

Char To Int Array

ZPRAC-16-17-Lab10

[BONUS]

A character array of N elements is simply a contiguous block of N bytes in memory. In C, int is represented by 4 bytes. As such a character array of N elements (N bytes) can be interpreted as an integer array of N/4 elements.

For example:

Given a character array of 8 elements we can write the array as:

b0 b1 b2 b3 b4 b5 b6 b7

where b represents a byte.

This array can also be interpreted as a 2 element integer array, with b0b1b2b3 being the first integer and b4b5b6b7 the second one.

Your task is to print the integer array for a given character array.

INPUT FORMAT:

N (int) --- number of elements of character array

(N characters) --- elements of the array

OUTPUT FORMAT:

(N/4 integers) --- char array interpreted as integer array

EXAMPLE:

INPUT:

8

abcdefgh

OUTPUT:

1684234849 1751606885

Explanation:

As you may know, a "char" has a size of 1 byte, whereas an "int" has a size of 4 bytes. Now suppose you have two array declarations -

```
char a1[8];  
int a2[2];
```

Both these arrays will have a size of 8 bytes. The machine doesn't understand the types "int" and "char". It just knows that there is a contiguous sequence of 8 bytes in memory. So it's upto you, how you want to interpret these 8 bytes.

When you do an "a1[0]", it looks up the 1st byte of the 8-byte array and displays it as a character, whereas when you do an "a2[0]", it uses the first 4 bytes of the 8-byte array to generate the 32-bit number.

So if the first 4 bytes of the array are "a" (ascii - 97 (01100001 in binary)), "b" (ascii - 98 (01100010 in binary)), "c" (ascii - 99 (01100011 in binary)), "d" (ascii - 100 (01100100 in binary)), it interprets it as a 32-bit number,

01100100-01100011-01100010-01100001 (dashes are for your reading convenience)

This is exactly the big integer that you see as the first number of the sample output. Note that the order of bytes is reversed while constructing the 4-byte number (dcba instead of abcd). This is called little-endianness.

Hint :

Use type-casting to get what you want, instead of actually generating the 32-bit number, interpreting it and converting it to decimal form.