



# Why C++?

**ELEC1006: ENGINEERING COMPUTING**

# C++

- C++ uses a compiler that reads the source code and generates a stand-alone program.
- Executable file can then be run without the use of a compiler.
- Advantages:
  - Optimisable to provide high computing performance.
    - Fast processing ideal for real-time systems and computer games.
  - Precise control of computing resources, e.g. memory use, USB port usage, etc. Ideal for embedded systems, where resources are scarce, e.g. microcontrollers.
- Disadvantages:
  - More difficult to program than MATLAB.
  - Improperly developed program causes run-time errors and computer crashes.

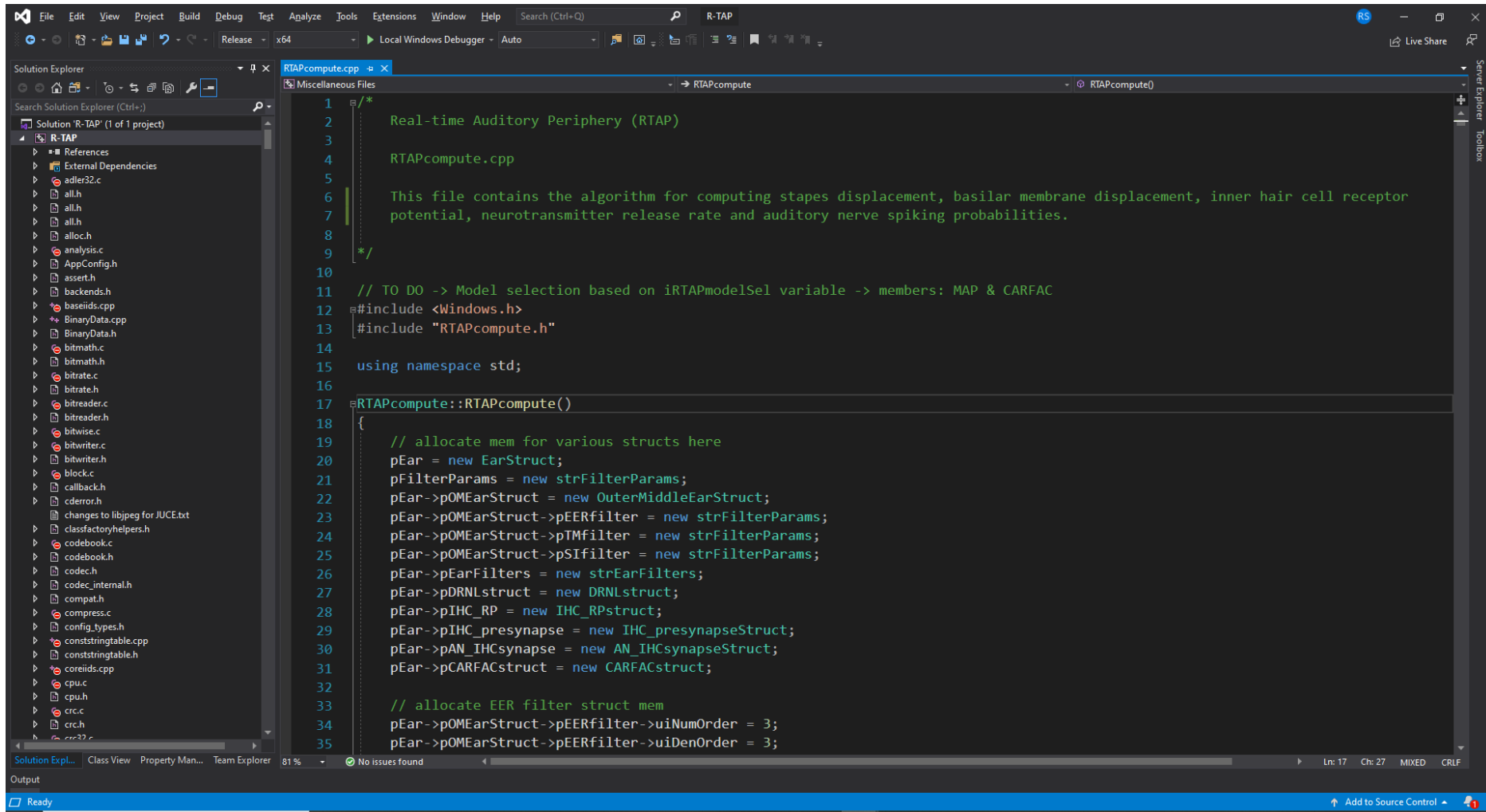
# MATLAB

- MATLAB is an interpreter program.
- Executes the instruction directly without having to compile them into an executable file.
- Advantages:
  - Easier to program than C++.
  - Computing resources are automatically allocated.
  - Errors are easily detected by the interpreter.
- Disadvantages:
  - No precise control of computing resources. Cannot be used for embedded systems.
  - Low computing performance. Slower processing than C++ means that it cannot be used for developing real-time systems and video games.

