

Fundamentele Programării

Scrierea primului program.

Tipuri de erori.

Scrierea primului program

1. Scrieți un program care afișează pe monitor mesajul

“Introduceți numărul vostru favorit între 1 și 100:”,

după care așteaptă ca utilizatorul să tasteze numărul, apoi să afișeze textul

“Surprinzător, acesta este și numărul meu favorit!”

Rezolvare:

```
#include <iostream>

int main() {
    int numarFavorit;
    std::cout << "Introduceti numarul vostru favorit cuprins intre 1 si 100: ";
    std::cin >> numarFavorit;
    std::cout << "Surprinzator, acesta este si numarul meu favorit!"<<std::endl;
    return 0;
}
```

CHALLENGE

1. Scrieti un program C/C++ care afișează pe monitor mesajul

“Introduceți numărul vostru favorit între 1 și 100:”,

după care așteaptă ca utilizatorul să tasteze numărul. Presupunem ca utilizatorul tastează numărul x . Să se afișeze apoi textul

*“Surprinzător, acesta este și numărul meu favorit!
Super, x este numărul meu favorit!”*

Building the project

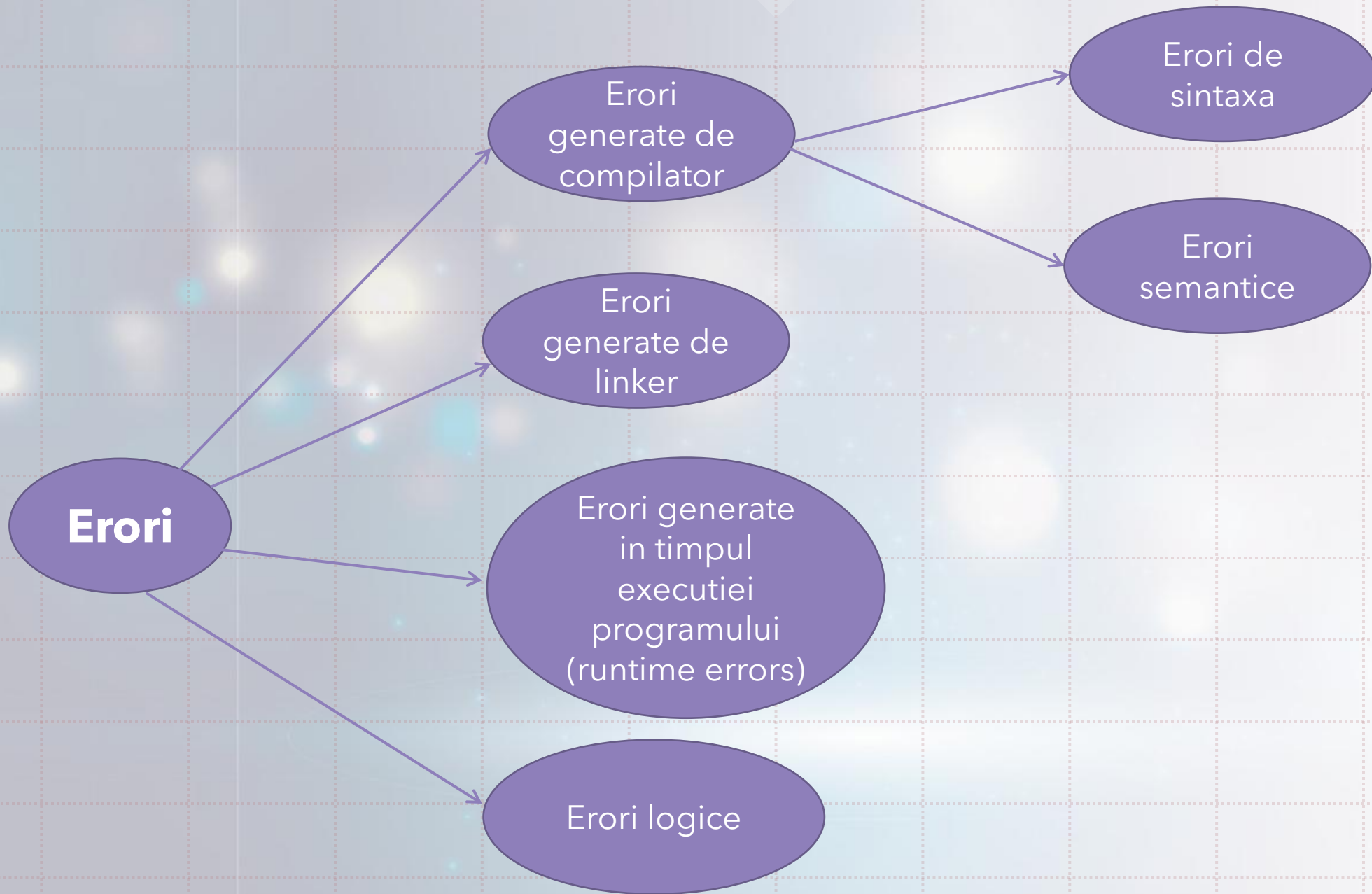
Build->Compile (Ctrl+F7) --- convertirea codul sursa (.cpp) in cod masina (.obj)

