Necessary & Intentional Bounds

If we change the problem so that it doesn't include the guarantee that every input string that contains characters will have a period, things are more complicated.

Here is what you need to ask yourself: "**Can my loop reach its bounds?**"

If there **is no period** in `str` then **obviously it cannot**. It will continue consuming any memory that appears after the string, **or**, it will crash. Neither are desirable.

A secondary condition designed for such eventualities is called a **necessary bound**. When we run out of characters, we must stop, even if our **intentional bound** is not reached. Here's our code modified to handle this complication.

```
// Adding a necessary bounds
counter <- -1
len <- str.size()
If  str != ""
{
   counter <- 0
   pos <- 0
   letter <- str.at(0)
   While pos < len and letter is not a period
   {
     ...
   }
   if letter is a '.' then counter <- counter + 1
   else counter <- -2
}
If counter is -1 the string was empty
Else if counter is -2 there was no period
Else counter contains the goal
```

The post-condition **now handles three cases**: a string with a period, the empty string, and a string with no period.