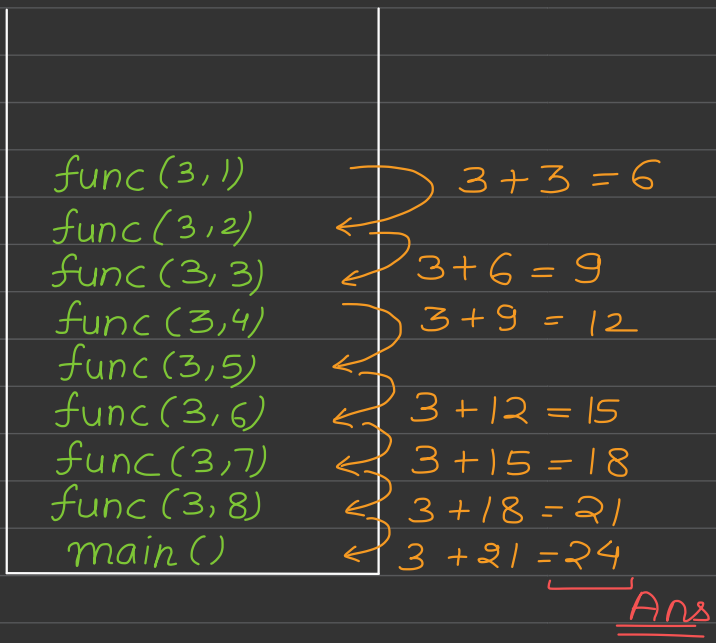
Quiz-7 Detailed Solutions

1. Stack is the data structure used to hold the entries of the function calls. We have already discussed about the function call stack.

2. Base condition is basically the stopping condition. If it is not written, then stack would be filled at some point of time & this is known as stack overflow.

3.



4. Recursion uses more memory as we need to maintain all the entries of the function call.

5. Recursion → Stops when certain condition is met which is same as in loops.

6. Problems without base case can't be solved without recursion as in these problems, we won't be knowing when to stop the recursion & hence stack overflow error would come.

7. Base condition is also known as Stopping condition.

8. Base case ⇒ Stopping condition

9. factorial (n) = $n!$ = $n \times (n-1)!$

factorial (n-1) = $(n-1)!$

factorial (n) = n × factorial (n-1)
Recursive relation of factorial

10. Leads to infinite loops if not implement correctly. Ex → without base case.

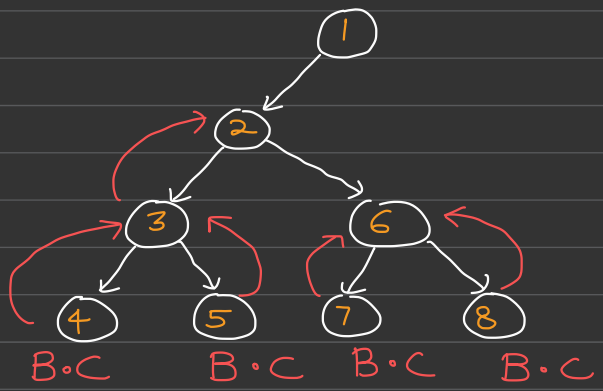
11. Number of recursive calls that can be made depends on the function call stack size of the computer.

12. Backtracking is a special form of recursion in which all the possibilities are explored.

13. We have done question named permutations of string in our class by backtracking.

14. Backtracking solutions have bad time complexity as all the possible solutions are explored.

15. Depth first search



This is how backtracking is implement & this is known as DFS.
↳ already mentioned in notes.

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16. Backtracking approach is used to solve combinatorial problems. ☺ remember it

17. Crossword is an application of backtracking.

18. Backtracking is done when we reach the base case by recreating the original state.

19. In backtracking algorithms, selection is not a step.

20. Pruning ⇒ α-β pruning (in AI) used to reduce the search space.

21. In backtracking, same sub-problem might be visited multiple times which can be solved by storing the answers of the sub problem. (DP concept)