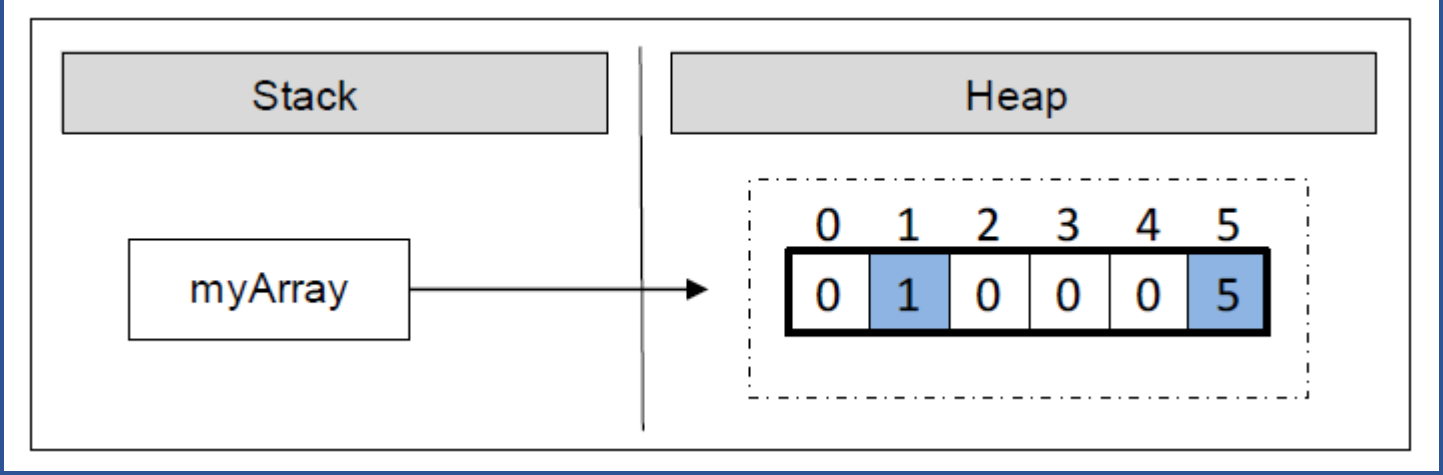


```
string[] daysOfWeek =
   { "Monday", "Tuesday", "Wednesday","Thursday", "Friday",
   "Saturday", "Sunday" };
```



Access Array Elements (Write)

```
int[] myArray = new int[6];
myArray[1] = 1;
myArray[5] = 5;
```



Array Iteration

For loop

```
int[] array = new int[] { 1, 2, 3, 4, 5 };

Console.Write("Reversed: ");
for (int index = array.Length - 1; index >= 0; index--)
{
   Console.Write(array[index] + " ");
}
// Reversed: 5 4 3 2 1
```

Foreach loop

```
string[] capitals =
   { "Sofia", "Washington", "London", "Paris" };

foreach (string capital in capitals)
{
   Console.WriteLine(capital);
}
```

Matrix

```
// Declare and initialize a matrix of size 2 x 4
int[,] matrix =
{
    {1, 2, 3, 4}, // row 0 values
    {5, 6, 7, 8}, // row 1 value
};

// Read Row 1 column 2    result = 7
Console.WriteLine(matrix[1, 2]);

// Print the matrix on the console
for (int row = 0; row < matrix.GetLength(0); row++)
{
    for (int col = 0; col < matrix.GetLength(1); col++)
    {
        Console.Write(matrix[row, col]);
    }
    Console.WriteLine();
}
```

List

```
// declear list
List<int> list = new List<int>();
// add item to list
list.Add(2);
list.Add(3);
list.Add(7);
// Loop through List with foreach.
foreach (int prime in list)
{
    System.Console.WriteLine(prime);
}

// insert item to list
List<string> dogs = new List<string>(); // Example list.
dogs.Add("spaniel"); // Contains: spaniel.
dogs.Add("beagle"); // Contains: spaniel, beagle.
dogs.Insert(1, "dalmatian"); // Spaniel, dalmatian, beagle.
// remove item from list
dogs.RemoveAt(1); // // Contains: spaniel, beagle.
```

Sort List

```
// sort list
String[] names = { "Samuel", "Dakota", "Koani", "Saya", "Vanya",
            "Yiska", "Yuma", "Jody", "Nikita" };
var nameList = new List<String>();
nameList.AddRange(names);
Console.WriteLine("List in unsorted order: ");
foreach (var name in nameList)
    Console.Write("   {0}", name);
Console.WriteLine(Environment.NewLine);
nameList.Sort();
Console.WriteLine("List in sorted order: ");
foreach (var name in nameList)
    Console.Write("   {0}", name);
Console.WriteLine();
// The example displays the following output:
//    List in unsorted order:
//       Samuel   Dakota   Koani   Saya   Vanya   Yiska   Yuma   Jody   Nikita
//
//    List in sorted order:
//       Dakota   Jody   Koani   Nikita   Samuel   Saya   Vanya   Yiska   Yuma
```

Exercise