#include <iostream>

#include <iomanip>

#include <vector>

#include <map>

using namespace std;

// Structure to store milk yield data for each cow

struct CowData {

int cowId;

vector<double> yields;

};

int main() {

const int DAYS\_IN\_WEEK = 7;

const double MIN\_DAILY\_YIELD = 12.0;

int numCows;

cout << "Enter the number of cows milked on each day: ";

cin >> numCows;

// Task 1 - Record the yield

vector<CowData> cowRecords(numCows);

for (int i = 0; i < DAYS\_IN\_WEEK; ++i) {

cout << "Day " << i + 1 << ":\n";

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

cout << "Enter identity code for cow " << j + 1 << ": ";

cin >> cowRecords[j].cowId;

cout << "Enter milk yield for cow " << cowRecords[j].cowId << " (in liters): ";

double yield;

cin >> yield;

cowRecords[j].yields.push\_back(yield);

}

}

// Task 2 - Calculate the statistics

double totalVolume = 0.0;

int totalCows = 0;

for (const auto& cow : cowRecords) {

for (double yield : cow.yields) {

totalVolume += yield;

++totalCows;

}

}

double averageYield = totalVolume / totalCows;

cout << fixed << setprecision(1);

cout << "\nWeekly Summary:\n";

cout << "Total weekly volume of milk: " << round(totalVolume) << " liters\n";

cout << "Average yield per cow in a week: " << round(averageYield) << " liters\n";

// Task 3 - Identify the most productive cow and cows with low volume of milk

map<int, double> cowTotalYield;

map<int, int> lowYieldDays;

for (const auto& cow : cowRecords) {

double cowTotal = 0.0;

int lowYieldCount = 0;

for (double yield : cow.yields) {

cowTotal += yield;

if (yield < MIN\_DAILY\_YIELD) {

++lowYieldCount;

}

}

cowTotalYield[cow.cowId] = cowTotal;

lowYieldDays[cow.cowId] = lowYieldCount;

}

// Find the most productive cow

int mostProductiveCowId = -1;

double maxTotalYield = 0.0;

for (const auto& pair : cowTotalYield) {

if (pair.second > maxTotalYield) {

mostProductiveCowId = pair.first;

maxTotalYield = pair.second;

}

}

// Output results

cout << "\nMost productive cow this week: Cow " << mostProductiveCowId << " with " << round(maxTotalYield) << " liters\n";

cout << "Cows with less than 12 liters for four or more days this week:\n";

for (const auto& pair : lowYieldDays) {

if (pair.second >= 4) {

cout << "Cow " << pair.first << endl;

}

}

return 0;

}