INTRODUCTION TO PROGRAMMING.

Poggie

01.30.2024

A bit about me.

Science & ALC @ John Abbott College.

Computer Science & Neuroscience @ Mcgill University.

Most of my professional experience comes from startups.

// TODO.

Programming

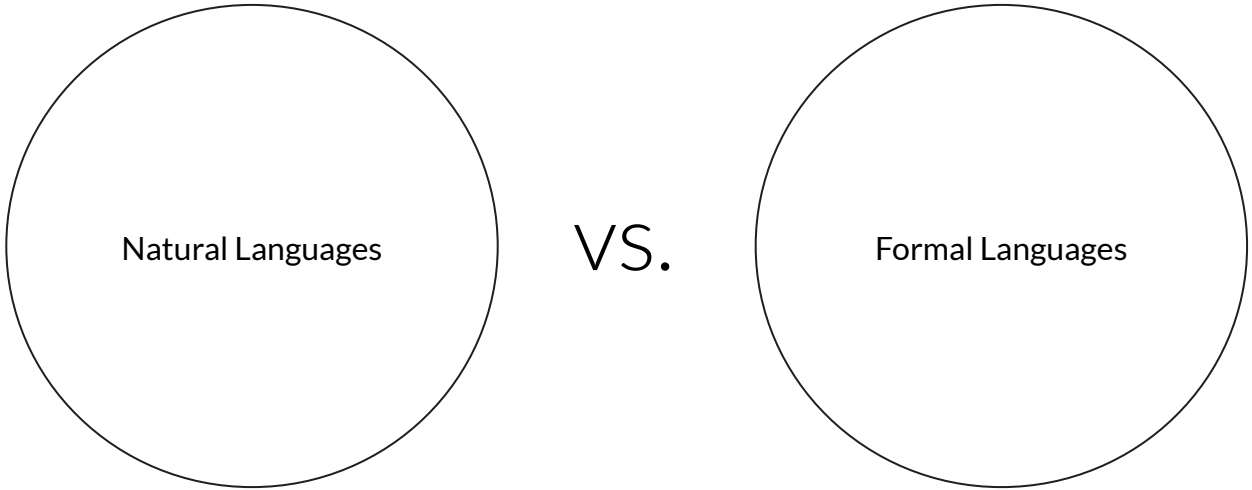
Variables

Data types

Expressions

What is programming?

Languages.



The lady hit the man with a child.

Break a leg!

Thats sick.

Programming Languages.

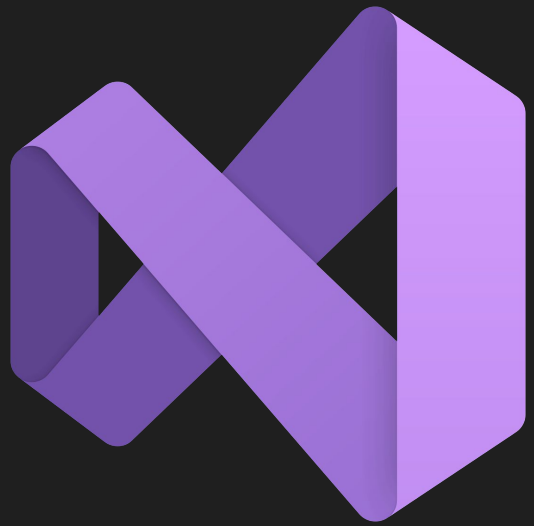
In order to communicate with a computer we need to use a specific formal language: a programming language!

For this class we will be using C#

Tools.

The tool to create a C# program is Visual Studio 2022.

Download it here.



Software Development Kit.

Install .NET 6.0 here

Why? What Version?

Low-level.

Language “spoken” by your computer.

Machine Language
0101010101010010101010100101011110101010

Assembly Language
01010100 01101000 01101001 01110011
00100000 01101001 01110011

High-level.

Programming languages that use English and mathematical symbols in their instructions.

C# Python JavaScript Typescript

C++ OCaml LISP Java

… and so much more

Low-level.

Hardware specific.

High-level.

Programs are portable: they can run on different kinds of computers.

How do computers understand high-level languages?

