TDT4205 Problem Set 6
Spring 2017

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 9%

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 21%

Consider the following program fragment:

```
for ( int i=0; i<n; i++ ) {
    sum = 4*i;
    for ( int j=0; j<m; j=j+i ) {
        a = a + b * 2;
    }
}
```

1. Convert the program to a control flow graph with three-address instructions
2. List the dataflow equations for the dominator relation, and solve them
3. Draw the corresponding dominator tree

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%)