

Tuesday, April 10

Name Solutions

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Miniquiz #21

5 Minutes

```
foo = fun(x){
    return x >> 3;
};
i = 0;
j = 0;
while (i < 10){
    y = 32;
    j = j + foo(y);
}
print(j);
```

```
i = 0;
j = 0;
while (i < 10){
    y = 8 * 4;
    j = j + (y / 8);
}
print(j);
```

The above two programs output the same result to the console on every execution.

1. What optimizations/improvements does the code snippet on the left demonstrate? Why would it improve performance?

Algebraic Simplification: $8 * 4$ simplified to 32.

Strength Reduction: $y / 8$ simplified $y \gg 3$.

2. What optimizations/improvements does the code snippet on the right demonstrate? Why would it improve performance?

Function Inlining: $foo(y)$ replaced with $y / 8$.