Build->Clean Project (Solution) --- stergerea tuturor fisierelor .obj si .exe (daca au fost create anterior)

Build->Build Project --- se creaza fisierul executabil (.exe); se va parcurge intreg proiectul si se va face *Build* doar la ceea ce trebuie (fisierile .cpp care nu au fost deja convertite in fisiere executabile .exe)

Build->Rebuild Project = Clean Project + Build Project

Debug->Start without Debugging (Ctrl+F5) --- se creaza fisierile .obj si .exe (daca nu au fost deja create) si se executa fisierul .exe



Erori generate de compilator

- **Limbajele de programare au reguli foarte precise despre cum trebuie scris codul**
- **Erori de sintaxa** - programul nu respecta regulile de scriere (gramatica) limbajului
- **Erori semantice** – programul este scris corect din punctul de vedere al regulilor limbajului, dar logica lui este gresita
- **Erorile de sintaxa sunt mai usor de reparat decat erorile semnataice!**

Exemplul 1 (eroare de sintaxa)

The screenshot shows the Microsoft Visual Studio IDE with a C++ project named 'Project2'. The main window displays the file 'EroriCompilare.cpp' with the following code:

```
#include <iostream>

int main() {
    std::cout << "Hello world << std::endl;
    return 0;
}
```

The code contains four syntax errors highlighted by the compiler:

- Line 4: missing closing quote (E0008)
- Line 5: expected a ';' (E0065)
- Line 4: newline in constant (C2001)
- Line 5: syntax error: missing ';' before 'return' (C2143)

The Error List window at the bottom shows the following details:

Code	Description	Project	File	Line
E0008	missing closing quote	Project2	EroriCompilare.cpp	4
E0065	expected a ';'	Project2	EroriCompilare.cpp	5
C2001	newline in constant	Project2	eroricompilare.cpp	4
C2143	syntax error: missing ';' before 'return'	Project2	eroricompilare.cpp	5

The Solution Explorer on the right shows the project structure, including the 'EroriCompilare.cpp' file. The status bar at the bottom indicates 'Ready' and shows the current cursor position at Line 6, Column 2, Character 2.

Exemplul 2 (eroare de sintaxa)

The screenshot displays the Microsoft Visual Studio IDE with a C++ project named 'Project2'. The code in 'EroriCompilare.cpp' contains two syntax errors. The Error List at the bottom shows two errors: E0065 (expected a ';') and C2143 (syntax error: missing ';' before '}'). The Solution Explorer on the right shows the project structure, and the Properties window is empty. A status bar at the bottom indicates 'Build failed'.

Project2 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Debug x86 Local Windows Debugger

Server Explorer Toolbox

EroriCompilare.cpp

Project2 (Global Scope) main()

```
#include <iostream>

int main() {
    std::cout << "Hello world" << std::endl;
    return 0
}
```

100 %

Error List

Entire Solution 2 Errors 0 Warnings 0 Messages Build + IntelliSense Search Error List

Code	Description	Project	File	Line	Sup
E0065	expected a ';'	Project2	EroriCompilare.cpp	6	
C2143	syntax error: missing ';' before '}'	Project2	eroricompilare.cpp	6	