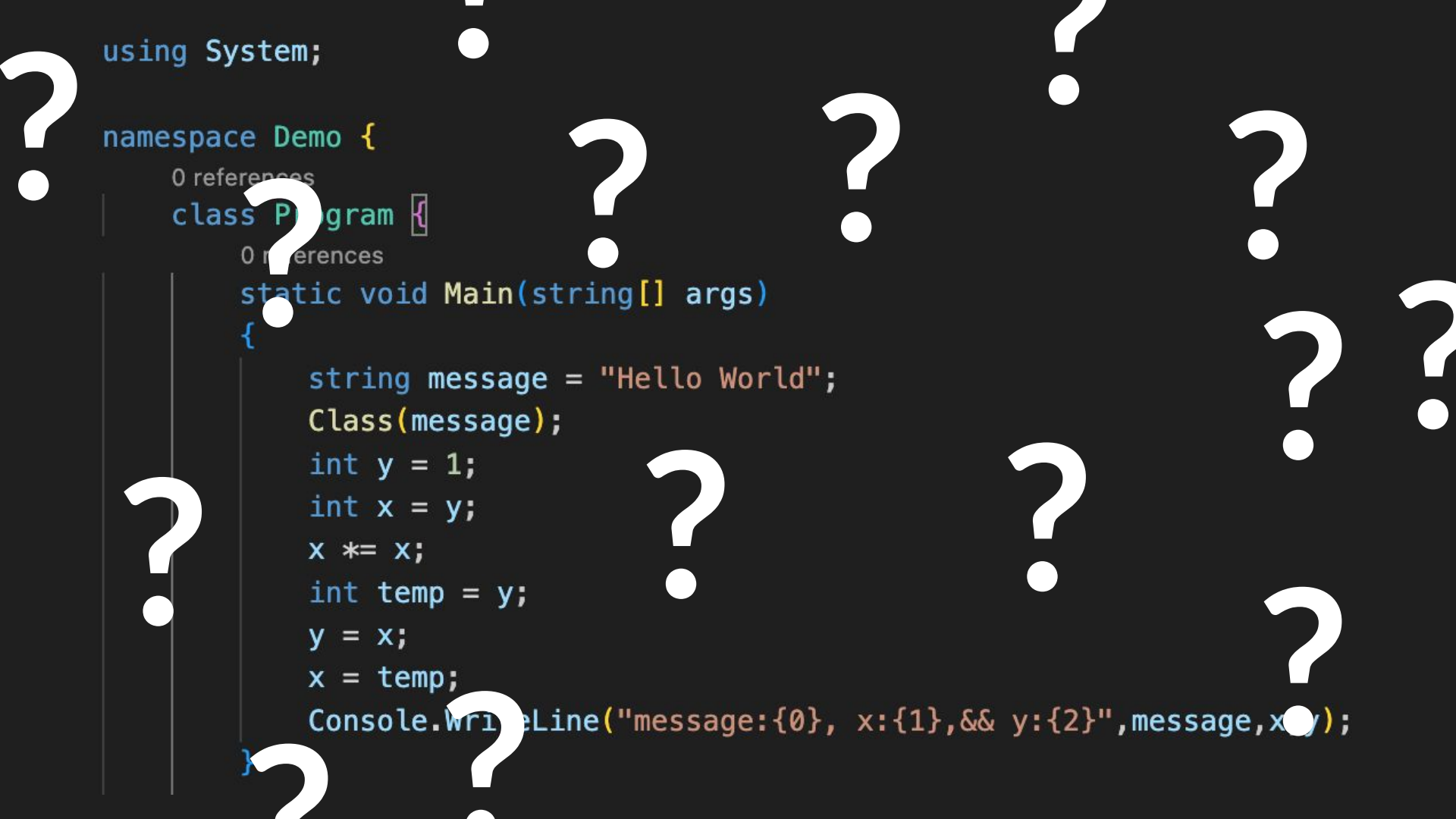
Compile time

Run time

Let’s get started.

```
using System;

namespace Demo {
    0 references
    class Program {
        0 references
        static void Main(string[] args)
        {
            string message = "Hello World";
            Class(message);
            int y = 1;
            int x = y;
            x *= x;
            int temp = y;
            y = x;
            x = temp;
            Console.WriteLine("message:{0}, x:{1},&& y:{2}",message,x,y);
        }
```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}

Starting simple.

A mindset.

We have the tools to talk to computers.

Now we need to think like computers.

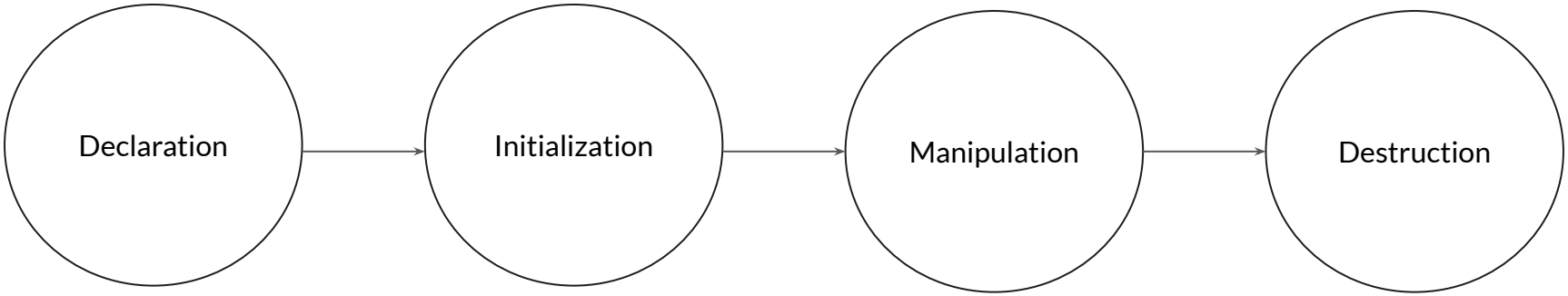
HELLO WORLD.

