# KAHOOT – QUIZZ – DYNAMIC PROGRAMMING

*Editor: Trương Quốc Bình*

**1. Which of the following is/are property/properties of a dynamic programming problem?**

A. Optimal Structure

B. Overlapping Subproblems

C. Greedy Approach

D. Both Optimal Structure and Overlapping Subproblems

**2. Who developed the Dynamic programming method?**

A. Alan Leman

B. Norman Villard

C. Richard Bellman

D. Esdger Dijkstra

**3. If a problem can be solved by combining optimal solutions to non-overlapping problems, the strategy is called _____**

A. Dynamic Programming

B. Greedy

C. Divide and Conquer

D. Recursion

**4. When a top-down approach of dynamic programming is applied to a problem, it usually _____**

A. Decreases both, the time complexity and the space complexity

B. Decreases the time complexity and increases the space complexity

C. Increases the time complexity and decreases the space complexity

D. Increases both, the time complexity and the space complexity

**5. What is the time complexity and space complexity of function?**

```python
def fib(n):
    table = [0] * (n + 1)
    table[1] = 1
    for i in range(2, n + 1):
        table[i] += table[i - 1] + table[i - 2]
    return table[n]
```

A. O(n) and O(n)

B. O(n2) and O(1)

C. O(logn) and O(1)

D. O(2n) and O(n)

**6. A greedy algorithm can be used to solve all the dynamic programming problems.**

A. True

B. False

**7. The third step in solving a dynamic programming problem is to define value of optimal solution recursively.**

A. True

B. False

**8. Which of the following problems is NOT solved using dynamic programming?**

A. 0/1 knapsack problem

B. Matrix chain multiplication problem

C. Edit distance problem

D. Fractional knapsack problem

**9. Which of the following problems should be solved using dynamic programming?**

A. Mergesort

B. Binary search

C. Longest common subsequence

D. Quicksort

**10. Which of the following statements is wrong?**

I – In dynamic programming, the Output to stage n become the input to stage n+1.

II – Bellman–Ford, 0-1 knapsack, Floyd Warshall algorithm are the dynamic programming-based algorithm.

III – Dynamic programming is faster than a greedy problem.

IV – We use a dynamic programming approach when we need an optimal solution.

A. I and III

B. II and III

C. I, II and III

D. I, III and IV

**11. What will be the Output when the following code is executed?**

```
F = [0] * 50   # array to store fibonacci terms

def fibo_dp(n):
    F[n] = 0
    F[1] = 1

    for i in range(2, n + 1):
        F[i] = F[i - 1] + F[i - 2]
    return F[n]

if __name__ == '__main__':
    print(fibo_dp(49))
```

A. 7778472049

B. 7787742049

C. 7778742409

D. 7778742049