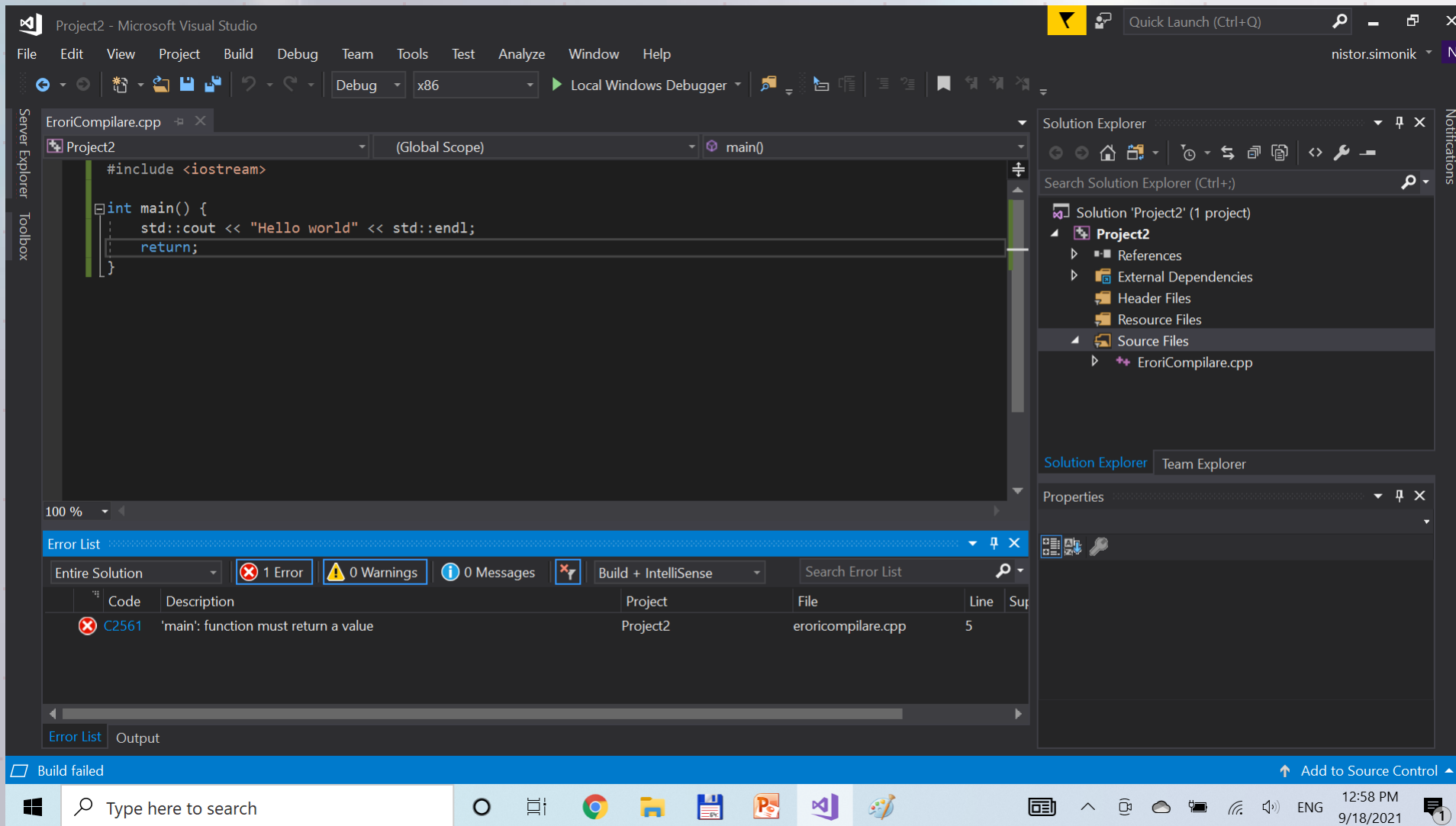
Build failed

Add to Source Control

Type here to search

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Exemplul 3 (eroare de sintaxa)



Exemplul 4 (eroare de sintaxa)

The screenshot shows the Visual Studio IDE with a C++ file named `EroriCompilare.cpp` open. The code contains several syntax errors. The Error List panel at the bottom displays 8 errors and 0 warnings.

```
1  #include <iostream>
2
3
4  int main()
5
6      std::cout << "Hello world" << std::endl;
7      return 0;
8  }
9
10
11
```

Error List:

Code	Description	Project	File	Line
C2371	'std::cout': redefinition; different basic types	Project2	EroriCompilare.cpp	5
E0130	expected a 'f'	Project2	EroriCompilare.cpp	6
C4430	missing type specifier - int assumed. Note: C++ does not support default-int	Project2	EroriCompilare.cpp	5
C2059	syntax error: 'return'	Project2	EroriCompilare.cpp	6
C2059	syntax error: '}'	Project2	EroriCompilare.cpp	7
C2143	syntax error: missing ';' before '<'	Project2	EroriCompilare.cpp	5
C2143	syntax error: missing ';' before 'std::cout'	Project2	EroriCompilare.cpp	5
C2143	syntax error: missing ';' before '}'	Project2	EroriCompilare.cpp	7

Exemplul 5 (eroare semantica)

The screenshot shows the Microsoft Visual Studio IDE with a project named 'Project2'. The main editor displays the file 'EroriCompilare.cpp' with the following code:

```
#include <iostream>

int main() {
    std::cout << "Hello world" << std::endl;
    return "Stefan";
}
```

The 'Error List' panel at the bottom shows two errors:

Code	Description	Project	File	Line	Sup
E0120	return value type does not match the function type	Project2	EroriCompilare.cpp	5	
C2440	'return': cannot convert from 'const char [7]' to 'int'	Project2	eroricompile.cpp	5	

The status bar at the bottom indicates 'Build failed'.

Exemplul 6 (eroare semantica)

The screenshot shows the Microsoft Visual Studio IDE with a project named "Project2". The code in the main window is as follows:

```
#include <iostream>

int main()
{
    std::cout << ("Hello world"/125) << std::endl;
    return 0;
}
```

The Error List at the bottom shows two errors:

Code	Description	Project	File	Line
E2138	expression must have arithmetic or unscoped enum type	Project2	EroriCompilare.cpp	5
C2296	'/': illegal, left operand has type 'const char [12]'	Project2	eroricompilare.cpp	5

