2585. Number of Ways to Earn Points

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User Accepted:	2343
User Tried:	3130
Total Accepted:	2478
Total Submissions:	4710
Difficulty:	Hard

There is a test that has `n` types of questions. You are given an integer `target` and a **0-indexed** 2D integer array `types` where `types[i] = [count_i, marks_i]` indicates that there are `count_i` questions of the i^{th} type, and each one of them is worth `marks_i` points.

Return *the number of ways you can earn* ***exactly*** `target` *points in the exam*. Since the answer may be too large, return it **modulo** $10^9 + 7$.

Note that questions of the same type are indistinguishable.

- For example, if there are `3` questions of the same type, then solving the 1^{st} and 2^{nd} questions is the same as solving the 1^{st} and 3^{rd} questions, or the 2^{nd} and 3^{rd} questions.

Example 1:

```
Input: target = 6, types = [[6,1],[3,2],[2,3]]
Output: 7
Explanation: You can earn 6 points in one of the seven ways:
- Solve 6 questions of the 0th type: 1 + 1 + 1 + 1 + 1 + 1 = 6
- Solve 4 questions of the 0th type and 1 question of the 1st type: 1 + 1 + 1 + 1 + 2 = 6
- Solve 2 questions of the 0th type and 2 questions of the 1st type: 1 + 1 + 2 + 2 = 6
- Solve 3 questions of the 0th type and 1 question of the 2nd type: 1 + 1 + 1 + 3 = 6
- Solve 1 question of the 0th type, 1 question of the 1st type and 1 question of the 2nd type: 1 + 2 + 3 = 6
- Solve 3 questions of the 1st type: 2 + 2 + 2 = 6
- Solve 2 questions of the 2nd type: 3 + 3 = 6
```

Example 2:

```
Input: target = 5, types = [[50,1],[50,2],[50,5]]
Output: 4
Explanation: You can earn 5 points in one of the four ways:
- Solve 5 questions of the 0th type: 1 + 1 + 1 + 1 + 1 = 5
- Solve 3 questions of the 0th type and 1 question of the 1st type: 1 + 1 + 1 + 2 = 5
- Solve 1 questions of the 0th type and 2 questions of the 1st type: 1 + 2 + 2 = 5
- Solve 1 question of the 2nd type: 5
```

Example 3:

```
Input: target = 18, types = [[6,1],[3,2],[2,3]]
Output: 1
Explanation: You can only earn 18 points by answering all questions.
```

Constraints:

- `1 <= target <= 1000`
- `n == types.length`
- `1 <= n <= 50`
- `types[i].length == 2`
- `1 <= count_i, marks_i <= 50`

Discuss (https://leetcode.com/problems/number-of-ways-to-earn-points/discuss)

JavaScript

```
1  const mod = 1e9 + 7;
2  const waysToReachTarget = (target, types) => {
3      let dp = Array(target + 1).fill(0);
4      dp[0] = 1;
5      for (const [cnt, x] of types) {
6          let ndp = Array(target + 1).fill(0);
```

```
        for (let use = 0; use <= cnt; use++) {
            for (let i = 0; i + use * x <= target; i++) {
                ndp[i + use * x] += dp[i];
                ndp[i + use * x] %= mod;
            }
        }
        dp = ndp;
    }
    return dp[target];
};
```

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