

Programming Principles (MT162)

Lecture 1

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WHAT
DO
YOU
EXPECT



Programming background?



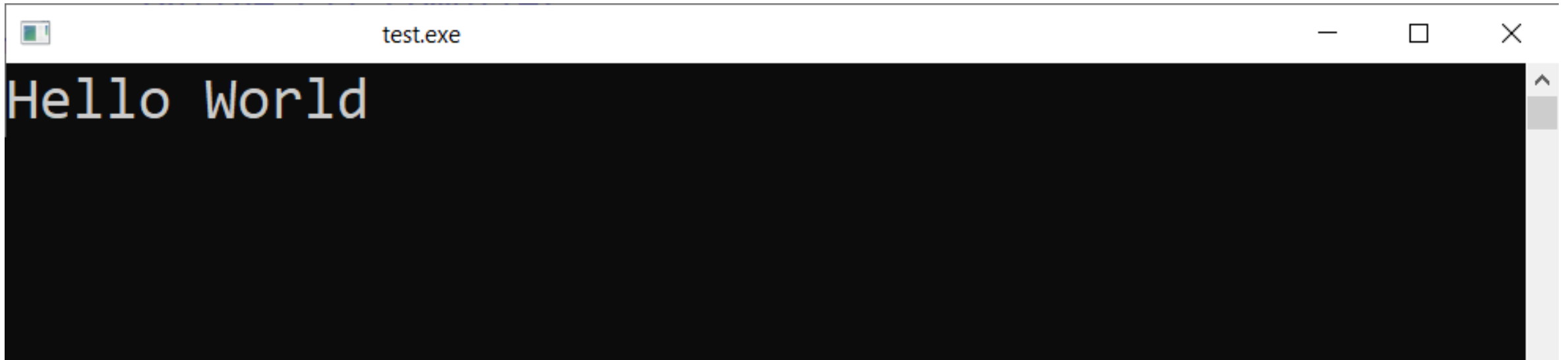
Problems & Applications

- Calculator.
- Market.
- Bank system.
- Self driving cars.

Aim of this course

- Aim: Problem solving
- How: By writing instructions (Program).

C++ application (Console application)

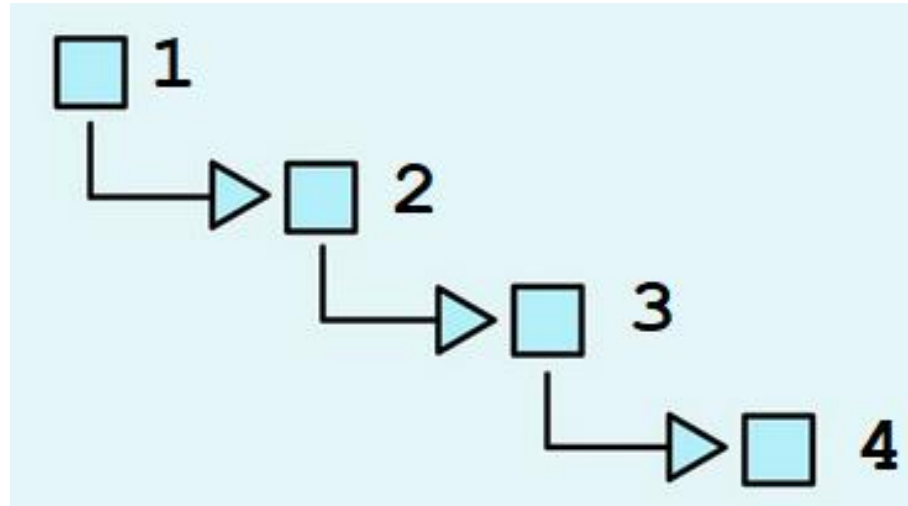


Writing a program

- Programming is a process of problem solving
- One problem-solving technique:
 - Analyze the problem
 - Outline the problem requirements
 - Design steps (algorithm) to solve the problem
- Algorithm:
 - Step-by-step problem-solving process.
 - Solution achieved in finite amount of time.

