

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

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<b>EECS2032</b>	<b>Lab Test 3</b>	<b>Intro to Embedded Systems</b>
Tuesday Dec 8 <sup>th</sup> 2020		2:30– 4:00pm

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**Question 1** (3 points)

Write a bash script `q31.sh` that accepts an integer as a command line argument and display the output as follows

- If the integer is a perfect square, it displays “Perfect square” (without the quotes) followed by the square root of the arguments then a new line.
- If the integer is not a perfect square, it displays “Not a perfect square” (without the quotes followed by a new line

A perfect square is an integer that is the square of another integer, for example 25, 36, 49, ... but not 77

Hint: The easiest way is to brute force all the integers from 1 to half the input value

**Submit as 2032 LT3A    `q31.c`**

## Question 2 (3 points)

Write a C program (q32.c) that reads from the standard input two integers  $a$ , and  $b$ , add them up to form another integer  $z=a + b$ , and then display two lines of output

- The sum of all the digits in the result of the addition ( $z$ ), followed by a new line
- Two integers separated by a comma then a new line, the first integer is the sum of the odd numbered digits and the second integer is the sum of all the even number digits.

**Note** that the least significant digit is digit number zero

For example

`%a.out`

`34 1213`

The output is

`14`

`5,9`

Explanation

The sum of  $34+1213 = 1247$  (sum of digits =  $1+2+4+7 = 14$ )

The sum of odd numbered digits  $4+1=5$ , The sum of even numbered digits =  $2+7=9$

**Submit as 2032 LT3B q32.c**

### Question 3 (4 points)

Consider an array of integers of length  $n$ , and a positive number  $MAX$ . Write a C program that reads the array and the  $MAX$ , number. Then it chooses three numbers of the array such that the sum of these three numbers is as close as possible to  $MAX$ , but it does not exceed  $MAX$ .

The program reads an integer  $n$  (array length), then the number  $MAX$ , then  $n$  integers. The program displays

- The three integers separated by tabs then a new line
- If there is no such number, display “Sorry couldn’t be done”

The program should read the following

1. An integer  $n$ , which is the length of the array
2. The number  $MAX$
3.  $n$  integers (the array)

For example

`%a.out`

`4`

`12`

`4 9 2 5`

The output should be

`4 2 5`

Since  $4+2+5=11$  and that is the closest we can come to 12 without exceeding it

**Submit 2032 LT3C q33.c**