Programming Refresher Workshop

Session 2 Exercises

Learning objectives:

- Using repetition statement
- Writing functions/methods
- Applying neat logic in problem solving

Exercise 5 (ex5): Candles

[Past CS1010 lab exercise.]
Alexandra 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 to help Alexandra find out how many candles he can burn in total, given two positive integers n and k.

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

The diagram on the right illustrates the case of n = 5 and k = 3. After burning the first 3 candles, Alexandra 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 any more new candle. Therefore, in total he can burn 7 candles.
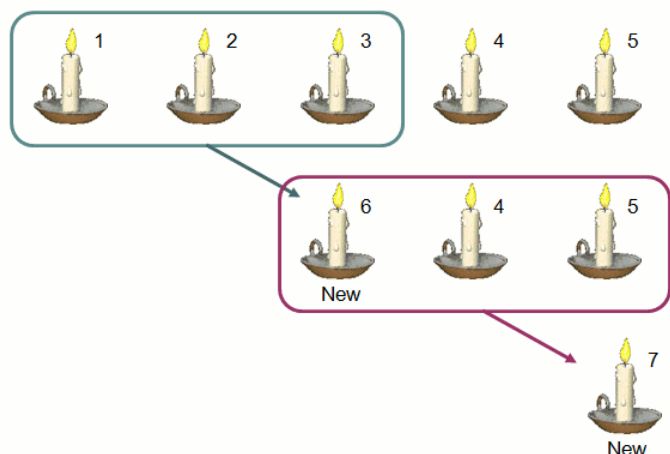
Your program should read the inputs n and k and then pass them to a function/method to compute the total number of candles burnt. What should be the pre-condition of your function/method?

Sample runs

```
Enter n and k: 5 3
Total candles burnt = 7
```

```
Enter n and k: 100 7
Total candles burnt = 116
```