

# Re: C Programming: A Modern Approach – Chapter 15 Exercise 5

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*Source:* [http://coding.derkeiler.com/Archive/C\\_CPP/comp.lang.c/2005-07/msg02239.html](http://coding.derkeiler.com/Archive/C_CPP/comp.lang.c/2005-07/msg02239.html)

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- *From:* [richard@xxxxxxxxxxxxxxxx](mailto:richard@xxxxxxxxxxxxxxxx) (Richard Tobin)
  - *Date:* 22 Jul 2005 12:22:30 GMT
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In article <pan.2005.07.22.09.48.30.184627@xxxxxxxxxxxx>, Simon Morgan <me@xxxxxxxxxxxx> wrote:

>The task is to modify it so that it alternates between distribution of the  
>extra spaces favouring the end of the line and the beginning of the line.

It's not really answering your question, but this is an example of the large class of problems that can be solved with something equivalent to Bresenham's algorithm. That algorithm is traditionally used for drawing straight lines on a pixel display, but can be used for all kinds of problems where you want to approximate division using integer increments.

In this case, suppose you want to divide 8 spaces among 5 gaps. Start with zero. At each gap, then add 8 and subtract off as many 5s as you can, and for each one add a space to that gap. Then proceed to the next gap using the remainder as the starting value.

So we have

$0+8 = 8 = 1*5 + 3 \Rightarrow 1 \text{ space}$   
 $3+8 = 11 = 2*5 + 1 \Rightarrow 2 \text{ spaces}$   
 $1+8 = 9 = 1*5 + 4 \Rightarrow 1 \text{ space}$   
 $4+8 = 12 = 2*5 + 2 \Rightarrow 2 \text{ spaces}$   
 $2+8 = 10 = 2*5 \Rightarrow 2 \text{ spaces}$

— Richard

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- *Follow-Ups:*
    - ◆ [Re: C Programming: A Modern Approach – Chapter 15 Exercise 5](#)  
◇ *From:* Tim Rentsch
  - *References:*
    - ◆ [C Programming: A Modern Approach – Chapter 15 Exercise 5](#)

Re: C Programming: A Modern Approach – Chapter 15 Exercise 5

◇ *From:* Simon Morgan

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