University of Amsterdam
System and Network Engineering Lab
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Compilerbouw
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Assignment Series 5

Code Transformation and Optimisation

Consider the following CiviC code fragment:

```
i = 0;
while (i<n) {
  j = 0;
  while (j<m) {
    if (i<j) {
      val = val + i;
    }
    else if (j==i) {
      val = val - 1;
    }
    else {
      val = val + j;
    }
    j = j + 1;
  }
  i = i + 1;
}
```

Assignment 18: Static Single Assignment Form

Transform the above code into Static Single Assignment Form (SSA).

Assignment 19: Machine-Independent Optimisation

Apply the loop unswitching optimisation to the (original) code above.

Assignment 20: Compilation Schemes

Devise a formal compilation scheme that systematically eliminates all occurences of `while`-loops in the body of a CiviC function definition and replaces them by semantically equivalent control code without `while`-loops.

Assignment due date: March 23, 2018