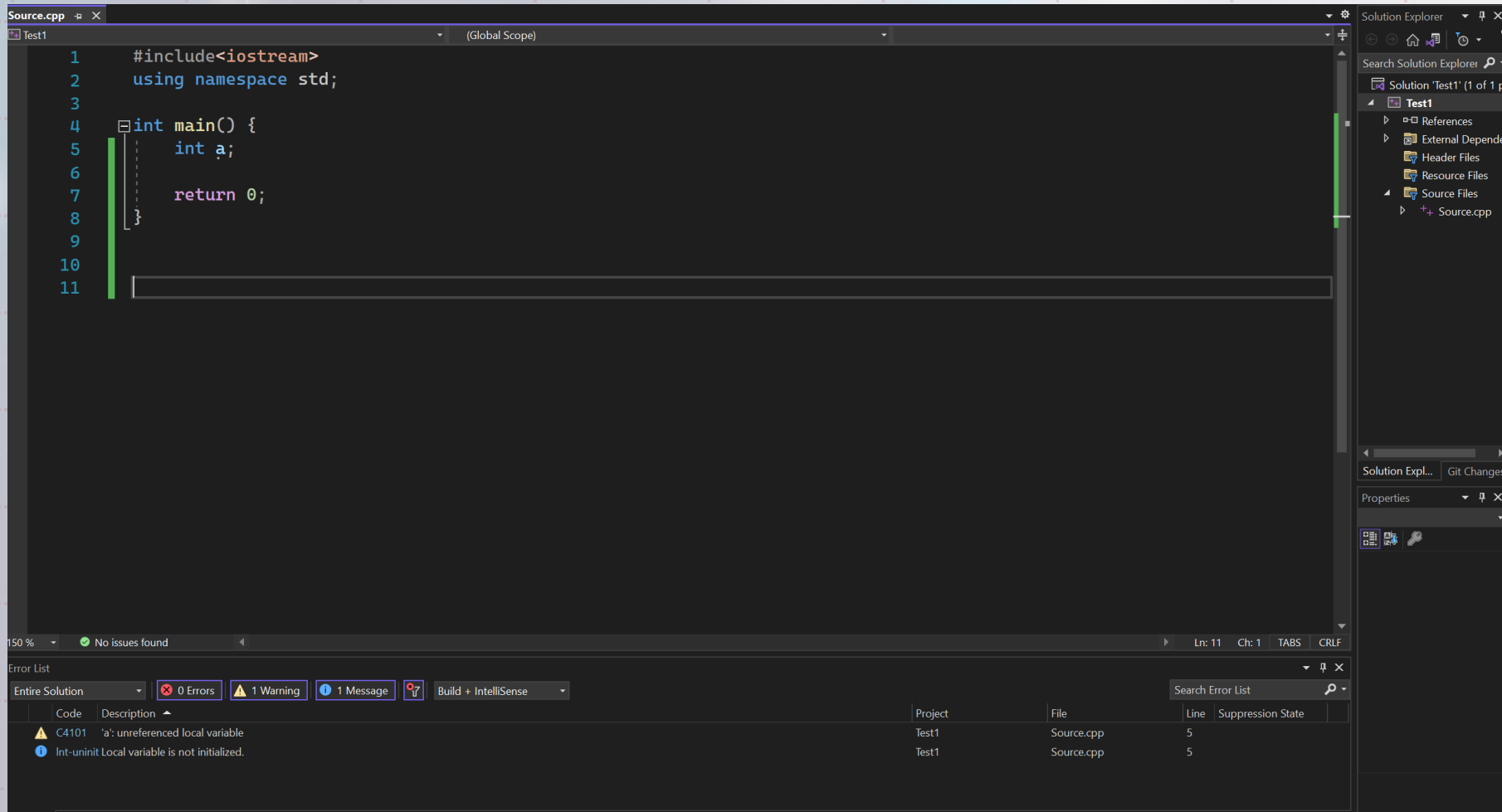
The status bar at the bottom indicates "Build failed".

Avertizari ale compilatorului

NU le ignorati!

- Compilatorul recunoaste o problema cu codul nostru care poate duce la o posibila problema
- Este doar o avertizare deoarece compilatorul este inca capabil sa genereze cod masina corect

