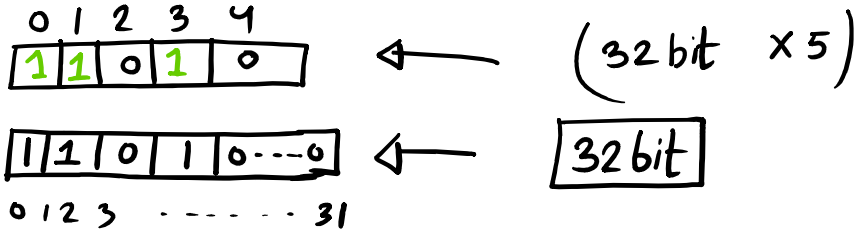
Dynamic Programming: BitmaskDP

Saturday, January 3, 2026 7:43 PM

TSP → N = 5



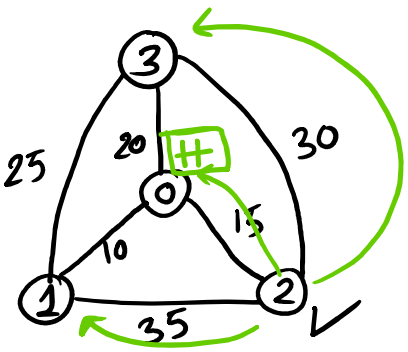
$2^0+2^1+2^3 = 11$

1 → 1
10 → 2
100 → 4
1000 → 8

$2^0+2^1+2^2+2^3+1 = 2^4$

15 → 16

mask = 1 1 1 1 → 15 → 16



① Min Distance

② No Duplicate visits

0 → 1 → 2 → 3

0 → 1 → 3 → 2

0 → 2 → 1 → 3

0 → 2 → 3 → 1

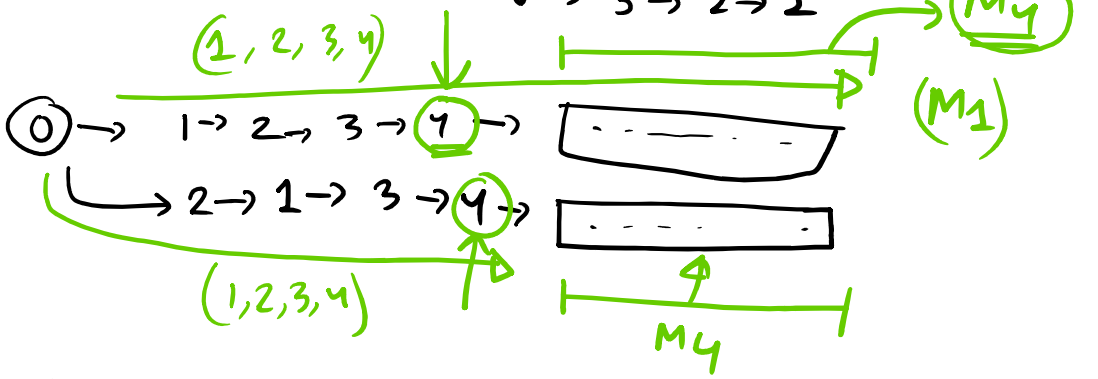
0 → 3 → 1 → 2

0 → 3 → 2 → 1

n! n

mask = 1 0 0 0 → $2^0 = 1$

house = 0



f(currentHouse, mask) = Min Distance to visit all friends

0 1 2 3 4 5 6 7 8 9

(1<<3) & mask → 0 → Not Visited

(1<<1) & mask != 0 → visited

(1 << pos) & mask

(1 << pos) | mask