

# **YORK UNIVERSITY**

## **Lassonde School of Engineering**

### **Dept of EECS**

#### **PLEASE READ CAREFULLY**

- test consists of 5 questions
- Please read the questions carefully
- Read the question to the end, something that is not clear may be clear when you read the specifications and see the example
- Do exactly what I asked for, no more no less
- Use web submit to submit files as stated in every problem
- For question 5 you may submit txt or pdf (NO doc or docx). I will not even look at doc or docx
- submission will be closed at 7:30pm

## Problem 1

Read two 1 dimensional arrays and an integer  $n$  and decide if

- Every element of the first  $n$  elements of the first array is equal to the corresponding element of the second array.
- Every element of the first  $n$  elements of the first array is greater than the corresponding element of the second array.
- Every element of the first  $n$  elements of the first array is less than the corresponding element of the second array.
- Non of the above

## Specifications

### Input

The input is 5 lines

- an integer  $k$  (number of elements in the first array)
- $k$  integers to form the first array
- An integer  $m$
- $m$  integers to form the second array
- An integer  $n$

### Output

- If  $n$  is greater than either  $k$  or  $m$ , display INVALID followed by  $\backslash n$
- if every element of the first  $n$  elements of the first array is equal to the corresponding element of the second array, display EQUAL followed by  $\backslash n$
- if every element of the first  $n$  elements of the first array is greater than the corresponding element of the second array, display LARGER followed by  $\backslash n$
- if every element of the first  $n$  elements of the first array is less than the corresponding element of the second array, display SMALLER followed by  $\backslash n$
- If non of the above is true, display NONE followed by  $\backslash n$

**Example** (Input in **blue**, output in **red**)

**3**

**7 2 9**

**5**

**1 0 3 2 1**

**2**

**LARGER**

This is because  $7 > 1$ ,  $2 > 0$

Submit as **submit 2032Z LT31 A.c**

## **Problem 2**

Write a program to read a floating point number and print the number of digits required to write the whole part of the number. For example 123.42 the output should be 3, for 0.234 the output is 0.

### **Specifications**

#### **Input**

One floating point number

#### **Output**

one integer followed by new line

**Example** (Input in **blue**, output in **red**)

**123.4567**

**3**

Submit as **submit 2032Z LT32 B.c**

## Problem 3

Write a program that reads two integers and print the prime numbers between these two integers inclusively separated by “,” and ended with a newline. For example, if the inputs are 3 and 10, the output should be 3,5,7. A prime number is an integer greater than 1 whose only factors are 1 and itself.

### Specifications

#### Input

Two integers

#### Output

A list of prime numbers separated by commas and ended by a new line

**Example** (Input in blue, output in red)

**3 15**

**3,7,11,13**

Submit as **submit 2032Z LT33 C.c**

## Problem 4

Write a program that reads one integer and display all its prime factors. For example if the input is 12, the output should be 2,2,3 (note that  $2 \times 2 \times 3 = 12$ )

### Specifications

#### Input

one integer

#### Output

The integer prime factors not counting 1, if a factor is repeated  $n$  times, it will be repeated in the output  $n$  times followed by a new line

**Example** (Input in **blue**, output in **red**)

**46**

**2,23**

OR

**17**

**17**

OR

**24**

**2,2,2,3**

Submit as **submit 2032Z LT34 D.c**

## Problem 5

Write the steps/statements we have to do to perform the following. The steps or instructions is writing some values to a register, for example

DACA->CL = 0x03

or it could be set bits 0 and 1 in register DACA->CL

- Enable port E and make the pin as GPIO and output
- Set pin 0 of Port C and pin 5 of Port D to trigger an interrupt when reset (when go from 1 to 0).

Submit as **submit 2032Z LT35 F.txt or F.pdf**