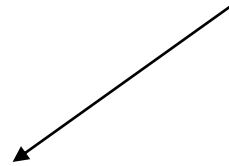
Algorithm

- In mathematics and computer science, an algorithm is a **finite sequence of well-defined (computer-implementable) instructions**, typically to solve a class of specific problems or to perform a computation.





Programmer

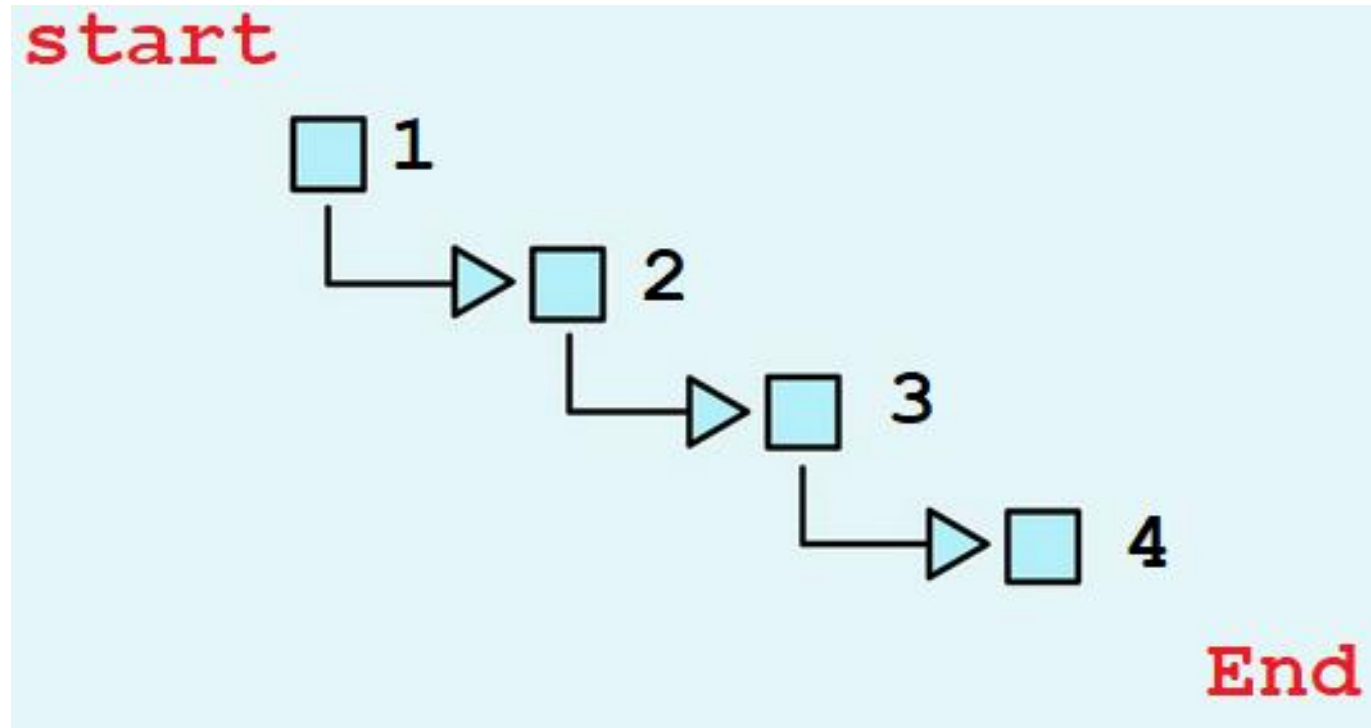


USER



Writing a program

- Writing a sequence of instructions.



Programs

- Program_1: Hello world.
- Program_2: Ask user for his name.
- Program_3: Calculate area of a circle.
- Program_4: Sum two numbers.
- Program_5: Even-odd checker.
- Program_6: Success-fail checker.

Program_7:

A. Write a program to find out the student's degree in any grade of the table will be set forth below

grades	Excellent	v.good	good	medium	pass	fail
degrees	100-90	89-80	79-70	69-60	59-50	49-0

Program_8:

- Print even numbers between 1-20.

