**Министерство Образования и Просвещения Республики Молдова**

**Бельцкий Государственный Университет им. ,,Алеко Руссо”**

**Proect**

**Tema: ELEMENTE DIN COMBINATORICA.**

**Группа: IS11Z**

**Подготовил:Порческу Д.**

**Бельцы, 2020**

## I. Formularea problemei

De efectuat următoarele operații:

1. Factorialul;
2. Combinări cu, sau fără repetiții;
3. Permutări cu, sau fără repetiții;
4. Aranjări cu, sau fără repetiții.

## II. Programul

#include <iostream>

#include <cstdio>

#include <cmath>

using namespace std;

long unsigned Factorial(int n, int t = 1);

long unsigned Combinari(int n, int m);

long unsigned Aranjamente(int n, int m);

long unsigned AranjamenteRepetitii(int n, int m);

//long unsigned FactorialRecursiv(int n);

int main()

{

int nr, m;

//textcolor(1);

cout << "Elemente din combinatorica!" << endl;

cout << " n = "; cin >> nr;

cout << " m = "; cin >> m;

cout << nr << "! = " << Factorial(nr);

//cout << nr << "! = " << FactorialRecursiv(nr);

cout << "\n Combinari din " << nr << " cite " << m << " = " << Combinari(nr, m);

cout << "\n Aranjamente din " << nr << " cite " << m << " = " << Aranjamente(nr, m);

cout << "\n Aranjamente (rep) din " << nr << " cite " << m << " = " << AranjamenteRepetitii(nr, m);

cout << "\n floor " << floor(pow(nr, m));

return 0;

}

long unsigned Factorial(int n, int t)

{

int i;

long unsigned fact = 1;

for(i=t; i<=n; i++)

fact \*= i;

return fact;

}

long unsigned FactorialRecursiv(int n)

{

int i;

long unsigned fact = 1;

for(i=1; i<=n; i++)

fact \*= i;

return fact;

}

long unsigned Combinari(int n, int m)

{

int t = n - m;

t = (t>m)?t:m;

return Factorial(n, t+1)/(Factorial(n-t));

}

long unsigned Aranjamente(int n, int m)

{

return Factorial(n, n-m+1);

}

long unsigned AranjamenteRepetitii(int n, int m)

{

return ceil(pow(n, m));

}

## III. Rezultatele și analiza lor

