Getting better

Getting better

- Dirty Function
- Clear function
- Wrapping
- Composition
- Immutability
- Curry
- Recursion

Dirty Function

```
let y = 2;
let z = 3;

function f(x) {
   y = y * x;
   z = y * x;
}
```

Dirty Function

```
f(5);
console.log("y " + y);
console.log("z " + z);

f(5);
console.log("y " + y);
console.log("z " + z);
```

EVOLUTION KILLS

Clear function

```
function bar(x, y, z) {
    f(x);
    return [y, z];

    function f(x) {
        y = y * x;
        z = y * x;
    }
}
```

Clear function

```
let res1 = bar(5, 2, 3);
let res2 = bar(5, ...res1);
console.log(res1);
console.log(res2);


let res3 = bar(5, ...bar(5, 2, 3));
console.log(res3);
```

Wrapping

```
let y = 2;
let z;

function f(x) {
    y++;
    z = x * y;
}

f(10);
console.log("y " + y);
console.log("z " + z);

f(5);
console.log("y " + y);
console.log("z " + z);
```

Wrapped

```
function bar(x, y) {
    let z;

    f(x);
    return [y, z];

    function f(x) {
        y++;
        z = x * y;
    }
}

let res1 = bar(10, 2);
console.log("res1");
console.log(res1);

let res2 = bar(10, res1[0]);
console.log("res2");
console.log(res2);
```

Composition

```
let sum = (x, y) => x + y;
let mul = (x, y) => x * y;

let z = mul(2, 3); // side effect
let x = sum(z, 5);
```

Composition - manual

```
let sum = (x, y) => x + y;
let mul = (x, y) => x * y;

let x = sum(mul(2, 3), 5);

console.log(x);
```

Composition - manual

```
let sum = (x, y) => x + y;
let mul = (x, y) => x * y;

let mulAndSum = (x, y, z) => sum(mul(x, y), z);

let x = mulAndSum(2, 3, 5);
console.log(x);
```

Composition - Utility

```
let sum = (x, y) => x + y;
let mul = (x, y) => x * y;

function compose(f1, f2) {
    return function fc() {
        var args = [].slice.call(arguments);
        return f2(f1(args.shift(), args.shift()), args.shift());
    };
}

let mulAndSum = compose(mul,sum);

let x = mulAndSum(2, 3, 5);
console.log(x);
```

Composition - Utility

```
let sum = (x, y) => x + y;
let mul = (x, y) => x * y;

function compose(f1, f2) {
    return function fc() {
        var args = [].slice.call(arguments);
        return f2(f1(args.shift(), args.shift()), args.shift());
    };
}

let x = compose(mul,sum)(2, 3, 5);

console.log(x);
```

Immutability

```
let x = 1;
x++;

const y = 1;
y++;
```

Immutability

```
const z = [1, 2];
z = 10;
z = [3, 4];
z[0] = 3;
z.length = 0;

const w = Object.freeze([1, 2]);
w = 10;
w = [3, 4];
w[0] = 3;
w.length = 0;
```

Immutability

```
const z = [1, 2];
const w = Object.freeze(z);

z[0] = 3;
w[0] = 3;

console.log(z);
console.log(w);
```

Immutability

```
const z = [1, 2];
z[0] = 3;

const w = Object.freeze(z);
z[0] = 3;
w[0] = 3;

console.log(z);
console.log(w);
```

Immutability

```
const z = [1, 2];

let temp = z;

const w = Object.freeze(temp);
z[0] = 3;
temp[0] = 3;
w[0] = 3;

console.log(z);
console.log(w);
```

Immutability

```
const z = [1, 2];
z = Object.freeze(z);
```

Immutability

```
let doubleMe = ar => {
    for (let i = 0; i < ar.length; i++) {
        ar[i] *= 2;
    }
};

let myAr = [0, 1, 2];
doubleMe(myAr);
console.log(myAr);
```

Immutability

```
let doubleMeImmutableStyle = ar => {
    let result = [];
    for (let i = 0; i < ar.length; i++) {
        result.push(ar[i] * 2);
    }
    return result;
};

let myAr = [0, 1, 2];
console.log(doubleMeImmutableStyle(myAr));
console.log(myAr);
```

