Assignment 9: Dash

9.1 Finding a Character

C string functions use pointers in a convenient way. Since the strings in C are implemented using char arrays, the location of a character can be referenced using a char pointer. For example, `strchr(s, c)` returns the address of the character `c` in the string `s` if `c` is included in `s`; `NULL`, otherwise. The constant `NULL` is generally used for denoting the invalid pointer.

```c
#include <stdio.h>
#include <string.h>

int main()
{
    char from[] = "Hello Pointer?";
    char what[] = "HoLa";

    for (char *p = what; *p; p++) {
        if (strchr(from, *p) != NULL)
            printf("'%s' has '%c'.\n", from, *p);
        else
            printf("'%s' does not have '%c'.\n", from, *p);
    }

    return 0;
}
```

9.2 Programming Assignment 9: dash.c

A machine called Dash supports four integer operations, namely D, A, S, and H. The operation D is the "double-up" operation returning the doubled-up value, say `D(12) = 24`; the operation A is the "add-one" operation returning the next integer, say `A(7) = 8`; the operation S is the "subtract-one" operation returning the previous integer, say `S(10) = 9`; the operation H returns the "half," say `H(11) = 5`. Note that H discards the factional part toward zero, i.e. `H(-11) = -5`.

Given the integer and a sequence of Dash instructions, find the final integer applying the sequence of operations to the given number. Given 5 and a sequence of instructions "DAAAHHS" for example, the integer is changed in the following sequence:

$$5 \rightarrow 10 \rightarrow 11 \rightarrow 12 \rightarrow 13 \rightarrow 6 \rightarrow 3 \rightarrow 2$$

and your program should print 2 as the final result.

The input consists of two lines. The first line of the input contains the input integer n and the second line contains a string, the sequence of Dash operations. The operations are given in a sequence of characters where every character is one of D, A, S, and H. Assume that n and the intermediate integers during the operations are all in `int` range. Your program should print the final integer applying dash instructions.

Additional requirements for bonus points

- Define and use four functions for the Dash operations.

- Do not use `switch` nor `if` statements in your code.

Input	Output
5 DAAAHHS	2
−10 HASH	−2