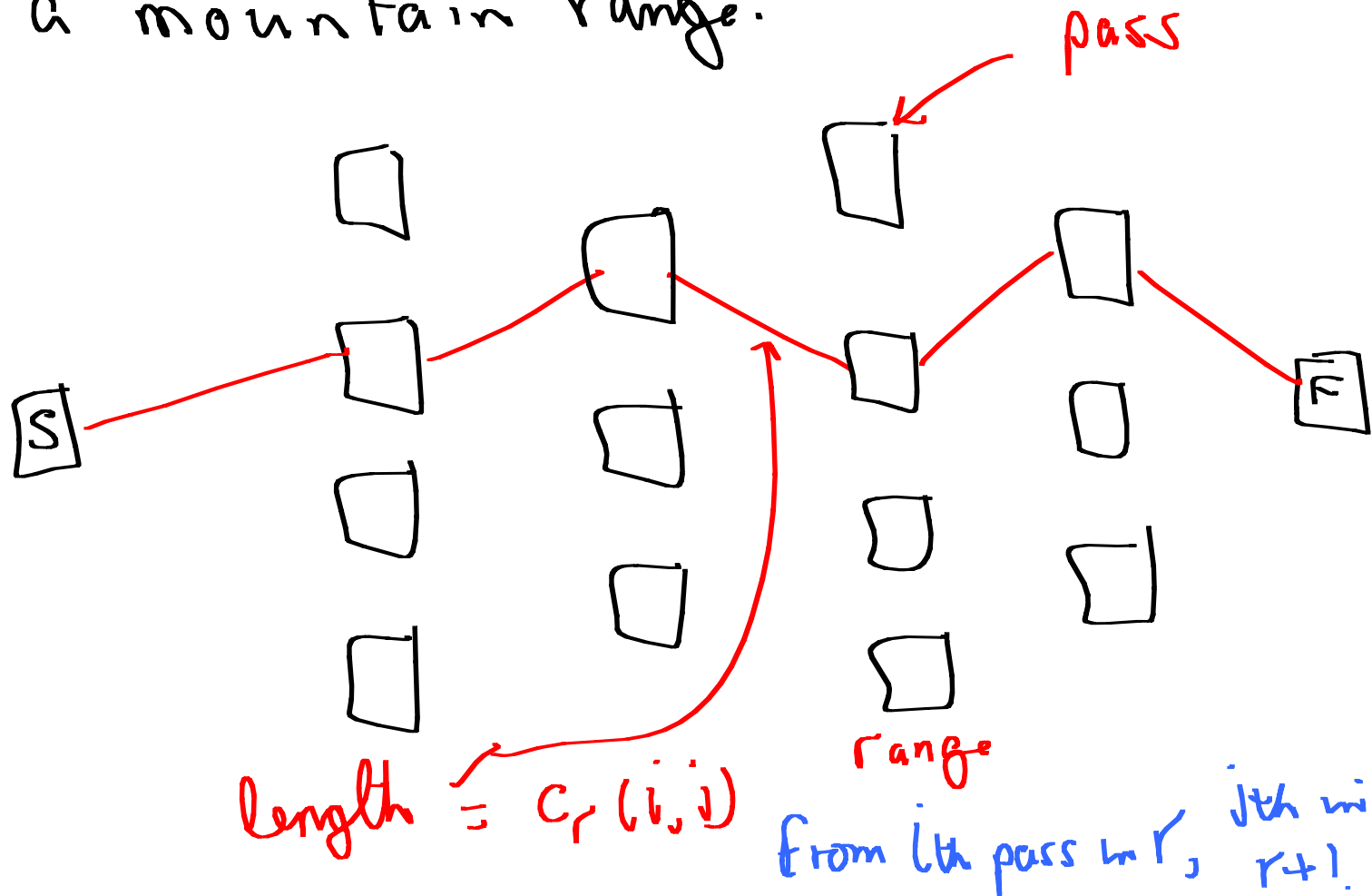


Dynamic Programming

Find a shortest path through a mountain range.