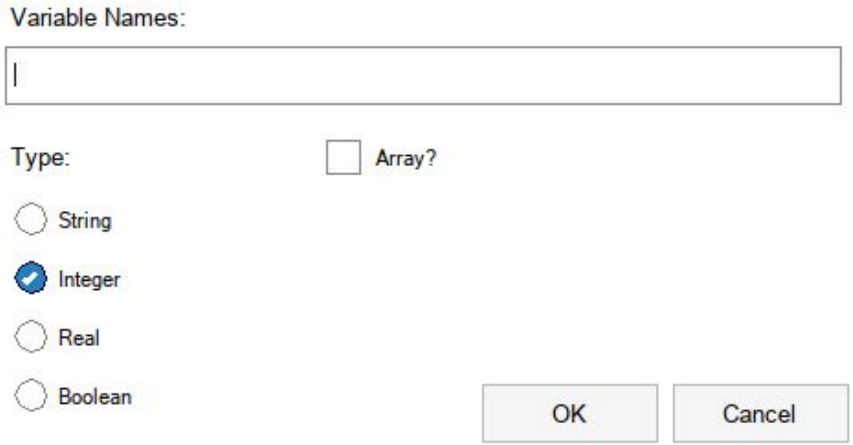
Variables.

A variable is a named location that stores a value.

By location we mean a place in the memory of the computer.

Variable Life Cycle.





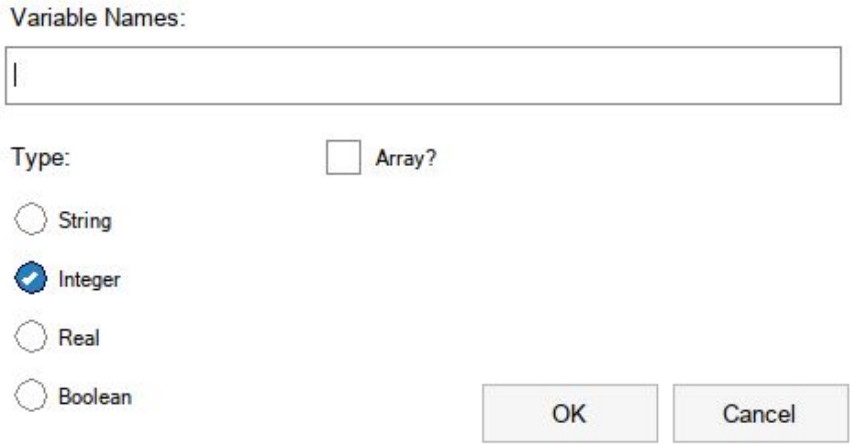
Types.

Before a value can be stored in a variable, the type of variable must be specified.

Why?

…. the type to keep track of which kind of value we store, and thus how much space in memory is needed.

TLDR: variables have a name and a type.



Primitive Types.

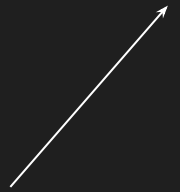
Predefined by the language

Named by a reserved keyword

Case sensitive

What about C#?

```
string today;
int hour, minute;
bool isSnowing;
```



‘camelCase’

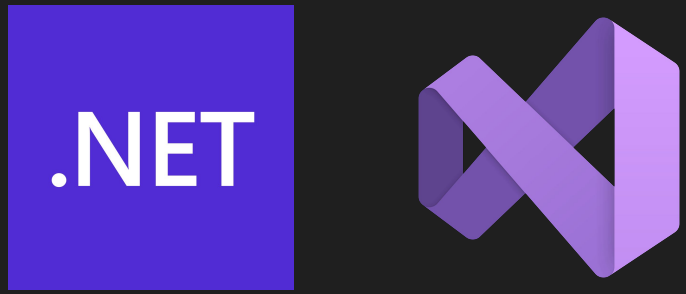
Short, but not too short

Descriptive and unique.

C# type keyword	.NET type
bool	System.Boolean
byte	System.Byte
sbyte	System.SByte
char	System.Char
decimal	System.Decimal
double	System.Double
float	System.Single
int	System.Int32
uint	System.UInt32
nint	System.IntPtr
nuint	System.UIntPtr
long	System.Int64
ulong	System.UInt64
short	System.Int16
ushort	System.UInt16

Expressions.

HOMEWORK:



QUESTIONS?