# Hackathon 1 ( 7th Jan 2022)

## General

- The only header you are allowed is stdio.h. You can only use basic datatypes with no modifiers like long or double.
- All submissions on autojudge. Only latest submission counts for evaluation.
- Evaluation is done manually by TAs. Autojudge only helps you test your programs.
- Autojudge score and your final score have no relationship.
- You can use **your own** code from previous lab exercises if you wish.
- Duration: 20 + 40 + 60 = 120 minutes.

## Problem 1

(20 marks)

Statement:

- Input: $n, a, b \in \mathbb{N}$.
- Goal: Compute the sum of all numbers less than $n$ that are multiples of $a$ or $b$.
- Output: Print the sum followed by `\n`

Example:
For $n = 30$, $a = 6$, $b = 9$, the numbers less than $n$ that are multiples of $6$ or $9$ are $6, 9, 12, 18, 24, 27$.
Their sum is $96$.

## Problem 2

(30 marks)

- Input: $a, b \in \mathbb{N}$ given as two integers separated by a space.
- Goal: Find the reduced proper fraction of $\frac{a}{b}$. i.e., find $p, q$ such that $\frac{a}{b} = \frac{p}{q}$ and $\frac{p}{q}$ cannot be reduced any further.
- Output: Print $p/q$ followed by a `\n`.

Examples:
Input: `18 27`
Output: `2/3` `\n`

Input: `162 90`
Output: `9/5` `\n`

## Problem 3

(50 marks)
Statement:

- Input: A string formed by the following characters: `(`, `)`, `[`, `]`
- Goal: Check if the string is a well formed parenthesized expression.
- Output:
    - 1`\n` if the string is a well formed parenthesized expression

- 0 `\n` otherwise

Example:
The expression "[ ] ( [ ( ( ) ) ] )" is well formed.

The expressions "( [ ) ]" and "( ( [ ] ) ( )" are not.