DYNAMMIC PROGRAMMING:

PROBLEM 1:

PLAYING WITH NUMBERS:

AIM:

Ram and Sita are playing with numbers by giving puzzles to each other. Now it was Ram term, so he gave Sita a positive integer ‘n’ and two numbers 1 and 3. He asked her to find the possible ways by which the number n can be represented using 1 and 3.Write any efficient algorithm to find the possible ways.

CODE:

```
#include <stdio.h>

long long countWays(int n) {
    long long dp[n + 1];
    dp[0] = 1;
    if (n >= 1) dp[1] = 1;
    if (n >= 2) dp[2] = 1;
    if (n >= 3) dp[3] = 2;
    for (int i = 4; i <= n; i++) {
        dp[i] = dp[i - 1] + dp[i - 3];
    }
    return dp[n];
}

int main() {
    int n;
    scanf("%d", &n);
```

```
    printf("%lld\n",countWays(n));
    return 0;
}
```

INPUT AND OUTPUT:

	Input	Expected	Got	
✔	6	6	6	✔
✔	25	8641	8641	✔
✔	100	24382819596721629	24382819596721629	✔