TDT4205 Problem Set 6
Spring 2016

Answers are to be submitted through *It's Learning*, by Apr. 27^{th}, 20:00. **This problem set is graded, and counts for a total of 10% of the final mark**

1 Theory

1.1 12%

Create control flow graphs for the following program fragments:

1. `for ( a ; b ; c ) d ; e ;`
2. `a ; while ( b ) { d ; c ; } e ;`
3. `a ; do { d ; c ; } while ( b ); e ;`

1.2 18%

Consider the following program fragment:

1. `a=1`
2. `b=2`
3. `c=3`
4. `d=a+x`
5. `e=b+c`
6. `f=e`
7. `g=f`
8. `g=d+y`
9. `a=b+c`

Identify the lines impacted by the optimizations

1. Copy propagation
2. Common subexpression elimination
3. Constant propagation

and rewrite them appropriately (start with the original program for each case).

2 Programming (70%)

Complete the VSL compiler (from your own code, or starting from ps6_skeleton.tgz), by implementing the following constructs in `generator.c`:

1. Local variables (20%)
2. Function calls (20%)
3. Conditionals (IF and relations) (15%)
4. While loops (10%)
5. Continue (NULL_STATEMENT) (5%)