Program_9:

- Sorting a group of numbers

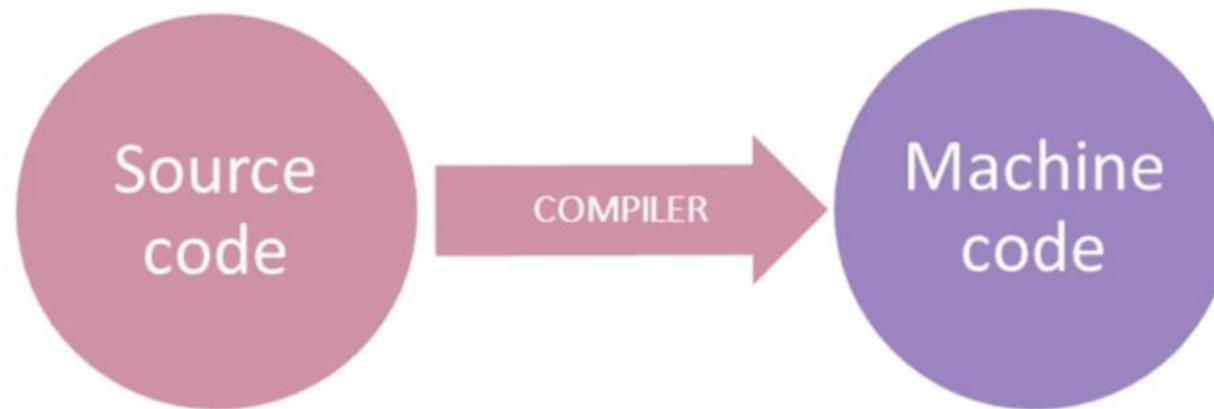


Machine Languages, Assembly Languages and High-Level Languages

- **Programming Languages:** Fall into three categories
 - Machine languages.
 - Assembly languages (low-level programming language).
 - High-level languages.

The Evolution of Programming Languages

- High-level languages include Basic, FORTRAN, COBOL, **Java**, **C++**, and **C#**.
- Compiler: translates a program written in a high-level language machine language.



C++

- C++ is a **compiled language**, meaning your program's source code must be translated (compiled) before it can be run on your computer.

