*Lab Exercise 4*

#include <iostream>

#include <vector>

#include <climits>

using namespace std;

void readMedals(vector<vector<int>> &medals, int countries, int categories) {

cout << "Enter the medal counts (Gold, Silver, Bronze) for each country:" << endl;

for (int i = 0; i < countries; i++) {

cout << "Country " << i + 1 << ":" << endl;

for (int j = 0; j < categories; j++) {

cin >> medals[i][j];

}

}

}

int totalMedalsForCountry(const vector<vector<int>> &medals, int countryIndex) {

int total = 0;

for (int i = 0; i < medals[0].size(); i++) {

total += medals[countryIndex][i];

}

return total;

}

pair<int, int> findLargestMedals(const vector<vector<int>> &medals) {

int largest = 0, country = -1;

for (int i = 0; i < medals.size(); i++) {

int total = 0;

for (int j = 0; j < medals[i].size(); j++) {

total += medals[i][j];

}

if (total > largest) {

largest = total;

country = i;

}

}

return {country, largest};

}

pair<int, int> findSmallestMedals(const vector<vector<int>> &medals) {

int smallest = INT\_MAX, country = -1;

for (int i = 0; i < medals.size(); i++) {

int total = 0;

for (int j = 0; j < medals[i].size(); j++) {

total += medals[i][j];

}

if (total < smallest) {

smallest = total;

country = i;

}

}

return {country, smallest};

}

pair<int, int> findHighestGold(const vector<vector<int>> &medals) {

int maxGold = 0, country = -1;

for (int i = 0; i < medals.size(); i++) {

if (medals[i][0] > maxGold) {

maxGold = medals[i][0];

country = i;

}

}

return {country, maxGold};

}

int main() {

const int countries = 5, categories = 3;

vector<vector<int>> medals(countries, vector<int>(categories));

cout << "Predefined Medal Data:" << endl;

medals = {

{129, 257, 590}, // Country 1

{120, 279, 394}, // Country 2

{115, 290, 123}, // Country 3

{98, 209, 112}, // Country 4

{130, 300, 450} // Country 5 (added for completeness)

};

cout << "\nTotal medals won by Country 3: " << totalMedalsForCountry(medals, 2) << endl;

auto largest = findLargestMedals(medals);

cout << "Country " << largest.first + 1 << " won the largest number of medals: " << largest.second << endl;

auto smallest = findSmallestMedals(medals);

cout << "Country " << smallest.first + 1 << " won the smallest number of medals: " << smallest.second << endl;

auto highestGold = findHighestGold(medals);

cout << "Country " << highestGold.first + 1 << " won the highest number of gold medals: " << highestGold.second << endl;

return 0;

}

***Sample Output:***

* Predefined Medal Data:
* Total medals won by Country 3: 528
* Country 5 won the largest number of medals: 880
* Country 4 won the smallest number of medals: 419
* Country 5 won the highest number of gold medals: 130