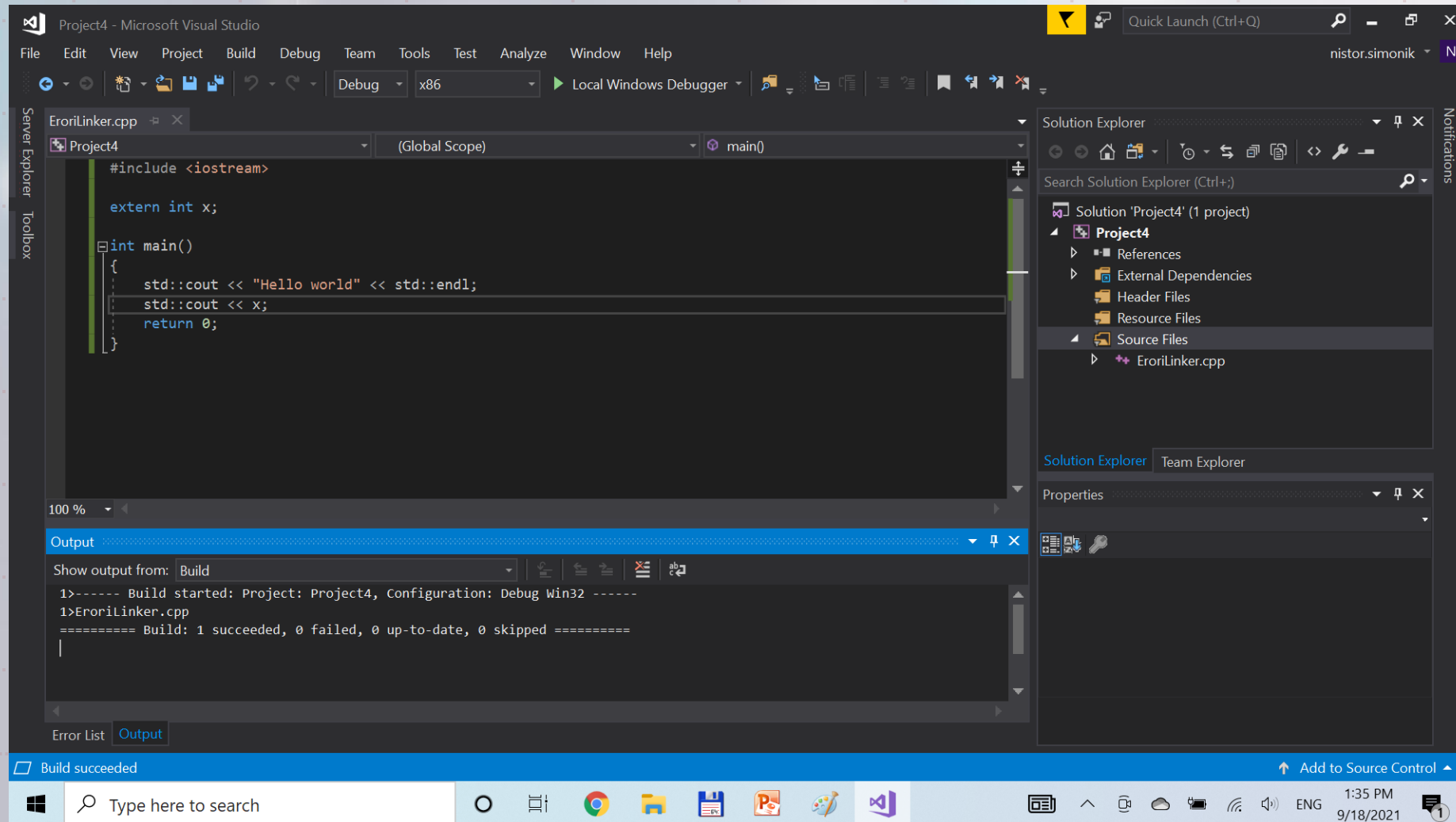
Exemplul 1



Erori generate de Linker

- Linker-ul poate genera erori atunci cand incearca sa uneasca toate fisierele obiect .obj pentru a crea fisierul executabil .exe
- De obicei, erorile sunt generate atunci cand o librerie sau un fisier obiect lipseste.
- **Erorile generate de Linker sunt destul de greu de solutionat!**

Exemplul 1 (Compile → nu sunt erori)



Exemplul 1 (Build → Eroare!)

The screenshot shows the Microsoft Visual Studio IDE with a project named "Project4". The main editor displays the file "ErrorLinker.cpp" with the following code:

```
#include <iostream>

extern int x;

int main()
{
    std::cout << "Hello world" << std::endl;
    std::cout << x;
    return 0;
}
```

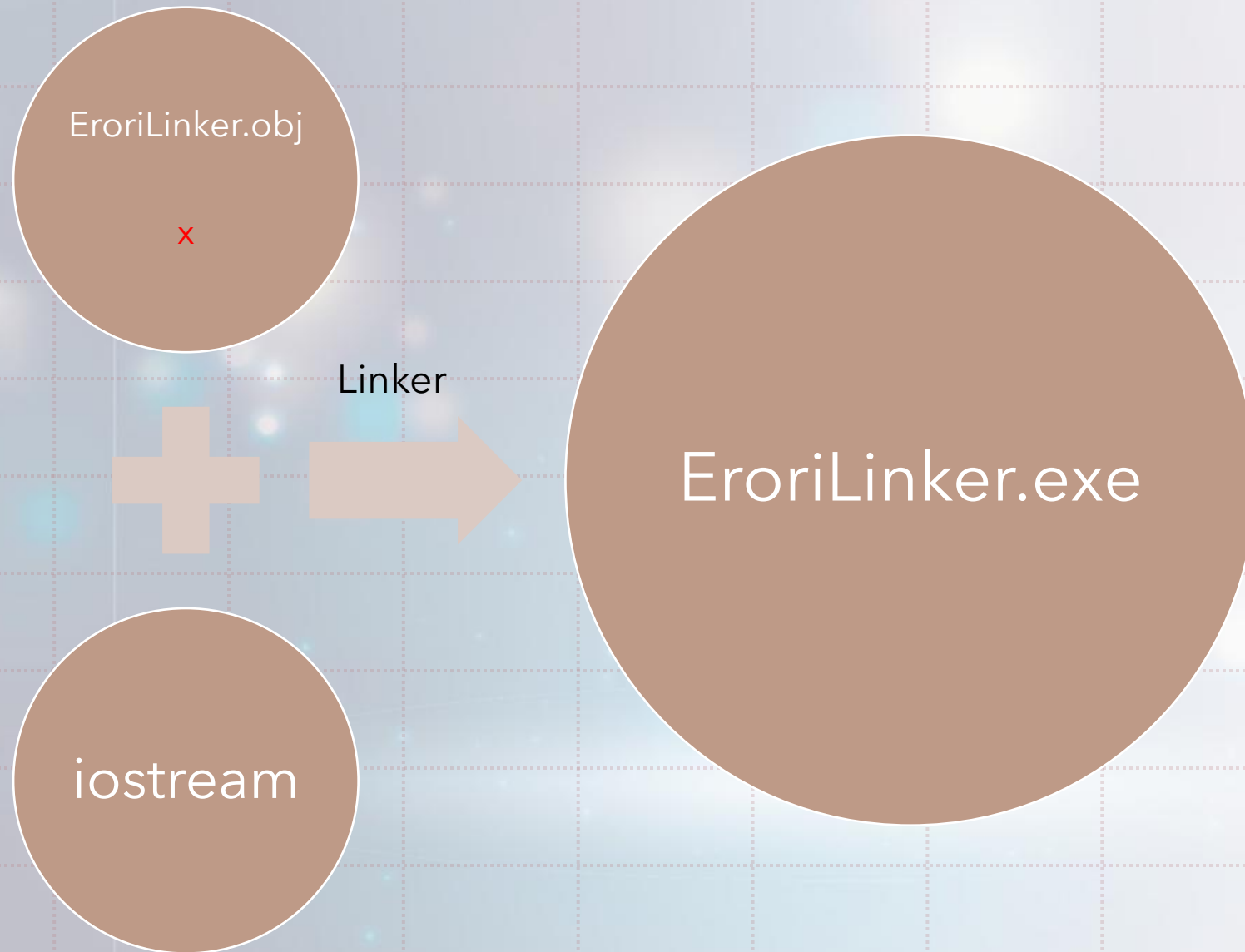
The Solution Explorer on the right shows the project structure:

