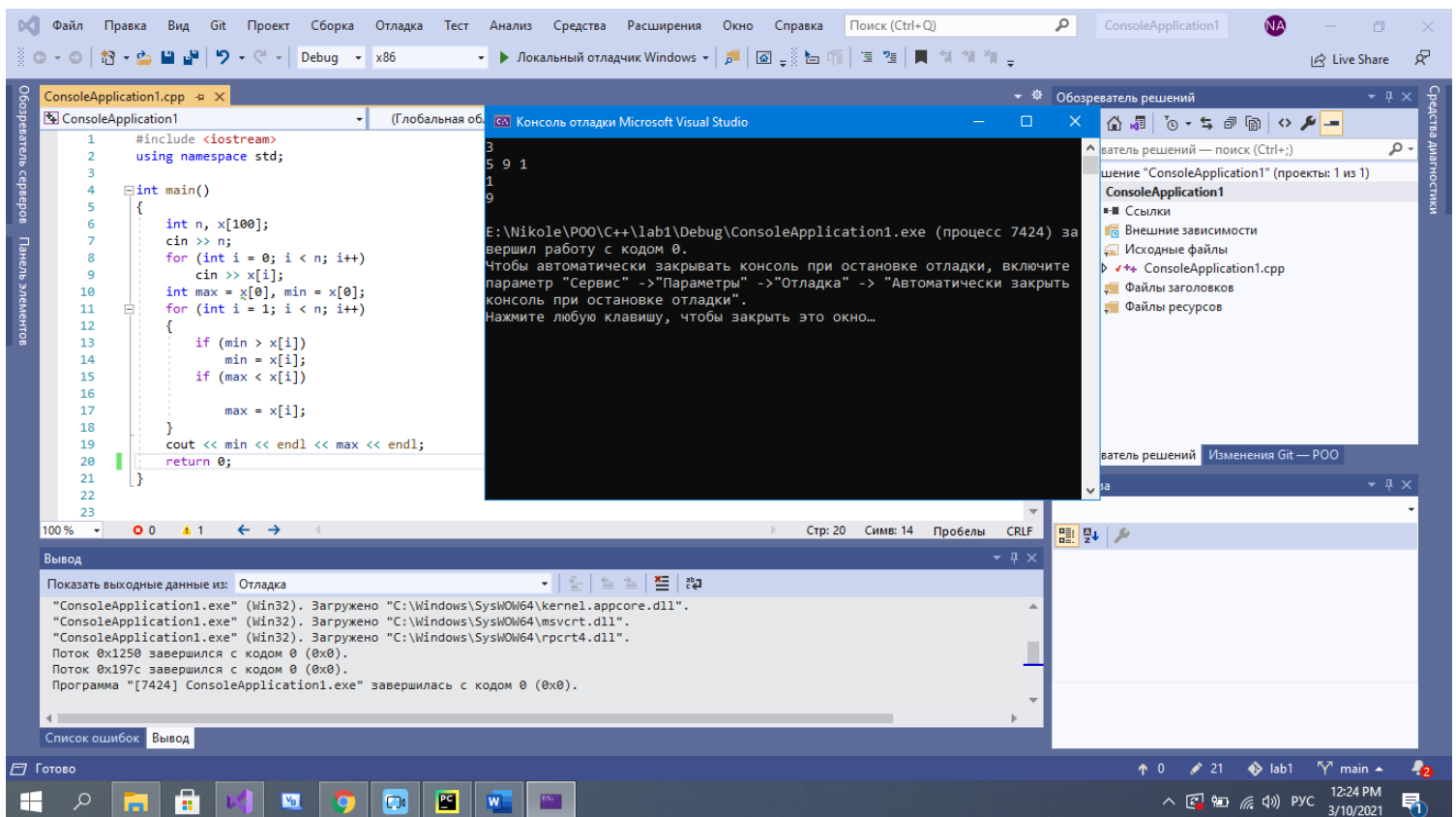


# Laborator 1

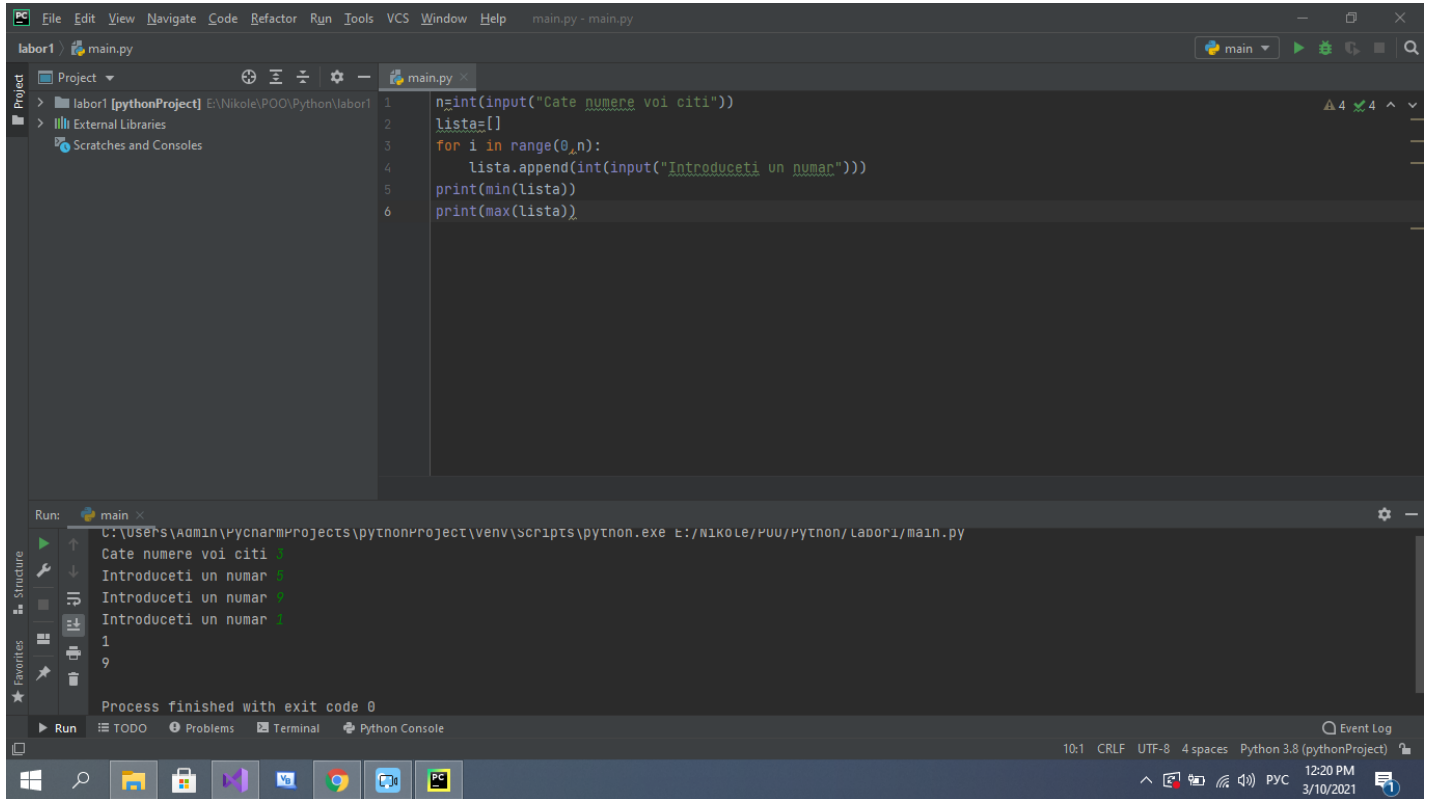
1. Primul pas a fost instalarea aplicațiilor de lucru Visual Studio și Pycharm (printscreens-ul afișează o parte din aplicațiile instalate pe laptop din Panel Control) .

