CS315: It is possible to make an Array Bigger. [Used in ArrayList and Vector]

* Create a new Array with Additional space
* Copy the items from the old array into the new Array.
* Change the reference from the new array to the old array

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| /\*\* This program shows how to increase the capacity of  \* an array. Note: It is important that the reference to the Array is returned  \*/  public class ExpandArrayApp  {  public static void main (String args[]){  final int MAX\_SIZE = 5;  int [] myArray = new int[MAX\_SIZE];  int capacityincrement = 0;  printArray (myArray);  myArray = expandCapacity(capacityincrement, myArray, MAX\_SIZE);  printArray(myArray);  }  public static void printArray (int[] myArray){  for (int i = 0; i< myArray.length; i++){  myArray[i] = 10\*i;  System.out.print(myArray[i]+ " ");  }  System.out.println();  }  public static int[] expandCapacity(int capacityIncrement, int[] myArray, int capacity) {  if (capacityIncrement == 0) {  capacity \*= 2;  }  else {  capacity += capacityIncrement;  }    int [] newArray = new int[capacity]; // a) create a new array with an updated capacity    for (int i = 0; i < myArray.length; i++) {  newArray[i] = myArray[i]; // b) copy the contents of the original into the new array  } // end for    myArray = newArray; //c) change the reference to the original Array  printArray(myArray);  return myArray;  }  } |

Output:

0 10 20 30 40

0 10 20 30 40 50 60 70 80 90

0 10 20 30 40 50 60 70 80 90

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **Before expandCapacity:**  **myArray**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 0 | 1 | 2 | 3 | 4 | | 0 | 10 | 20 | 30 | 40 | | **After expandCapacity**  **[**Assume capacityIncrement = 0, so new array will have double the amount of capacity.]  **newArray a)**   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |  |  |  |  |  |  |  |  |  |  |   **newArray b)**   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | 0 | 10 | 20 | 30 | 40 |  |  |  |  |  |   **newArray** **myArray c)**  10   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | 0 | 10 | 20 | 30 | 40 |  |  |  |  |  | |