

York University
Lassonde School of Engineering
Dept. of Electrical Engineering and Computer Science
EECS 2032
Introduction to Embedded Systems
Fall 2020

EECS2032	Lab Test 2	Intro to Embedded Systems
Tuesday Nov 3 rd 2020		2:30– 4:00pm

Question 1 (3 points)

Write A C program that reads a (not necessarily square) matrix. Your program should calculate the main diagonal (diagonal if the matrix is square) and the anti diagonal and prints one of these two messages

- Main
- Anti

It prints Main if the absolute value of the sum of all the elements in the (main) diagonal is greater than the absolute value of the sum of all the elements in the anti diagonal. Otherwise it prints Anti.

Example The following matrix is a 3×6 matrix where the main diagonal elements are shown in red, and the anti diagonal elements are shown in blue.

$$\begin{pmatrix} \mathbf{1} & 6 & 18 & 17 & 5 & \mathbf{12} \\ 6 & \mathbf{8} & 4 & 6 & \mathbf{3} & 9 \\ 12 & 6 & \mathbf{9} & \mathbf{3} & 1 & 7 \end{pmatrix}$$

Input

One line contains two integers, r, c (number of rows and columns)

Second line contains $r \times c$ integer elements of the matrix on the same line

Submit as 2032 LT2A q21.c

Question 2 (3 points)*

Write a C Programs that reads four integers. (a, b, c, d).

Then it displays either YES or NO based on the 4 integers being a part of Fibonacci sequence or not.

A Fibonacci sequence is a sequence that starts with “0 1” and where every number is the sum of the previous two numbers.

Note that there is one and only one Fibonacci sequence

0 1 1 2 3 5 8 13 21 34 55

So, 8 13 21 34 is a part of Fibonacci sequence, while

4 5 9 14 is not a part of Fibonacci sequence although $9=4+5$ and $14=5+9$

Submit as 2032 LT2B q22.c

Question 3 (4 points)

Write C code to read a string from the standard input (string is characters ended with a white space).

Your program should display Yes or No followed by a new line.

- If there is a substring of length 3 is repeated more than once in the string
- Otherwise

For example

ASDFGHASDPOIU	Yes
QWERTYUERTH	Yes
QWERTYUIOPLKJH	No

Submit 2032 LT2C q23.c