- Solution 'Project4' (1 project)
 - Project4
 - References
 - External Dependencies
 - Header Files
 - Resource Files
 - Source Files
 - ErrorLinker.cpp

The Error List at the bottom shows two errors:

Code	Description	Project	File	Line	Sup
LNK2001	unresolved external symbol "int x" (?x@@3HA)	Project4	ErrorLinker.obj	1	
LNK1120	1 unresolved externals	Project4	Project4.exe	1	

A status bar at the bottom indicates "Build failed".



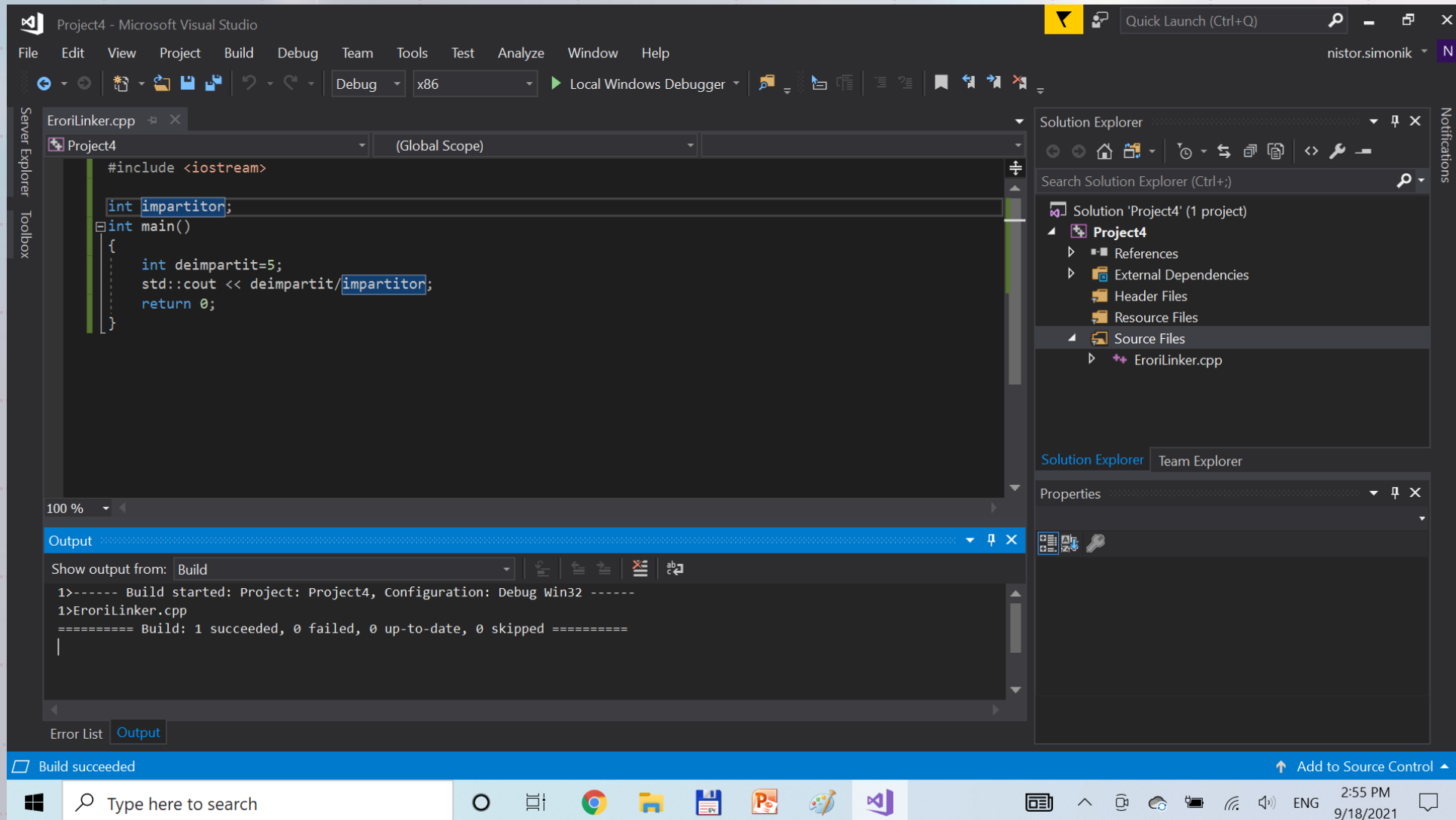
Problema. Daca in loc de
 `extern int x;`
scriem
 `int x;`
mai avem eroare generata de Linker? Motivati!



