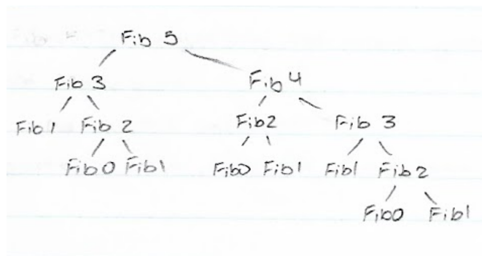
Dennis Kuzminer
CSCI-UA 310-001 PS1

8.

a.



b. Base case n = 0

G(n)=2F(n+1)-1→ 1 = 2(1)-1 → 1=1

Inductive step: Assume G(k)=2F(k+1)-1 holds for all n up to k. Prove k+1 also holds: G(k+1)=2F(k+2)-1→

G(k)+G(k-1)+1=2F(k)+2F(k+1)-1→

2F(k-1+1)-1+G(k)+1=2F(k)+2F(k+1)-1→

G(k)+1=2F(k+1) →

G(k)=2F(k+1)-1→

∴G(n)=2F(n+1)-1 holds for all n≥0

c.
```
int fib(int n) {
        int fib[] = new int[n+2];
        for(int i = 0; i <= n; i++) {
                if(i == 0) {
                        fib[i] = 0;
                } else {
                        if(i == 1) {
                                fib[i] = 1;
                        } else {
                                fib[i] = fib[i-1] + fib[i-2];
                        }
                }
        }
        return fib[n];
}
```