# Homework #2

Due date: 10/21

## iSum

Given an integer $n = d_k \cdots d_2 d_1 d_0$, where each $d_i$ is a decimal digit, your **Jobs** are to compute the following two sums:

$$d_k - d_{k-1} + d_{k-2} - \cdots + (-1)^k d_0 \qquad \text{// sum 1}$$
$$(\ldots ((d_0 \times 10 + d_1) \times 10 + d_2) \ldots) \times 10 + d_k \qquad \text{// sum 2}$$

Observe that the 2nd sum reverses the digits of $n$ and equals
$$d_0 \times 10^k + d_1 \times 10^{k-1} + \cdots + d_k \times 10^0$$

Example

For $n = 12345$, your program shall output the following two equations:
$$1 - 2 + 3 - 4 + 5 = 3$$
$$(((5 * 10 + 4) * 10 + 3) * 10 + 2) * 10 + 1 = 54321$$

For $n = 120000$, your program shall output the following two equations:
$$1 - 2 + 0 - 0 + 0 - 0 = -1$$
$$((((0 * 10 + 0) * 10 + 0) * 10 + 0) * 10 + 2) * 10 + 1 = 21$$

## Requirements

1  You shall write one function for each summation.
   One of them shall return the sum as the function value, and the other shall not return any value.
   For example, you may write
   **`int sum1(int);`**       // display the equation up to the equality sign $=$
                                // and return the 1st sum as the function value
   **`void sum2(int);`**     // display the entire equation for the 2nd sum
2  Don't use techniques (e.g. recursion, array, string) that have not been taught so far.
3  Properly comment your program.
4  Refer to the sample run for the required output format.

## Sample run

```
Enter an integer >=0: 7
7 = 7
7 = 7


Enter an integer >=0: 89
8-9 = -1
9*10+8 = 98


Enter an integer >=0: 12345
1-2+3-4+5 = 3
(((5*10+4)*10+3)*10+2)*10+1 = 54321


Enter an integer >=0: 120000
1-2+0-0+0-0 = -1
((((0*10+0)*10+0)*10+0)*10+2)*10+1 = 21


Enter an integer >=0: ^Z
```