Subject: lecture3 notes 21393
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Breaking up a stick

Suppose we have a stick of length L. We want to break it into pieces.

Values \{i,j\} is \text{length of \text{interval \{i,j\}}.

f(n) = \text{minimum number of cuts needed to} \text{break stick into} \text{intervals of length 1}

\text{Function} \text{finds} \text{minimum number of cuts} \text{needed to break stick into} \text{intervals of length 1}.
Traveling Salesman Problem (TSP)

Matrix of costs: $C[i,j]$

TSP: Start at 0 and visit every city exactly once at minimum cost.

A Tour is a permutation $\pi$ of $1, n$

$C[\pi] = C[1, \pi(1)] + C[\pi(1), \pi(2)] + \cdots + C[\pi(n-1), n]$

# of Tours: $(n-1)!$

Dynamic Programming Solves $TSP = O(n^2 \cdot 2^n)$
Suppose I have a minimum cost of a flow through $f(x, y)$.

**Best Flow:**

- $f(x, y) = \text{cost of }$ for all $S \subseteq X$.
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