$$0 \quad 1 \quad 2 \quad 3 \sim \quad \sim \quad \sim \sim \quad 5000$$

0
1
2
3
|
|
|
|

rod i

bag0, bag1
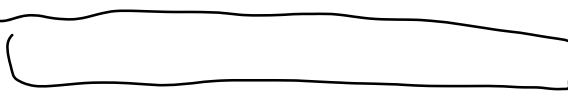
$dp[i][j]$ = maximum length of bag1
when using $0 \sim i$ rod
and bag1 − bag0 = j

Case 1

Case 2

Case 4

$\downarrow$ Some as Case 3

Case 3

rod[i]

$dp[i-1][rod[i]-j]$
$+j$

$dp[i-1][rod[i]-j]$

Thinking process:
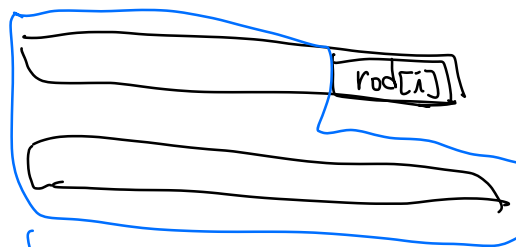
Our goal is find the maximum
of sum s.t.

bag0 :

bag1 :

To achieve this, for each rod,
we want to decide ① put in bag 0
② put in bag 1
③ not used

For ① :
bag0:
bag1:

rod[i]

↳ observe that this must be the

maximum sum (bag1) !

$\Rightarrow$ prompt us to define

$dp[i][d]$

$\Rightarrow$ if we know $dp[i-1][rod[i]]$,

then we know the answer!