

## 948. Bag of Tokens

You are given initial values:

power: any

score: 0

Bag of tokens

Maximize the total score by strategically playing these tokens.

For each move you can play an unused token in the following ways:

- If current token  $\geq$  power,  $\text{power} -= \text{tokens}[i]$  and  $\text{score} += 1$
- If  $\text{score} \geq 1$ ,  $\text{power} += \text{tokens}[i]$ ,  $\text{score} -= 1$

Return maximum score possible using any # of tokens.

Ex1 Input: tokens: [100]

power: 50

Output: 0

Reason: both conditionals are wrong.

Goal:

If  $\text{power} \geq \text{token}$ , find the smallest token and subtract to power  $+\text{score}$

If  $\text{score} \geq 1$  find the largest token and add to power  $-\text{score}$

If we can maximize power when subtracting score, we maximize chance of having multiple min values to increase score.

```

int maxScore( std::vector<int> tokens , int power) {
    int score{};
    std::sort( tokens.begin(), tokens.end());
    int min  {}; int maxScore{};
    int max  ( tokens.size() - 1 );
    for( int i=0; i < tokens.size(); ++i) { while (min <= max)
        if ( tokens[min] < power) {
            power -= tokens[min];
            ++score; ++min;
            maxScore = std::max( maxScore, score);
        }
        else if ( score >= 1) {
            power += tokens[max];
            --score; --max;
        }
        else break;
    }

    return maxScore;
}

```