Problem Set 2 Exercise #22: Candles

Reference: Lecture 5 notes

Learning objective: Repetition statements; Algorithm design

Estimated completion time: 45 minutes

Problem statement:

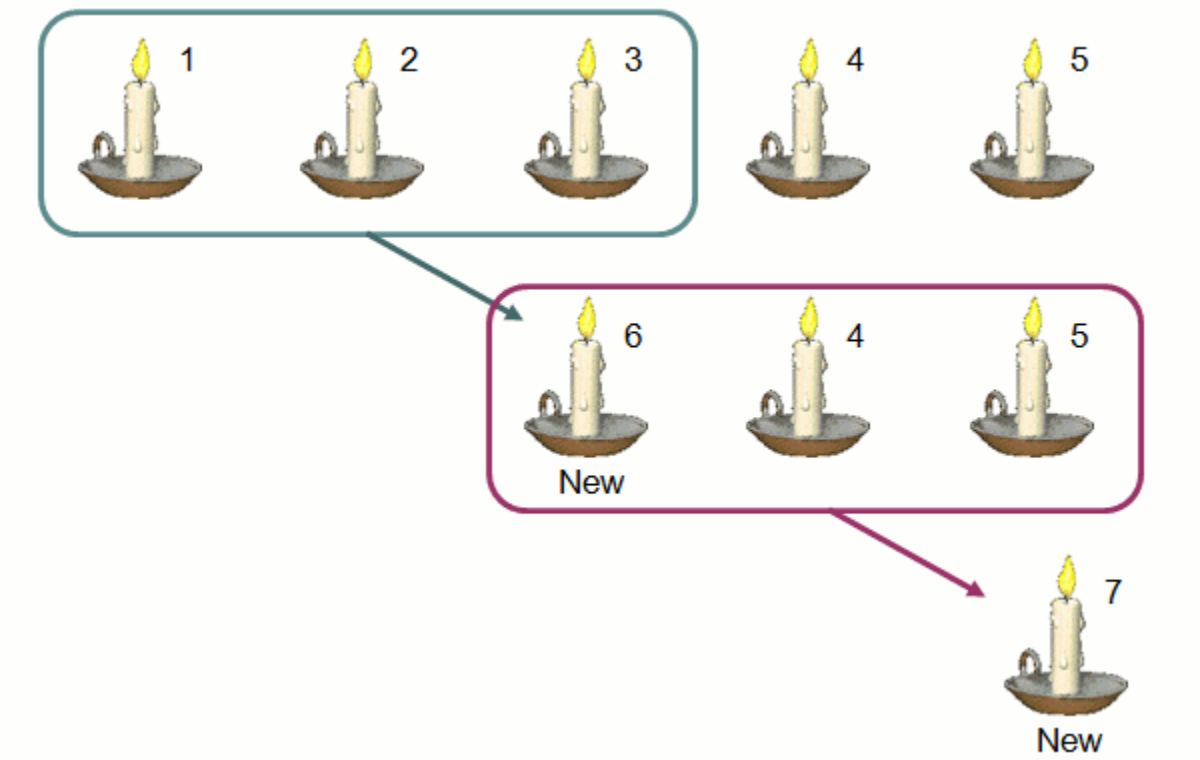
[Past year CS1101 Practical Exam Question]

Peter has *n* candles. He burns them one at a time and carefully collects all unburnt residual wax. Out of the residual wax of exactly *k* (where *k* > 1) candles, he can roll out a new candle.

Write a program **candles.c** to help Peter find out how many candles he can burn in total, given two positive integers *n* and *k*.

The output should print the total number of candles he can burn.

The diagram below illustrates the case of *n* = 5 and *k* = 3. After burning the first 3 candles, Peter has enough residual wax to roll out the 6th candle. After burning this new candle with candles 4 and 5, he has enough residual wax to roll out the 7th candle. Burning the 7th candle would not result in enough residual wax to roll out anymore new candle. Therefore, in total he can burn 7 candles.



Sample run #1:

```
Enter n, number of candles: 5
Enter k, number of residuals to make a new candle: 3
Peter will burn this number of candles: 7
```

Sample run #2:

```
Enter n, number of candles: 100
Enter k, number of residuals to make a new candle: 7
Peter will burn this number of candles: 116
```