CS3230 Tutorial 6

AY 25/26 Sem 1 — github/omgeta

Q1). (a) $TRI(x, y) = 0$ if $y - x \leq 1$

(b) $TRI(x, y) = \min_{i \in [x+1, y-1]} \{TRI(x, i) + W(x, i, y) + TRI(i, y)\}$

Q2). $T(n) = n + (T(1) + T(n-1)) + (T(2) + T(n-2)) + \cdots + (T(n-1) + T(1))$
$= n + 2T(1) + 2T(2)) + \cdots + 2T(n-1) = n + 2\sum_{i=1}^{n-1} T(i)$
So, $T(n-1) = (n-1) + 2\sum_{i=1}^{n-2} T(i)$

Then, $T(n) - T(n-1) = 1 + 2T(n-1) \implies T(n) = 1 + 3T(n-1) \implies T(n) = \Theta(3^n)$

Q3). (c) There are n^2 subproblems with many overlaps

Q4).