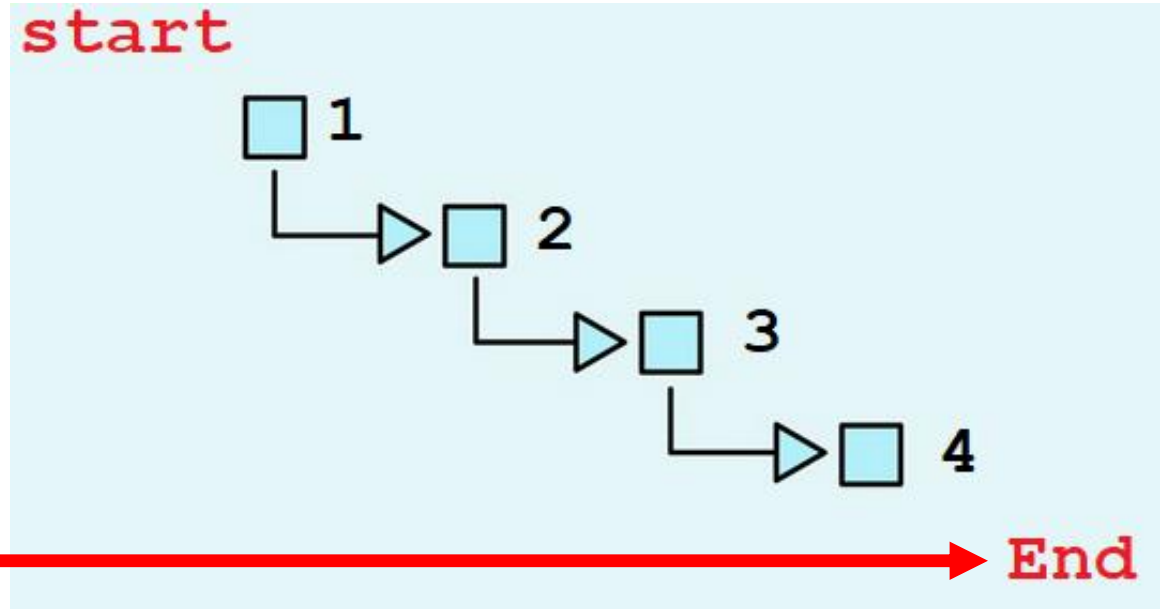
Suggested softwares for C++

- Desk top
 - Visual studio.
 - CodeBlocks
- Online compiler:
 - [https://www.onlinegdb.com/online c++ compiler](https://www.onlinegdb.com/online_c++_compiler)
 - <https://onecompiler.com/cpp>
 - <https://riju.codes/cpp>
- Mobile application:
 - Cxxdroid - C++ compiler IDE
 - CppDroid - C/C++ IDE

Processing a C++ Program

```
#include <iostream>
using namespace std;
int main()
{
    cout << "My first C++ program." << endl;

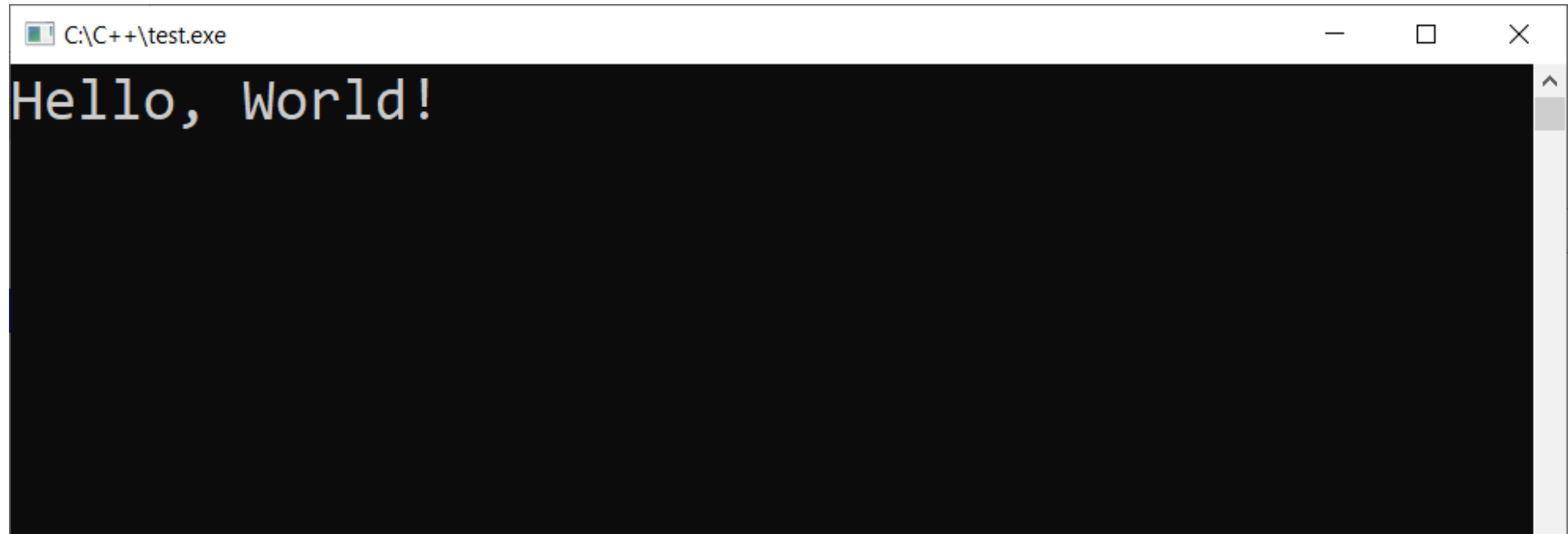
    return 0;
}
```



Sample Run:

My first C++ program.

Output



A screenshot of a Windows command prompt window. The title bar at the top reads "C:\C++\test.exe" and includes standard minimize, maximize, and close buttons. The main area of the window is black, and the text "Hello, World!" is displayed in a light blue monospaced font. A vertical scrollbar is visible on the right side of the window.