Microsoft Visual Studio 2010 Express Prerequisites x6...	Microsoft Corporation	3/1/2021	4.06 MB	10.0.30319
Microsoft Visual Studio Installer	Microsoft Corporation	2/22/2021		2.8.3077.1211
Microsoft XNA Framework Redistributable 4.0 Refresh	Microsoft Corporation	2/15/2021	10.5 MB	4.0.30901.0
Movavi Video Editor Plus 2021	Movavi	2/15/2021	263 MB	21.1.0
OEM Application Profile	Advanced Micro Devices, Inc.	2/15/2021	9.00 KB	1.00.0000
OpenAL		2/15/2021		
PyCharm Community Edition 2020.3.3	JetBrains s.r.o.	3/2/2021		203.7148.72
Python 3.8.6 (64-bit)	Python Software Foundation	3/2/2021	101 MB	3.8.6150.0
Python Launcher	Python Software Foundation	3/2/2021	1.78 MB	3.8.7205.0
StartIsBack++	startisback.com	2/15/2021		2.9.8
Telegram Desktop version 2.6.1	Telegram FZ-LLC	3/1/2021	77.3 MB	2.6.1
UltraUXThemePatcher	Manuel Hoefs (Zottel)	2/15/2021		4.1.1.0
Visual Studio 2010 Tools for SQL Server Compact 3.5 S...	Microsoft Corporation	3/1/2021	10.7 MB	4.0.8080.0
Visual Studio Community 2019	Microsoft Corporation	2/22/2021		16.8.31005.135
Vulkan Run Time Libraries 1.0.37.0	LunarG, Inc.	2/15/2021	1.66 MB	1.0.37.0
Windows SDK AddOn	Microsoft Corporation	2/22/2021	152 KB	10.1.0.0

2. Verificarea codului dat ca exemplu la curs în C++



### 3. Verificarea codului dat ca exemplu la curs în limbaj python.



The screenshot shows an IDE with a Python file named `main.py`. The code defines a function `n` that takes an input `n` and returns a list `lista` containing the first `n` natural numbers. The function is then called with `n=10` and the result is printed.

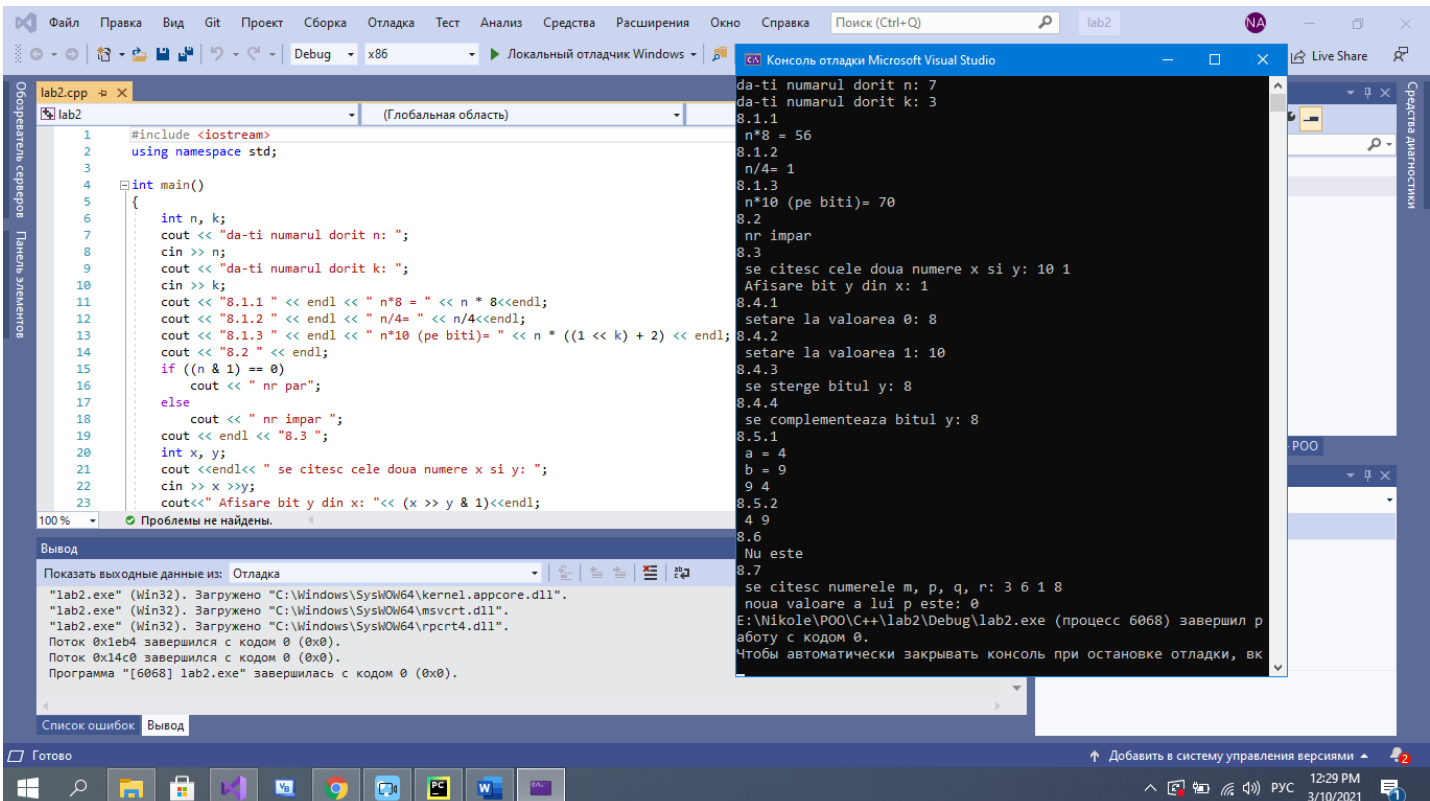
```
1 n=int(input("Cate numere voi citi"))
2 lista=[]
3 for i in range(0,n):
4     lista.append(int(input("Introduceti un numar")))
5 print(min(lista))
6 print(max(lista))
```

