Homework #2

Due date: 10/27

iSum

Given an integer $n = d_k \cdots d_2 d_1 d_0 \geq 0$, where each d_i is a decimal digit, your **Jobs** of this homework are to compute the following three sums:

$d_k \cdots d_2 d_1 d_0 - d_k \cdots d_2 d_1 + d_k \cdots d_2 - \cdots + (-1)^k d_k$ // sum 1
$d_k + \cdots + d_k \cdots d_2 + d_k \cdots d_2 d_1 + d_k \cdots d_2 d_1 d_0$ // sum 2
$d_0 + d_1 d_0 + d_2 d_1 d_0 + \cdots + d_k \cdots d_2 d_1 d_0$ // sum 3

As an example, for $n = 123456$, your program shall output the following three equations:

$123456 - 12345 + 1234 - 123 + 12 - 1 = 112233$ // sum 1
$1 + 12 + 123 + 1234 + 12345 + 123456 = 137171$ // sum 2
$6 + 56 + 456 + 3456 + 23456 + 123456 = 150886$ // sum 3

Bonus

There are 10 bonus points for displaying the leading 0's, if any, of numbers in the 3rd summation.
For example, let $n = 7000$, the 3rd sum is obtained by summing up the numbers 0, 00, 000, and 7000. Since $00 = 0$ and $000 = 0$, your program may display
$0 + 0 + 0 + 7000 = 7000$
However, you will earn 10 bonus points, if the equation is displayed as
$0 + 00 + 000 + 7000 = 7000$

Requirements

1 You shall write one function for each summation.
At least one of them shall return the sum as the function value, and at least one of them shall not return any value.
For example, you may write
// display the entire equation for the 1st sum
```
void sum1(int);
```

```
// display the equation up to the equality sign = and return the 2nd sum as the
// function value
int sum2(int);
```

2 Properly comment your program

3 Refer to the sample run below for the required output format

Sample run

```
Enter an integer >=0: 123456
123456-12345+1234-123+12-1 = 112233
1+12+123+1234+12345+123456 = 137171
6+56+456+3456+23456+123456 = 150886

Enter an integer >=0: 0
0 = 0
0 = 0
0 = 0

Enter an integer >=0: 7000
7000-700+70-7 = 6363
7+70+700+7000 = 7777
0+0+0+7000 = 7000

Enter an integer >=0: 5005005
5005005-500500+50050-5005+500-50+5 = 4550005
5+50+500+5005+50050+500500+5005005 = 5561115
5+5+5+5005+5005+5005+5005005 = 5020035

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

Comment

For bonus points, the two red-colored equations shall be replaced by

```
0+00+000+7000 = 7000
```

and

```
5+05+005+5005+05005+005005+5005005 = 5020035
```

respectively.