**Top Down Approach**:

Initialize the cache with MIN\_INT or MAX\_INT or some other value which does not interfere.

If some index of cache is not equal to this value, then we already the answer to this subproblem and there is no need to recurse further.

**Bottom Up**:

May or May not require default initialization

Passing data from lower recursion to upper recursion call.

**VIMP NOTE:**

Think whether to call recursive call after doing the work or before doing the work .

(Tail Recursion or Head Recursion)

May not even need to fill the cache with some default value in case of top down approach.

Maximum/Minimum: Heap

Maximum/Minimum:

Greedy and DP

In DP problems, also build the solution rather than just finding the value.

In a problem, if we have to find the answer of count, etc then bottom up approach can be helpful.

If we have to print or store something, then top down approach could be a preferable choice.

Optimal substructure

DP:

Can Reduce the 1d cache to 2-3 variables that is O(1) and can reduce the 2d cache to 2 arrays.

Space: Number of elements which are being stored.

Also see the time complexity of the DP formula.

In most cases, it is O(1).