# Practice Problem Set 6

1. Write a C program that finds the indexes of two consecutive elements of a given array such that the difference between them is largest.

Examples

|  |
| --- |
| Input |
| Array Size: 9 Input Array: 1 2 0 4 5 7 1 3 5 |
| Output |
| 5, 6 |

1. Write a C program that checks if a given array is palindrome or not.  
   Examples

|  |
| --- |
| Input |
| Array Size: 8 Input Array: 0 2 0 2 2 0 2 0 |
| Output |
| Yes |

1. Write a C program that checks if the two arrays are equal or not.  
   Examples

|  |  |
| --- | --- |
| Input | Input |
| Input Array1 Size: 4 Input Array1: 0 2 0 2  Input Array2 Size: 3 Input Array2: 0 2 0 | Input Array1 Size: 4 Input Array1: 0 2 0 2  Input Array2 Size: 4 Input Array2: 0 2 1 3 |
| Output | Output |
| Not Equal | Not Equal |

Examples

|  |
| --- |
| Input |
| Input Array1 Size: 4 Input Array1: 0 2 0 2  Input Array2 Size: 4 Input Array2: 0 2 0 2 |
| Output |
| Equal |

1. Write a C program that copies only the even elements to a new array.  
   Examples

|  |
| --- |
| Input |
| Array Size: 8 Input Array: 0 2 3 4 1 2 -9 0 |
| Output |
| New Array Size: 5  New Array: 0 2 4 2 0 |

1. Write a program that takes an array as input and copies the non-zero elements to a new array followed by the zeros at the end of the new array.

Examples

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| --- |
| Input |
| Array Size: 8 Input Array: 0 2 3 4 1 2 -9 0 |
| Output |
| New Array: 2 3 4 1 2 -9 0 0 |

1. Write a C program that checks if the input matrix is an identity matrix or not.

Examples

|  |  |
| --- | --- |
| Input | Output |
| 3 3  1 0 0  0 1 0  0 0 1 | Yes |

|  |  |
| --- | --- |
| Input | Output |
| 3 3  1 0 1  0 1 0  1 0 1 | No |

1. Write a C program that stacks the 2 input arrays horizontally and prints the output array.

Hints: The number of rows of the input arrays must be equal to horizontally stack them.  
Examples

|  |  |
| --- | --- |
| Input | Output |
| 4 5 1 2 3 4 5  4 5 6 7 8  5 6 7 8 9  1 2 4 5 7  4 3  1 2 3  5 6 7  1 3 6  2 4 7 | 4 8  1 2 3 4 5 1 2 3  4 5 6 7 8 5 6 7  5 6 7 8 9 1 3 6 1 2 4 5 7 2 4 7 |

Examples

|  |  |
| --- | --- |
| Input | Output |
| 4 5 1 2 3 4 5  4 5 6 7 8  5 6 7 8 9  1 2 4 5 7  3 4  1 2 3  5 6 7  1 3 6  2 4 7 | Not possible to horizontally stack the two arrays |

1. Write a C program that flips a binary matrix horizontally, then inverts it, and returns the resulting matrix.  
   Hints: To flip a matrix horizontally means that each row of the matrix is reversed.    
   For example, flipping [1, 1, 0] horizontally results in [0, 1, 1].   
   To invert a matrix means that each 0 is replaced by 1, and each 1 is replaced by 0.   
   For example, inverting [0, 1, 1] results in [1, 0, 0]  
   Examples

|  |  |
| --- | --- |
| Input | Output |
| 3 4  1 0 0 1  0 0 0 1  1 1 0 0 | After flipping:  1 0 0 1  1 0 0 0  0 0 1 1  After inverting:  0 1 1 0  0 1 1 1   1. 1 0 0 |

1. Write a C program that asks the user to enter r and c and reshapes the input matrix to a rxc matrix if possible.  
   Hints: Create a 1d array with mxn elements and populate the 1d array with the elements of input 2d array.  
   Then populate the rxc matrix from the 1d array.

Examples

|  |  |
| --- | --- |
| Input | Output |
| 4 4  1 2 3 4  5 1 2 3  9 5 1 2  2 6 | 2 6  1 2 3 4 5 1  2 3 9 5 1 2 |

|  |  |
| --- | --- |
| Input | Output |
| 4 4  1 2 3 4  5 1 2 3  9 5 1 2  2 3 | Not possible |