Data Structures Assignment #3

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Session: Monday @18:00 – 20:00

1: Iterative GCD

```
int gcd(int x, int y) {
    [1] boolean var3 = false;

    [n] while(y != 0) {
        [n] if (x > y && x != 0) {
        [1] int temp = x;
        [1] x = y;
        [1] y = temp % y;
        [1] System.out.println("Answer: " + x + ", " + y );
        }
    }
    return x;
}
```

Big-O (gcd):

- (1 + n (n (1 + 1 + 1 + 1)))
- (1 + n (n (4)))
- $(1 + 4n^2)$
- $(0 + 4n^2)$
- $1n^2$
- n^2

There, function (gcd) is not linear.

2: Iterative Hanoi Tower Problem

```
    int hanoi(int n) {
        [n] while (n != 1){
        [n]    if(n > 1){
        [1]      int temp_n = n;
        [1]      n = (n - 1) + 1;
        [1]      temp_n = 2 * n;
            return temp_n;
            }
        }
        return 1;}
}
```

Big-O (Hanoi):

- n (n (1 + 1 + 1))
- n (n (3))
- $3n^2$
- $1n^2$
- n^2

Therefore, function (Hanoi) is not linear either