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| **Arithmetic Slices in C++** | |
| #include <iostream>  #include <vector>  using namespace std;  int solution(const vector<int>& arr) {      vector<int> dp(arr.size(), 0);      //vector<int> dp;      int ans = 0;      for (size\_t i = 2; i < arr.size(); i++) {          if (arr[i] - arr[i - 1] == arr[i - 1] - arr[i - 2]) {              dp[i] = dp[i - 1] + 1;              ans += dp[i];          }      }      return ans;  }  int main() {      vector<int> arr = {2, 5, 9, 12, 15, 18, 22, 26, 30, 34, 36, 38, 40, 41};      cout << solution(arr) << endl;      return 0;  } | **Given Input**  vector<int> arr = {2, 5, 9, 12, 15, 18, 22, 26, 30, 34, 36, 38, 40, 41};   * **Size of array**: n = 14   **Step-by-Step Dry Run**  We'll track how dp[i] and ans evolve.  **Initialization**   | **Index (i)** | **arr[i]** | **dp[i]** | **ans (Sum of dp[i])** | | --- | --- | --- | --- | | 0 | 2 | - | - | | 1 | 5 | - | - |   **Loop Execution (i = 2 to i = 13)**   | **i** | **arr[i]** | **Check Condition arr[i] - arr[i-1] == arr[i-1] - arr[i-2]** | **dp[i] Calculation** | **ans Update** | | --- | --- | --- | --- | --- | | 2 | 9 | (9 - 5) == (5 - 2) → 4 == 3 ❌ | dp[2] = 0 | ans = 0 | | 3 | 12 | (12 - 9) == (9 - 5) → 3 == 4 ❌ | dp[3] = 0 | ans = 0 | | 4 | 15 | (15 - 12) == (12 - 9) → 3 == 3 ✅ | dp[4] = dp[3] + 1 = 1 | ans = 1 | | 5 | 18 | (18 - 15) == (15 - 12) → 3 == 3 ✅ | dp[5] = dp[4] + 1 = 2 | ans = 3 | | 6 | 22 | (22 - 18) == (18 - 15) → 4 == 3 ❌ | dp[6] = 0 | ans = 3 | | 7 | 26 | (26 - 22) == (22 - 18) → 4 == 4 ✅ | dp[7] = dp[6] + 1 = 1 | ans = 4 | | 8 | 30 | (30 - 26) == (26 - 22) → 4 == 4 ✅ | dp[8] = dp[7] + 1 = 2 | ans = 6 | | 9 | 34 | (34 - 30) == (30 - 26) → 4 == 4 ✅ | dp[9] = dp[8] + 1 = 3 | ans = 9 | | 10 | 36 | (36 - 34) == (34 - 30) → 2 == 4 ❌ | dp[10] = 0 | ans = 9 | | 11 | 38 | (38 - 36) == (36 - 34) → 2 == 2 ✅ | dp[11] = dp[10] + 1 = 1 | ans = 10 | | 12 | 40 | (40 - 38) == (38 - 36) → 2 == 2 ✅ | dp[12] = dp[11] + 1 = 2 | ans = 12 | | 13 | 41 | (41 - 40) == (40 - 38) → 1 == 2 ❌ | dp[13] = 0 | ans = 12 |   **Final dp Table**   | **Index (i)** | **arr[i]** | **dp[i]** | **ans (Sum of dp[i])** | | --- | --- | --- | --- | | 0 | 2 | - | - | | 1 | 5 | - | - | | 2 | 9 | 0 | 0 | | 3 | 12 | 0 | 0 | | 4 | 15 | 1 | 1 | | 5 | 18 | 2 | 3 | | 6 | 22 | 0 | 3 | | 7 | 26 | 1 | 4 | | 8 | 30 | 2 | 6 | | 9 | 34 | 3 | 9 | | 10 | 36 | 0 | 9 | | 11 | 38 | 1 | 10 | | 12 | 40 | 2 | 12 | | 13 | 41 | 0 | 12 |   **Final Output**  12 |
| Output:- 12 | |