

# Rekursjon

# Fibonacci-tallene

INF1010

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0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ...

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$$\text{fib}(1) = 1$$

$$\text{fib}(n) = \text{fib}(n-1) + \text{fib}(n-2)$$

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0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ...

```
int fib(int n) { . . . }
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0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ...

```
int fib(int n) {  
    if ( n == 0 ) return 0;  
}
```

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0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ...

```
int fib(int n) {  
    if ( n == 0 ) return 0;  
    else if ( n == 1 ) return 1;  
}
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0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ...

```
int fib(int n) {  
    if ( n == 0 || n == 1 ) return n;  
}
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int fib(int n) {  
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```
int fib(int n) {
    if ( n < 0 ) return 0;
    else if ( n < 2 ) return n;
    else return fib(n-1) + fib(n-2);
}
```

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```
fib(0) = 0
fib(1) = 1
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```

```
class Fibonacci {                                0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ...

    public static void main (String[] a) {
        FibonacciGenerator fg = new FibonacciGenerator();
        int N = Integer.parseInt(a[0]);

        for (int i=0; i <= N; i++) {
            System.out.println("fib("+i+") = "+ fg.fib(i));
        }
    }
}

class FibonacciGenerator {

    long fib(int n) {
        if ( n == 0 || n == 1 ) return n;
        else return fib(n-1) + fib(n-2);
    }
}
```