Curry

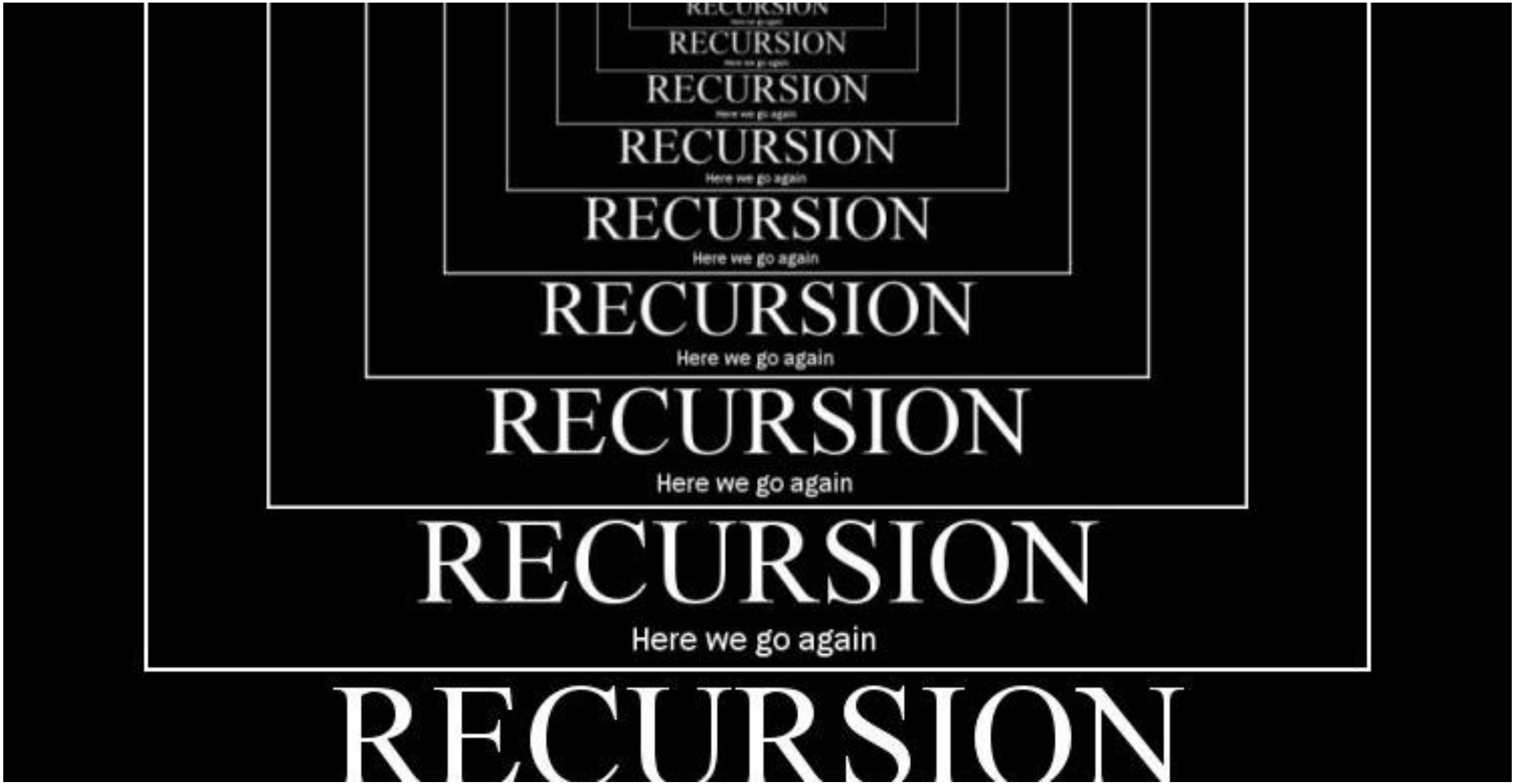
```
function f() {
    let count = 0;

    return function() {
        return count++;
    };
}

let x = f();

console.log(x());
console.log(x());
```

Curry

```
function s(x) {
    return function(y) {
        return x + y;
    };
}

let sum = s(5);

console.log(sum(1));
console.log(sum(1));
console.log(sum(2));
```

Curry

```
function s(x, y) {
    return function() {
        return x + y;
    };
}

let sum = s(5, 1);

console.log(sum());
console.log(sum());
```


RECURSION
Here we go again
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Here we go again
RECURSION

Recursion

```
function s() {
    var result = 0;
    for (var i = 0; i < arguments.length; i++) {
        result += arguments[i];
    }

    return result;
}

console.log(s(1, 2, 3));
```

Recursion

```
function s() {
    var args = [].slice.call(arguments);
    if (args.length <= 2) {
        return args[0] + args[1];
    }

    return args[0] + s.apply(null, args.slice(1));
}

console.log(s(1, 2, 3));
```

Recursion

```
function s(...args) {
    if (args.length <= 2) {
        return args[0] + args[1];
    }

    return args[0] + s(...args.slice(1));
}

console.log(s(1, 2, 3));
```