

Recursion extra questions (2)

1) Count Occurrences: Write a recursive function to count the occurrences of a specific element in an array. Example: `countOccurrences(arr, n, x)` where `arr = {1, 2, 3, 2, 2, 4}` and `x=2` should return 3.

2) Greatest Common Divisor (GCD): Write a recursive function to find the GCD of two numbers using Euclid's algorithm. Example: `gcd(a, b)` where `a=48` and `b=18` should return 6.

Assuming you want to calculate the GCD of 1220 and 516, let's apply the Euclidean Algorithm:

$$\begin{array}{l} 1220 \bmod 516 = 188 \\ 516 \bmod 188 = 140 \\ 188 \bmod 140 = 48 \\ 140 \bmod 48 = 44 \\ 48 \bmod 44 = 4 \\ 44 \bmod 4 = 0 \\ 4 = \text{GCD} \end{array}$$