The Run window shows the execution of the program. The input is 10, and the output is 0 and 9.

```
Run: main
C:\Users\ADMIN\PycharmProjects\pythonProject\venv\Scripts\python.exe E:\Nikole\POO\Python\labor1\main.py
Cate numere voi citi 10
Introduceti un numar 0
Introduceti un numar 1
Introduceti un numar 2
Introduceti un numar 3
Introduceti un numar 4
Introduceti un numar 5
Introduceti un numar 6
Introduceti un numar 7
Introduceti un numar 8
Introduceti un numar 9
Process finished with exit code 0
```

## Laborator 2

### 1. Rezolvarea problemelor propuse în C++



The screenshot shows Visual Studio with a C++ file named `lab2.cpp`. The code implements a program that calculates the sum of the first `n` natural numbers and the sum of the first `k` natural numbers. The program also calculates the sum of the first `n` natural numbers and the sum of the first `k` natural numbers.

```
1 #include <iostream>
2 using namespace std;
3
4 int main()
5 {
6     int n, k;
7     cout << "da-ti numarul dorit n: ";
8     cin >> n;
9     cout << "da-ti numarul dorit k: ";
10    cin >> k;
11    cout << "8.1.1 " << endl << "n*8 = " << n * 8 << endl;
12    cout << "8.1.2 " << endl << "n/4 = " << n/4 << endl;
13    cout << "8.1.3 " << endl << "n*10 (pe biti) = " << n * ((1 << k) + 2) << endl;
14    cout << "8.2 " << endl;
15    if ((n & 1) == 0)
16        cout << "nr par";
17    else
18        cout << "nr impar ";
19    cout << endl << "8.3 ";
20    int x, y;
21    cout << endl << "se citesc cele doua numere x si y: ";
22    cin >> x >> y;
23    cout << "Afisare bit y din x: " << (x >> y & 1) << endl;
```

The Run window shows the execution of the program. The input is 10 and 10, and the output is 80 and 10.

```
da-ti numarul dorit n: 10
da-ti numarul dorit k: 10
8.1.1
n*8 = 80
8.1.2
n/4 = 2.5
8.1.3
n*10 (pe biti) = 100
8.2
nr impar
8.3
se citesc cele doua numere x si y: 10 10
Afisare bit y din x: 1
8.4.1
setare la valoarea 0: 8
8.4.2
setare la valoarea 1: 10
8.4.3
se sterge bitul y: 8
8.4.4
se completeaza bitul y: 8
8.5.1
a = 4
b = 9
9 4
8.5.2
4 9
8.6
Nu este
8.7
se citesc numerele m, p, q, r: 3 6 1 8
noua valoare a lui p este: 0
E:\Nikole\POO\C++\lab2\Debug\lab2.exe (proces 6068) a terminat cu codul de eroare 0.
Pentru a evita inchiderea consolei la terminarea programului, apasati orice tasta.
```

