1. **Fibonacci Problem – Plant Branch Growth**
   A rare plant grows following a Fibonacci-like pattern. In the first cycle, it has 1 branch.
   In the second cycle, it grows 1 more. From the third cycle onward, the number of new
   branches equals the total number of branches in the previous two cycles.

Task:

How many branches will the plant have after 12 growth cycles?

Hint:

Model this as a Fibonacci sequence:

Cycle 1 → 1 branch

Cycle 2 → 1 branch

Cycle 3 → 2 branches

Cycle 4 → 3 branches

...

Find the total number of branches at cycle 12.

2. **LIS Problem – Student Score Trends**
   A student's test scores over a semester are recorded as:
   [72, 74, 69, 78, 80, 81, 75, 85, 88, 70, 92]

Task:

Determine the longest consecutive sequence of scores where each score is higher than the last
one (i.e., a strictly increasing subsequence).
What is the length of this increasing trend?

3. **Knapsack Problem – Server CPU Allocation**

Problem:

You manage a server with 30 CPU units available. You have a list of 7 tasks, each requiring a
certain number of CPU units and offering a reward in user satisfaction score:

Task	CPU Time	Reward
A	5	30
B	10	40
C	3	20
D	8	50
E	7	45
F	4	25
G	6	35

Task:

Which combination of tasks should you select to maximize the total reward without exceeding the 30 CPU unit limit?