Report Term Project

Algorithm Design (CS4402)

Section 541 Semester 1/2016

Submitted to Aj. Thitipong Tanprasert

Submitted by

Mr. Kanin Kunapermsiri 5716712
You are given a number $1 \leq N \leq 50$. Every ticket has its $2N$-digit number. We call a ticket lucky, if the sum of its first $N$ digits is equal to the sum of its last $N$ digits. You are also given the sum of ALL digits in the number. Your task is to count an amount of lucky numbers, having the specified sum of ALL digits.

**Input:**
Two space-separated numbers: $N$ and $S$. Here $S$ is the sum of all digits. Assume that $0 \leq S \leq 1000$.

**Output:**
The amount of lucky tickets.

**Submissions:**
The idea of solution is to generate every digit combination. Since first half of total digits must has the same value of second half, so I can divide total digits by half before do calculation.

The maximum of each digits is 9. If sum of every 9 is less than total sum, then there is no lucky ticket.

I use dynamic programming to reduce running time. I initiate table size of half of total digits and total sum.

As it is finding all combination, so big O is $O(n^2)$.