

# Planning & Implementation

The documentation in the header file is for the client-what us necessary to use the function. In the implementation file, add **implementation comments**, in the form of a **function plan**, to help you to write the function.

These comments **are intended for programmers**, not for the clients of the function. Don't use Doxygen, but describe the algorithms and important implementation details.

For instance, here is my plan for `lastDigit()`, placed inside the body of the function:

```
// result <- |n| % 10
```

*Single-line comments are simplest for this, since editors will comment and un-comment a portion of code, using only a single keystroke. In many editors, the keystroke is **Shift+/.***

## Implementing *lastDigit*

You should write your comments first, and then implement the function. The most straightforward solution just an **if** statement to select one path path for positive numbers, and another for negative numbers.

```
if (n < 0) { result = -(n % 10); }  
else { result = n % 10; }
```

You could write a shorter version using the **conditional operator** like this, instead of an **if** statement.

```
result = (n < 0 ? -n : n) % 10;
```

For another short, one-line solution, which almost exactly matches the function plan, you can use the **abs()** function like this:

```
result = abs(n % 10);
```

However, a new C++ programmer might not realize that there are separate versions of the function in **<cmath>** (for floating-point numbers), and in **<cstdlib>** for (integers), and end up with an answer that was wrong, or code that does not compile.



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