## Codul în C++

```
#include <iostream>
using namespace std;

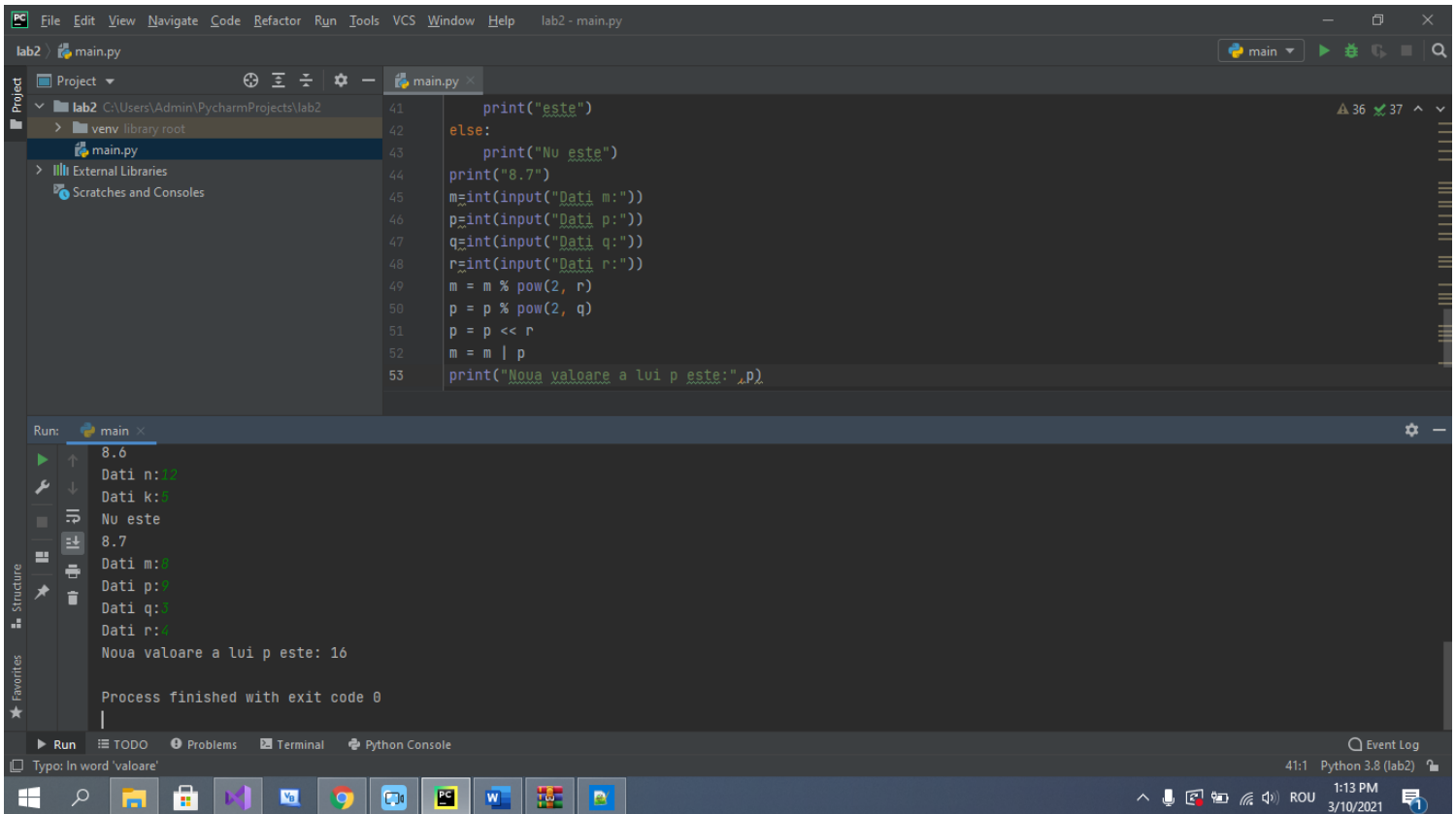
int main()
{
    int n, k;
    cout << "da-ti numarul dorit n: ";
    cin >> n;
    cout << "da-ti numarul dorit k: ";
    cin >> k;
    cout << "8.1.1 " << endl << " n*8 = " << n * 8<<endl;
    cout << "8.1.2 " << endl << " n/4= " << n/4<<endl;
    cout << "8.1.3 " << endl << " n*10 (pe biti)= " << n * ((1 << k) + 2) << endl;
    cout << "8.2 " << endl;
    if ((n & 1) == 0)
        cout << " nr par";
    else
        cout << " nr impar ";
    cout << endl << "8.3 ";
    int x, y;
    cout <<endl<< " se citesc cele doua numere x si y: ";
    cin >> x >> y;
    cout<<" Afisare bit y din x: "<< (x >> y & 1)<<endl;
    cout << "8.4.1" << endl;
    cout << " setare la valoarea 0: " << (x & (255 ^ (1 << y))) << endl;
    cout << "8.4.2" << endl;
    cout << " setare la valoarea 1: " << (x | (1 << y)) << endl;
    cout << "8.4.3"<<endl;
    cout << " se sterge bitul y: " << (x & ~(1 << y));
    cout << endl << "8.4.4" << endl;
    cout << " se completeaza bitul y: " << (x ^ 1 << y)<<endl;
    cout << "8.5.1 "<<endl;
    int a, b;
    cout << " a = ";
    cin >> a;
    cout << " b = ";
    cin>> b;
    a = a + b;
    b = a - b;
    a = a - b;
    cout <<" "<< a << " " << b<<endl;
    cout << "8.5.2" << endl;
    a = a ^ b;
    b = a ^ b;
    a = a ^ b;
    cout <<" "<< a << " " << b << endl;
    cout << "8.6"<<endl;
    if (n == (1 << k))
        cout << " Este ";
    else
        cout << " Nu este ";
    cout << endl << "8.7" << endl;
    int m, p, q, r;
    cout << " se citesc numerele m, p, q, r: ";
    cin >> m >> p >> q >> r;
    m = m % (int)pow(2, r);
    p = p % (int)pow(2, q);
    p = p << r;
```

```

    m = m | p;
    cout << " noua valoare a lui p este: " << p;
}

