

---

**Multiples of three****P61930\_en**

---

A well-known mathematical property states that a natural number is a multiple of three if and only if the sum of its digits is also a multiple of three. For instance, the sum of the digits of 8472 is  $8 + 4 + 7 + 2 = 21$ , which is a multiple of three. Therefore, 8472 is also a multiple of three.

Implement a recursive function that tells if a strictly positive natural number  $n$  is a multiple of three or not.

```
bool is_multiple_3 (int n);
```

**Interface**

C++	<b>bool</b> <i>is_multiple_3</i> ( <b>int</b> <i>n</i> );
C	<b>int</b> <i>is_multiple_3</i> ( <b>int</b> <i>n</i> );
Java	<b>public static boolean</b> <i>isMultiple3</i> ( <b>int</b> <i>n</i> );
Python	<i>is_multiple_3</i> ( <i>n</i> ) # returns bool <i>is_multiple_3</i> ( <i>n</i> : int) → bool

Solve this problem using a recursive function to return the sum of the digits of a natural number  $n$ .

```
int sum_of_digits (int n);
```

**Interface**

C++	<b>int</b> <i>sum_of_digits</i> ( <b>int</b> <i>n</i> );
C	<b>int</b> <i>sum_of_digits</i> ( <b>int</b> <i>n</i> );
Java	<b>public static int</b> <i>sumOfDigits</i> ( <b>int</b> <i>n</i> );
Python	<i>sum_of_digits</i> ( <i>n</i> ) # returns int <i>sum_of_digits</i> ( <i>n</i> : int) → int

**Observation**

Here, you are allowed to use the operations of division and integer remainder only with the number 10. Otherwise, this exercise would be totally trivial!

**Problem information**

Author : Salvador Roura

Translator : Carlos Molina

Generation : 2025-05-13 10:34:52

© Jutge.org, 2006–2025.

<https://jutge.org>