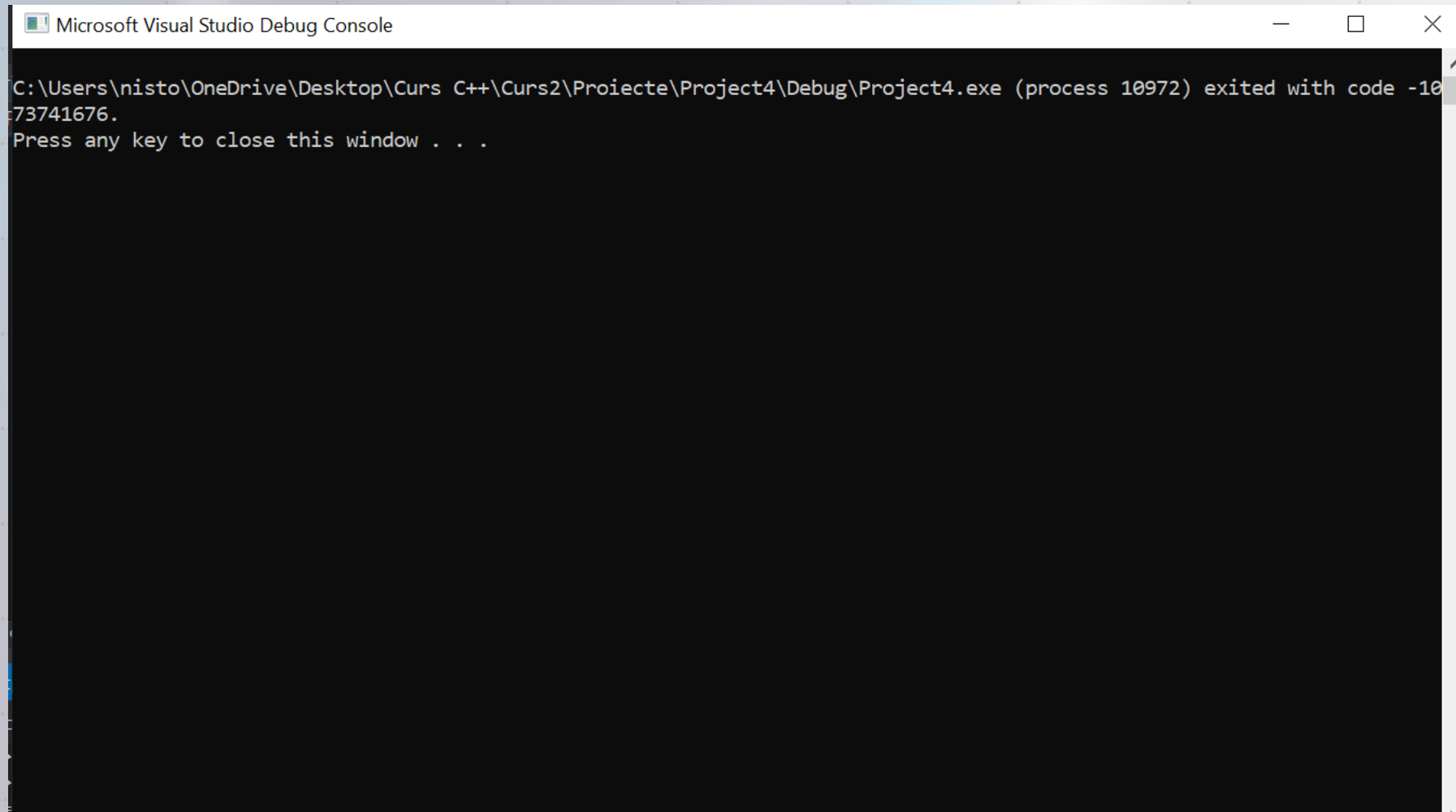
Runtime Errors

- Erori care se produc atunci cand programul este executat
- Cateva “runtime errors” uzuale
 - Impartirea prin zero
 - Fisierul nu este gasit
 - Depasirea spatiului de memorie
- Pot duce la “ruinarea” proiectului
- Vom vedea mai multe exemple de erori de acest tip intr-un curs ulterior (in special la lucrul cu fisiere)!