```

## 2. Varianta Python



### Codul Python:

```

n=int(input("Dati numarul dorit:"))
print("8.1.1")
print("n*8=",n*8)
print("8.1.2")
print("Catul impartirii lui n la 4 este ",n/4)
print("8.1.3")
print("n*10 cu operatorii logici de deplasare la nivel de
bit=", (n<<2<<1)+(n<<1))
print("8.2")
if (n&1)==0:
    print("Nr par")
else:
    print("Nr impar")
print("8.3")
x=int(input("Dati x:"))
n=int(input("Dati n:"))
print("Bitul n din x este:", (x & (1<<n)))
print("8.4.1")
print("setarea n la valoarea 0: ", (x & (255 ^ (1 << n))))
print("setarea n la valoarea 1:", (x | (1 << n)))

```

```
print("8.4.3")
print("șterge bitul n:", (x & ~(1 << n)))
print("8.4.4")
print("complementează bitul n:", (x ^ 1 << n))
print("8.5.1")
a=int(input("Dati a:"))
b=int(input("Dati b:"))
a = a + b
b = a - b
a = a - b
print(a, " ", b)
a=int(input("Dati a:"))
b=int(input("Dati b:"))
a = a ^ b
b = a ^ b
a = a ^ b
print(a, " ", b)
print("8.6")
n=int(input("Dati n:"))
k=int(input("Dati k:"))
if (n == (1<<k)):
    print("este")
else:
    print("Nu este")
print("8.7")
m=int(input("Dati m:"))
p=int(input("Dati p:"))
q=int(input("Dati q:"))
r=int(input("Dati r:"))
m = m % pow(2, r)
p = p % pow(2, q)
p = p << r
m = m | p
print("Noua valoare a lui p este:", p)
```