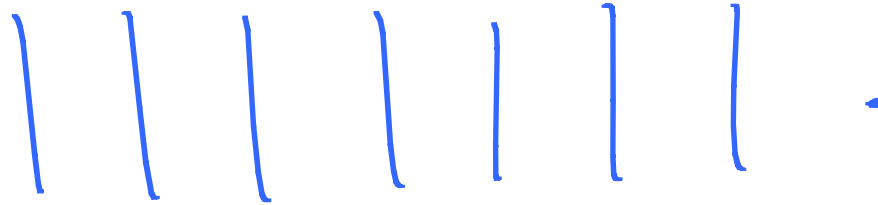


Problem: find shortest path
from S to F

of ranges in n

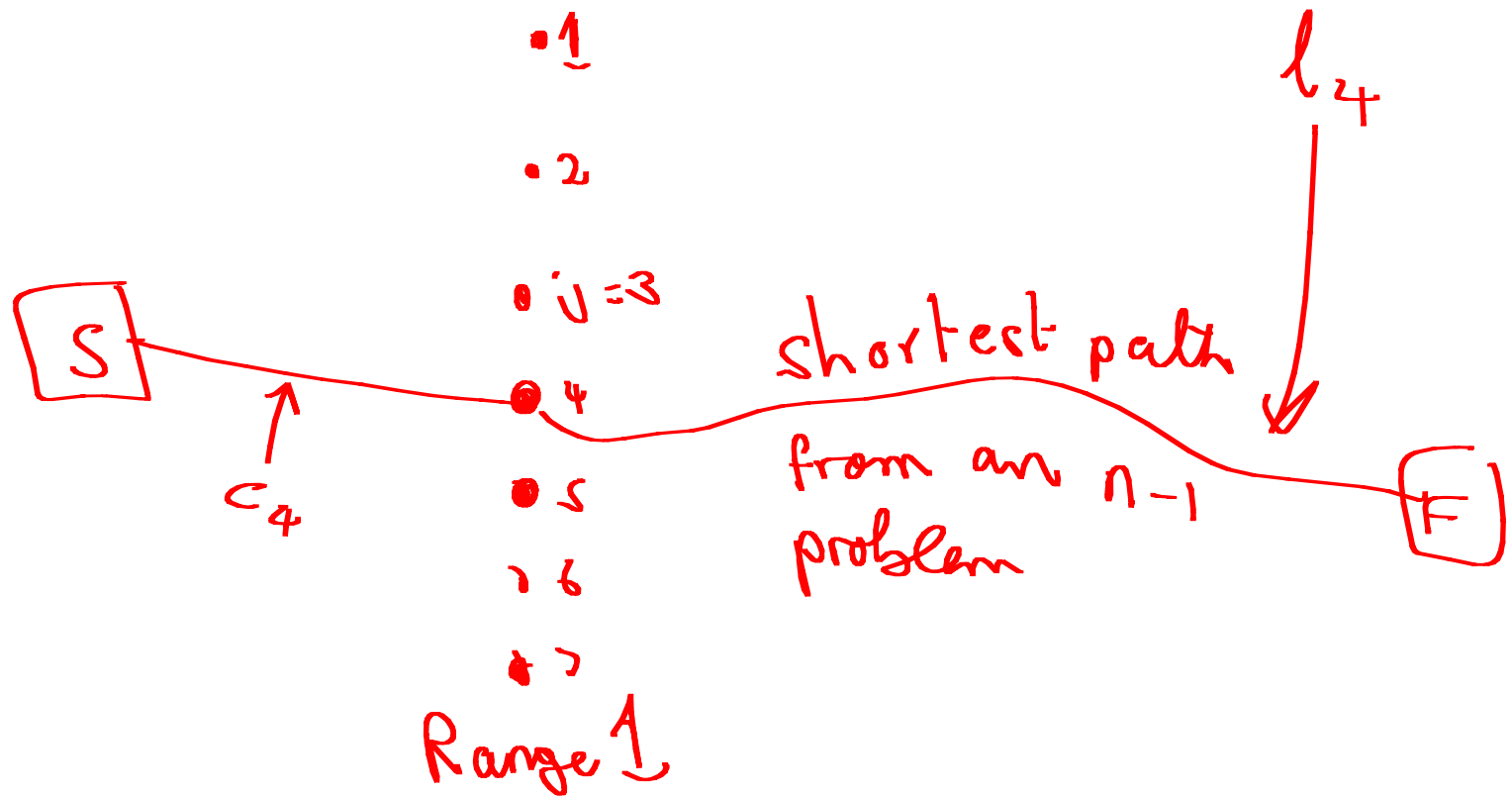
make a
design

x1
x2
x3
x4



Solve problem with n ranges.

