*Plus ONE*

*Description:*

Given a number that is represented as an array of digits, plus one to the number.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| N0 | N1 | N2 | N3 | N4 | N5 | N6 |

+ 1

Here we need such Variables include:

* Array that saves the Number.
* Current Digit.
* Carry Number.
* Index Number.

Here we need to pay attention that we start from the end digit.

N0 - N1 - N2 - N3 - N4 - N5 ... Ni - Nj ... N(end - 1) - Nend;

*Parameter:*

Array [N0, N1, N2, N3, N4, N5 ... Ni, Nj ... N(end - 1), Nend];

* Each byte stored as Integer.
* Length := end + 1;

We May Need a New Array which may occupies digit (end + 2);

Array\_New [Nnew, N0, N1, N2, N3, N4, N5 ... Ni, Nj ... N(end - 1), Nend];

* Length := end + 2;

*Pseudocode:*

Current Digit := 0;

Carry Number := 1;

Index Number := end;

Sum Digit := 0;

Starts From Index Number to 0:

Initialize Current Digit := Array[Index Number];

Update Sum Digit := Current Digit + Carry Number;

IF Sum Digit / 10 != 0:

Carry Number := 1;

Current Digit := Sum Digit % 10;

ELSE:

Carry Number : = 0;

Current Digit := Sum Digit;

Write Back the Current Digit to the original Array;

END;

IF Carry Number = 1:

Move Array into Array\_New;

Write Back Carry Number to the first Digit of the Array\_New.

Return Array\_New;

ELSE:

Return Array;

*Test Case:*

1. With No Carry Number:

* 23 + 1 = 24 (The Carry Number equals to 0);

1. With Carry Number:

* 19 + 1 = 20 (The Byte Number has not been changed);
* 999 + 1 = 1000 (The Byte Number has been changed);