LAB 5

Exercise 1

(b) $\sum_{j=0}^{1000} \sum_{k=0}^{N} O(1) = \sum_{j=0}^{1000} N\, O(1) = 1000\, N\, O(1) = O(N)$

(c) $\sum_{j=0}^{N} \sum_{k=0}^{N^2} O(1) = \sum_{j=0}^{N} N^2\, O(1) = N N^2 O(1) = O(N^3)$

(e) $\sum_{j=0}^{N} \sum_{k=j}^{j+7} O(1) = \sum_{j=0}^{N} (j+7-j+1)\, O(1) = N\, 8\, O(1) = O(N)$

(d) This will be an infinite loop (i.e. $0/2 = 0$)

(f) $T(n) = O(1) + T(k-1)$

$T(n) = O(n)$

(g) $T(n) = \sum_{j=0}^{k-1} O(1) + T(k-1)$

$T(n) = O(k) + T(k-1)$

$T(n) = O n^2$

(f) $T(n) = \sum_{j=0}^{k^2-1} O(1) + T(k/2)$

$T(n) = O(k^2) + T(k/2)$