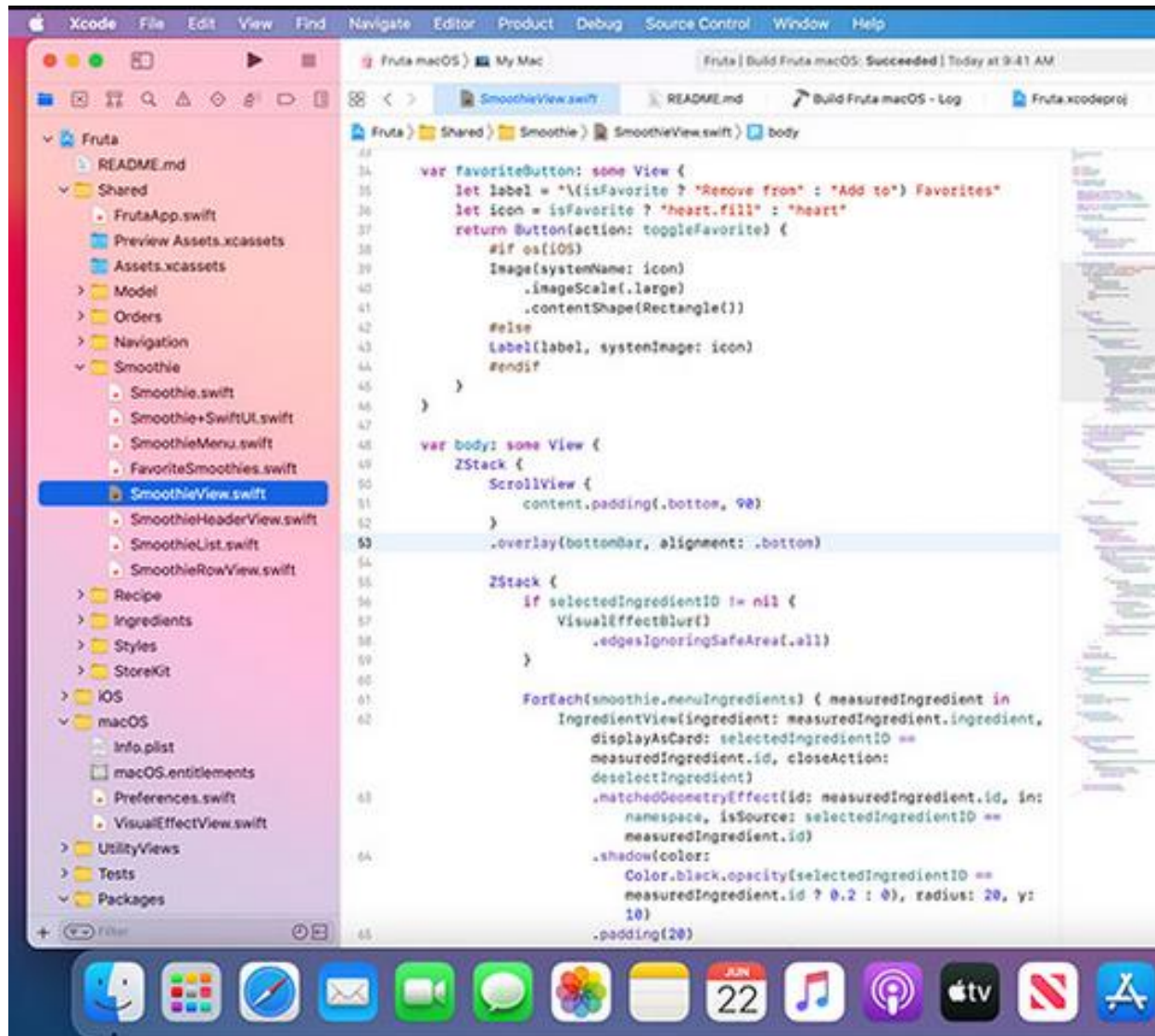
# IDE

- Integrated development environment (IDE) combines all the development tools for writing, compiling, and debugging a program into a single software application.
- Microsoft **Windows** user:
  - Download [Visual Studio - Community edition](https://visualstudio.microsoft.com/downloads/) from <https://visualstudio.microsoft.com/downloads/>.
- **Mac** OS user:
  - Download [Xcode](https://developer.apple.com/xcode/) from <https://developer.apple.com/xcode/>.

# Visual Studio 2019



# Xcode 12



# More info on C++

- [1] Learn Cpp.com: Tutorials to help you master C++ and object-oriented programming.  
<https://www.learncpp.com/>