

MECH 423

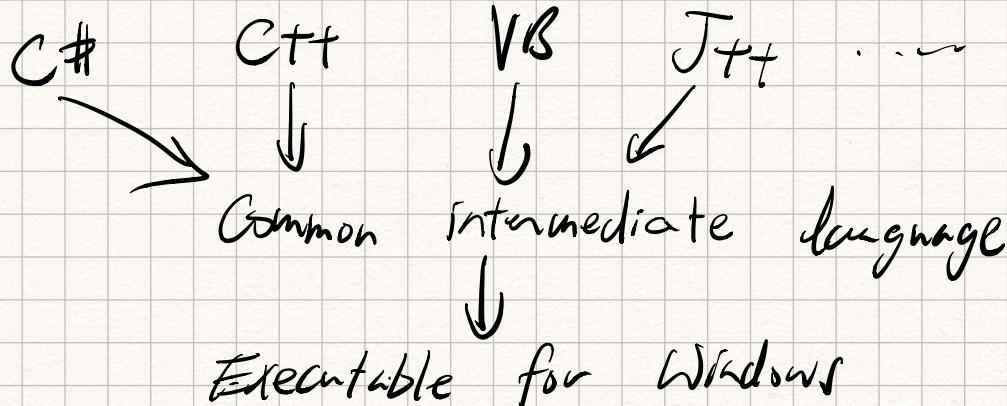
Lecture #2

- C# — Programming Language
- object oriented, modern, GP
- Influences: C, C++, Java, Visual Basic

- Visual Studio — Integrated development environment
- Software for making software (IDE)
- Editor, debugger, compiler, source control
- Intellisense

.NET

- Software framework — A system for software development
- Compilers & libraries
- Language interoperability

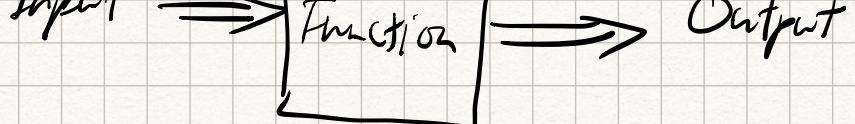


- Standard libraries — Access to OS
- Open source: Mono
- Other platforms: Android, iOS, RaspPi ...

Windows Forms

- App model
- Class library for GUI development

Console



Key challenge in software development:

- Complexity management
- Need to reuse code.

Object-oriented programming

- Encapsulate (package) data & function
- Hide away unnecessary detail
- Use real-world analogy.

Object — A collection of data & functions

Class — The design of an object (blue print)

Method — A function in an object.

Library — A collection of classes

Notation

Object.parameter — Externally accessible variable

Object.method();

Object.subobject.method();

In C#, EVERYTHING is an object!

5.ToString(); → "5"

Static Objects

- The object is not created (Not loaded to memory)
- Call using the class name.

Math. Abs (-7); \Rightarrow 7

- use most of the time.

Non-static Objects

- Reserve memory for data & methods
- Create objects using "new"
- Call using the object name.

Math myMath = new Math();

myMath. Abs (-7); \Rightarrow 7

constructor



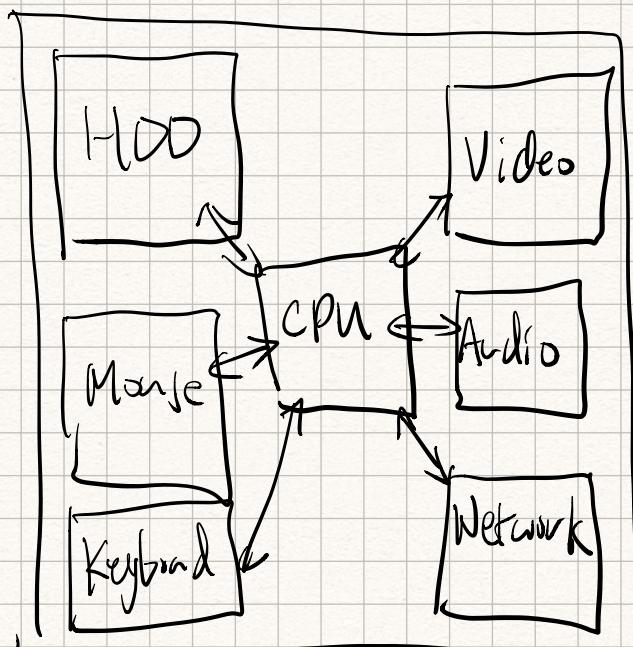
Event-driven Programs

Console Programs

- Start at Main()
- Execute in sequence ... Program Ends.

Event-driven Program

- Always on
- Code is executed when there is an event



*** CPUs can only do one thing at a time.

- Gives the illusion of multitasking by constantly switching

Events: Mouse click, Mouse move, Keyboard, timer tick

Event #1



Handler 1

Event #2

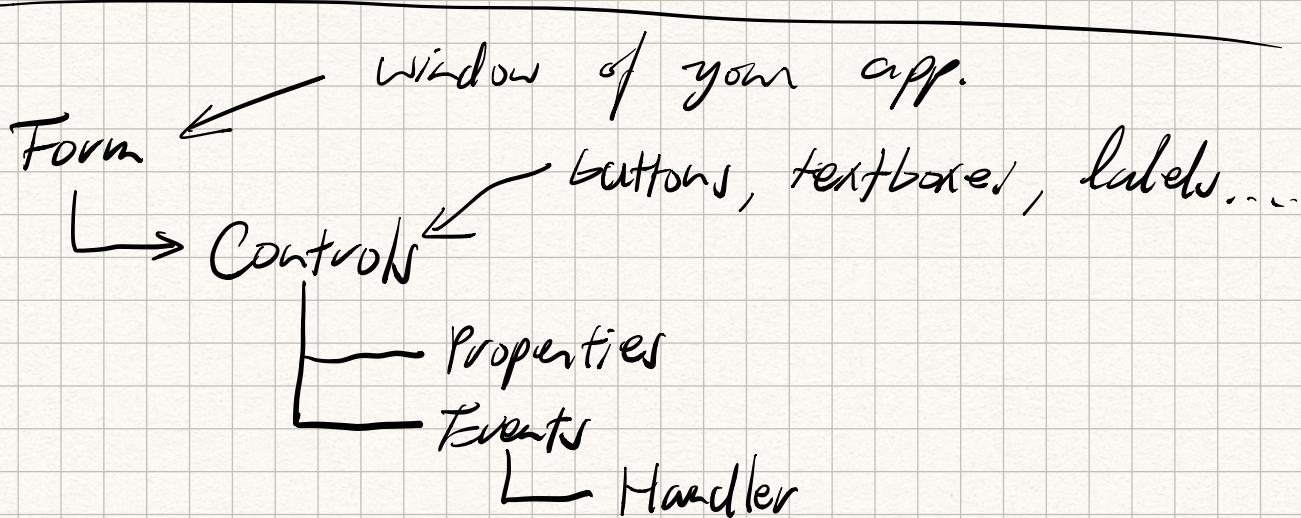


Handler 2

Event 3



Handler 3



UI thread

Serial data thread