Exemplul 1



Exemplul 1



The image shows a screenshot of the Microsoft Visual Studio Debug Console window. The window has a title bar with the text "Microsoft Visual Studio Debug Console" and standard window control buttons (minimize, maximize, close). The main area of the window is black with white text. The text displayed is:

```
C:\Users\nisto\OneDrive\Desktop\Curs C++\Curs2\Proiecte\Project4\Debug\Project4.exe (process 10972) exited with code -1073741676.  
Press any key to close this window . . .
```

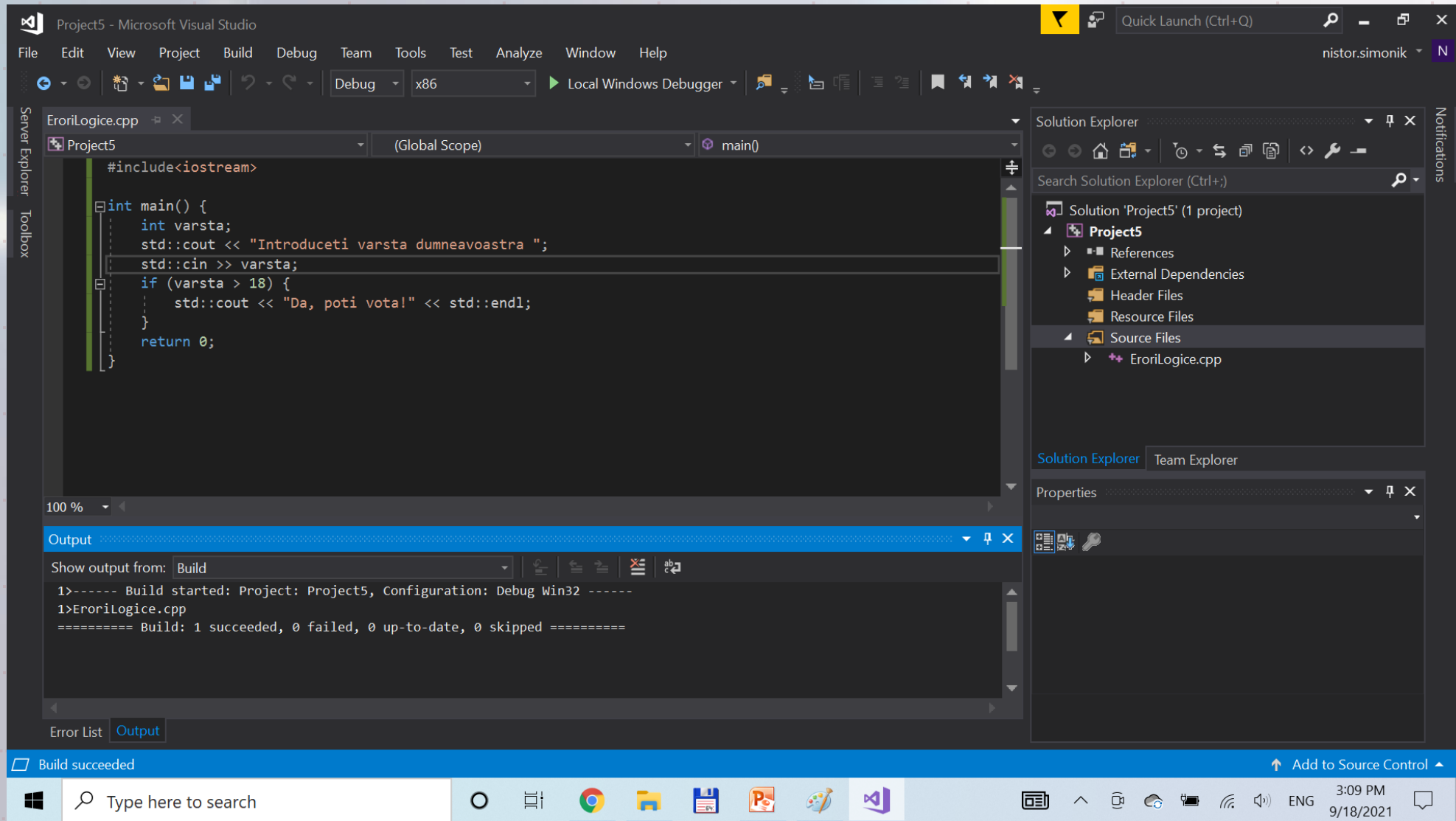
On the right side of the console window, there is a vertical scrollbar with a small upward-pointing arrow at the top.

Erori logice

- Erori (bug-uri) in cod care vor cauza functionalitatea incorecta a programului
- Sunt greseli facute de programator

Problema. Presupunem ca trebuie sa scriem un program care sa determine daca o persoana poate vota, adica trebuie sa aiba varsta de cel putin 18 ani.

Care este eroarea?



Let's

P

L

A

Y

KNOW
EVERYTHING



<https://test-master.space>

