

1 More Practice with Recursion

For each problem, write a recursive method with code. Use appropriate comments.

1. A function to tell if b is prime. By the math definition, b is prime if b is only (evenly) divisible by 1 and itself. Here is a math formula. It uses two functions.

$$isPrime(b) = isPrime(b, b - 1)$$

$$isPrime(b, x) = \begin{cases} yes & \text{if } x == 1 \\ no & \text{if } (b \% x) == 0 \\ isPrime(b, x - 1) & \text{otherwise} \end{cases}$$

2. A function to count the number of primes between a and b . Here is a math formula.

$$count_primes(a, b) = \begin{cases} 0 & \text{if } a > b \\ count_primes(a, b - 1) + 1 & \text{if } isPrime(b) \\ count_primes(a, b - 1) & \text{otherwise} \end{cases}$$

3. A function to remove consecutive duplicates from a string. For example, convert "aabccba" to "abcba". Convert "ww" to "w". Convert "" to "". Convert "v" to "v". Convert "qvq" to "qvq".

¹Borrowed from Professor Wittie