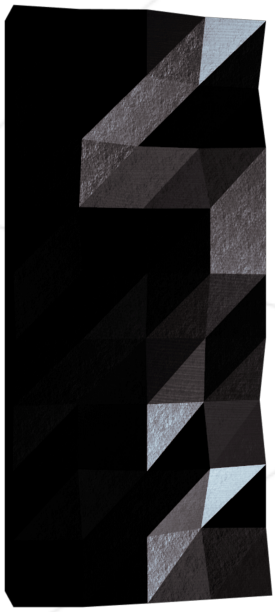

Dash - arithmetic_sequences

arithmetic_sequences

Summary: *this document is the subject for the dash @ 42Tokyo.*

Contents

Chapter I

Foreword

Try your hand at some dynamic programming!

Chapter II

Objective

Create the fastest `arithmetic_sequences.c`.
All functions allowed!

Chapter III

Instructions

- If your program doesn't compile, it's a 0.
- Evaluation will be done on 42 Tokyo's Mac.
- This dash is a solo project.
- Turn in your code inside the turn-in repository.

Chapter IV

Exercice 00 : arithmetic_sequences

	Exercise 00
arithmetic_sequences	
Turn-in directory : $ex00/$	
Files to turn in : `arithmetic_sequences.c`	
Allowed functions : `*`	

- Given N integers X1, X2, ... XN, determine how many ways you can choose three numbers such that they are three consecutive terms of an arithmetic sequence.
- In other words how many triplets (i, j, k) are there such that $1 \leq i < j < k \leq N$ and $Xj - Xi = Xk - Xj$.
- (1, 4, 7), (9, 7, 5), (8, 8, 8) are valid triplets as they contain three consecutive terms of an arithmetic sequence. (10, 9, 2), (3, 4, 9) are not.
- Your function should accept 2 variables as input:
  - `N` - Length of the integer array `arr`. $(3 \leq N \leq 100000)$
  - `arr` - An array of integers X1, X2, ..., XN. $(1 \leq Xi \leq 30000)$
- Your function should return the number of ways to choose a triplet such that they are three consecutive terms of an arithmetic sequence.

- Example:
  - Input -> N = 10, arr = 3, 5, 3, 6, 3, 4, 10, 4, 5, 2
  - Output -> 9
- Explanation: within `arr` there are 9 total triplets that can be considered arithmetic sequences.
  1 : (i, j, k) = (1, 3, 5), (Xi, Xj, Xk) = (3, 3, 3)
  2 : (i, j, k) = (1, 6, 9), (Xi, Xj, Xk) = (3, 4, 5)
  3 : (i, j, k) = (1, 8, 9), (Xi, Xj, Xk) = (3, 4, 5)
  4 : (i, j, k) = (3, 6, 9), (Xi, Xj, Xk) = (3, 4, 5)
  5 : (i, j, k) = (3, 8, 9), (Xi, Xj, Xk) = (3, 4, 5)
  6 : (i, j, k) = (4, 6, 10), (Xi, Xj, Xk) = (6, 4, 2)
  7 : (i, j, k) = (4, 8, 10), (Xi, Xj, Xk) = (6, 4, 2)
  8 : (i, j, k) = (5, 6, 9), (Xi, Xj, Xk) = (3, 4, 5)
  9 : (i, j, k) = (5, 8, 9), (Xi, Xj, Xk) = (3, 4, 5)
- Your function must be declared as follows:

```
size_t        ft_smallest_convert_base(size_t N, int *arr);
```