

How could each program below be optimized?

```
01 int minf(int a, int b) {
02     int min = INT_MIN;
03     if (b > a) {
04         min = a;
05     } else {
06         min = b;
07     }
08     return min;
09 }
```

Figure 1

```
01 void foo(int *v, int N, int a, int b) {
02     printf("Consider: %d\n", a * b);
03     for (int i = 0; i < N; i++) {
04         int x = v[i];
05         if (x < a * b) {
06             printf("Neg = %d\n", x);
07         }
08     }
09 }
```

Figure 2

```
01 void foo(int *v, int N, int a, int b) {
02     for (int i = 0; i < N; i++) {
03         int x = v[i];
04         if (x < a * b) {
05             printf("Neg = %d\n", x);
06         }
07     }
08 }
```

Figure 3



1. Which information would you need to carry out the proposed optimization automatically in each one of these three examples?
2. Is the optimization the same for each example?
3. Is your optimization always performance-safe? By performance safe I mean to say: could it be the case that, for some specific inputs, the optimized program would run slower than the original program?

