

ECE 573

Problem Set 8: Common subexpression elimination

Consider the following basic block:

```

1:  LD A, T1
2:  LD B, T2
3:  T3 = T1 * T2
4:  T4 = T3 + T1
5:  T5 = T1 * T2
6:  T3 = T5 + T2
7:  T6 = T3 + T1
8:  T7 = T5 + T2

```

1. After each statement, indicate which expressions are “available.”

Stmt	Available Exprs
1	—
2	—
3	T1 * T2
4	T1 * T2, T3 + T1
5	T1 * T2, T3 + T1
6	T1 * T2, T5 + T2
7	T1 * T2, T5 + T2, T3 + T1
8	T1 * T2, T5 + T2, T3 + T1

2. Show what this code looks like after performing CSE.

```

1:  LD A, T1
2:  LD B, T2
3:  T3 = T1 * T2
4:  T4 = T3 + T1
5:  T5 = T3
6:  T3 = T5 + T2
7:  T6 = T3 + T1
8:  T7 = T3

```