

Create a specifiable range array class

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/*
C#: The Complete Reference
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*/

/* Create a specifiable range array class.
The RangeArray class allows indexing
to begin at some value other than zero.
When you create a RangeArray, you specify
the beginning and ending index. Negative
indexes are also allowed. For example,
you can create arrays that index from -5 to 5,
1 to 10, or 50 to 56.
*/

using System;

class RangeArray {
// private data
int[] a; // reference to underlying array
int lowerBound; // lowest index
int upperBound; // greatest index

// data for properties
int len; // underlying var for Length property
bool errflag; // underlying var for outcome

// Construct array given its size.
public RangeArray(int low, int high) {
high++;
```

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if(high <= low) { Console.WriteLine("Invalid Indices"); high =
1; // create a minimal array for safety low = 0; } a = new
int[high - low]; len = high - low; lowerBound = low;
upperBound = --high; } // Read-only Length property. public
int Length { get { return len; } } // Read-only Error
property. public bool Error { get { return errflag; } } //
This is the indexer for RangeArray. public int this[int index]
{ // This is the get accessor. get { if(ok(index)) { errflag =
false; return a[index - lowerBound]; } else { errflag = true;
return 0; } } // This is the set accessor set { if(ok(index))
{ a[index - lowerBound] = value; errflag = false; } else
errflag = true; } } // Return true if index is within bounds.
private bool ok(int index) { if(index >= lowerBound & index <=
upperBound) return true; return false; } } // Demonstrate the
index-range array. public class RangeArrayDemo { public static
void Main() { RangeArray ra = new RangeArray(-5, 5);
RangeArray ra2 = new RangeArray(1, 10); RangeArray ra3 = new
RangeArray(-20, -12); // Demonstrate ra
Console.WriteLine("Length of ra: " + ra.Length); for(int i =
-5; i <= 5; i++) ra[i] = i; Console.Write("Contents of ra: ");
for(int i = -5; i <= 5; i++) Console.Write(ra[i] + " ");
Console.WriteLine(" "); // Demonstrate ra2
Console.WriteLine("Length of ra2: " + ra2.Length); for(int i =
1; i <= 10; i++) ra2[i] = i; Console.Write("Contents of ra2:
"); for(int i = 1; i <= 10; i++) Console.Write(ra2[i] + " ");
Console.WriteLine(" "); // Demonstrate ra3
Console.WriteLine("Length of ra3: " + ra3.Length); for(int i =
-20; i <= -12; i++) ra3[i] = i; Console.Write("Contents of
ra3: "); for(int i = -20; i <= -12; i++) Console.Write(ra3[i]
+ " "); Console.WriteLine(" "); } } [/csharp]

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