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# PROIECT DE PROGRAME Nr. 1. INSTRUCȚIUNI ITERATIVE ȘI ALTERNATIVE

# Tema: Populațiile (suprafețele, PIB-ul) țărilor

## I. Formularea problemei

De efectuat următoarele operaţii:

1. De determinat cea mai mică și cea mai mare populatie.
2. De determinat decalajul (diferența între valorile minimă și maximă).
3. De determinat media populatiilor.
4. De determinat numărul de orase cu populatia egala, mai mica sau mai mare ca o valoare introdusa.
5. De efectuat o clasificare a populatiilor in grupe.

## II. Studiu preliminar

Clasificarea pe grupe este următoarea:

1. Giant: Orasele cu populatia mai mare de 20 mii (milioane).
2. Middle: Orasele cu populatia intre 10 mii (milioane) si 20 de mii (milioane).
3. Small: Oreasele cu populatia mai mica decat 10 mii (miloane).

Numărul de valori *n* (1 ≤ *n* ≤ 20) şi însăși valorile, care semnifică numarul de orase. Datele se citesc de la tastatură.

## III. Programul

#include <iostream>

using namespace std;

int minim = 999, maxim = 0, gap;

float average;

int smaller = 0, same = 0, bigger = 0;

int giant = 0, middle = 0, small = 0;

int population, countries, compareNumber;

int main() {

cout << "Enter number of countries: ";

cin >> countries;

cout << "Enter number to compare countries' population: ";

cin >> compareNumber;

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

do {

cout << "Enter population " << i + 1 << " : ";

cin >> population;

} while (population <= 0);

average += population;

if (population < minim) minim = population;

if (population > maxim) maxim = population;

if (population > compareNumber) bigger++;

else if (population < compareNumber) smaller++;

else same++;

if (population > 20) giant++;

else if (population > 10 && population < 20) middle++;

else small++;

}

average /= countries;

gap = maxim - minim;

cout << "Country with max population has " << maxim << " million citizens \n";

cout << "Country with min population has " << minim << " million citizens \n";

cout << "Gap between max and min population is: " << gap << "\n";

cout << "Average population is: " << average << "\n";

cout << "Countries with bigger population than introduced number: " << bigger << "\n";

cout << "Countries with same population than introduced number: " << same << "\n";

cout << "Countries with smaller population than introduced number: " << smaller << "\n";

cout << "Giant countries: " << giant << "\n";

cout << "Middle countries: " << middle << "\n";

cout << "Small countries: " << small << "\n";

}

## IV. Rezultatele sugestive

Enter number of countries: 10

Enter number to compare countries' populations: 9

Enter population of the 1 country: 10

Enter population of the 2 country: 14

Enter population of the 3 country: 7

Enter population of the 4 country: 9

Enter population of the 5 country: 15

Enter population of the 6 country: 11

Enter population of the 7 country: 8

Enter population of the 8 country: 6

Enter population of the 9 country: 9

Enter population of the 10 country: 10

Country with max population has 15 million citizens

Country with min population has 6 million citizens

Countries with bigger population than introduced number: 5

Countries with same population than introduced number: 2

Countries with smaller population than introduced number: 3

Giant countries: 0

Middle countries: 3

Small countries: 7

**V. Concluzii**

In timpul efectuarii acestui proiect am utilizat structuri lineare, alternative si iterative.

La fel, am aflat unele detalii ale limbajului C++. De exemplu: folosirea bibliotecilor care permit efectuarea unor manipulari specifice.