

TDT4205 Compilers

Exercise 5

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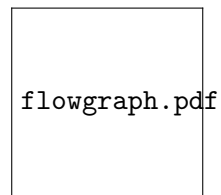
PART 1 Theory

Task 1.1 Data flow analysis

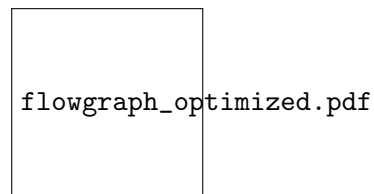
1. Tree-address code

```
1  // for (int x=0; x<n; x++)
2    x = -1
3  F1: x = x + 1
4    ifFalse x < n goto Nd
5
6  // for (int y=0; y<n-1; y++)
7    y = -1
8  F2: y = y + 1
9    m = n - 1
10   ifFalse y < m goto F1
11
12  // if (array[y] > array[y+1])
13    y1 = y + 1
14    ifFalse array[y] > array[y1] goto F2
15  // if-body
16    y2 = y + 1
17    temp = array[y2]
18    y3 = y + 1
19    array[y3] = array[y]
20    array[y] = temp
21  // end of if, back to beginning of inner loop
22  goto F2
23  Nd: // end
```

2.



3.



Task 1.2

1. Dominators

2. Forward- and backwards analysis