Suppose I have a friend (Oracle)
that will answer $n-1$ range problems.
How can I use my friend?



If I go to F via j , best

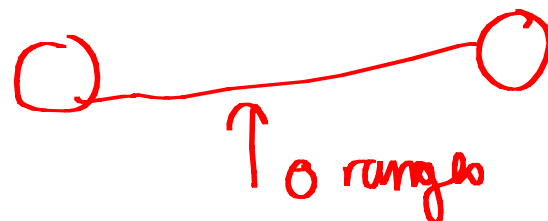
I can do is $c_j + l_j$

Take $\min_j [c_j + l_j]$

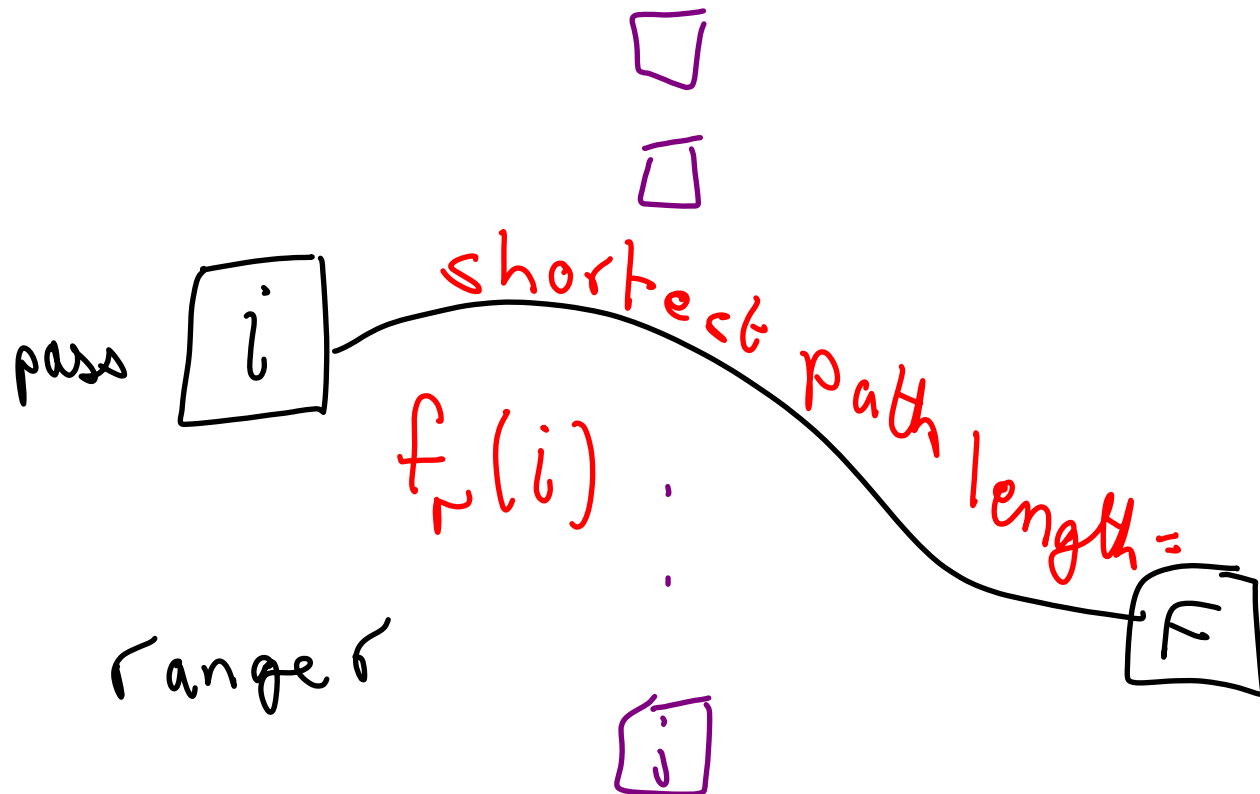
If I can solve "size" $n-1$ problems,
then I can use the answer to
solve size n problems.

To solve size $n-1$, I solve
collection of size $n-2$ and
so on ...

Size 0 problem is trivial



One route.



$$f_r(i) = \min_j \left[c_r(i, j) + f_{r+1}(j) \right]$$

$$f_n(i) = c_n(i, F)$$

I want value of $f_0(S)$