

# Introduction to Arduino IDE and getting started with the ESP32 microcontroller

## Part 2: Developing Arduino sketches with multiple files

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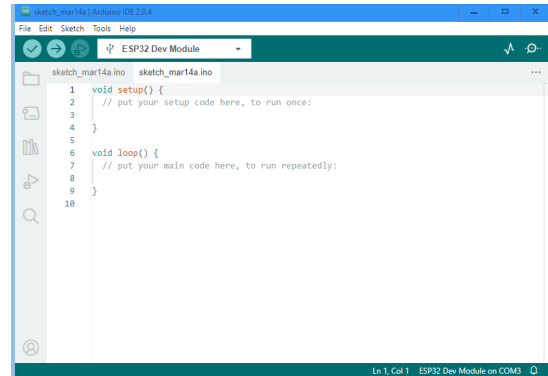
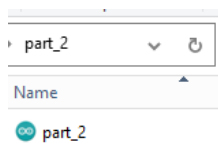
## Introduction

- Developing Arduino sketches with multiple files:
  1. The basics of an Arduino sketch.
  2. Folder and file structure.
  3. Managing a project: folders and files. Importance of commenting and formatting code.
  4. Walkthrough example: developing an Arduino sketch with multiple files.



## Single file Arduino Sketch

- When a new Arduino Sketch is created, it is a folder containing a single **.ino** file.
- The Sketch should be saved to a suitable folder on the user's computer.
- For smaller coding projects, a single **.ino** file containing all code would be OK as the single file would not become too large and complicated to develop and manage.



### Commenting:

// Single line comment (C++ style)  
/\* ... \*/ Multi-line comment (C style)

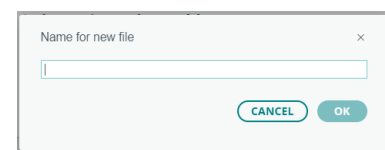
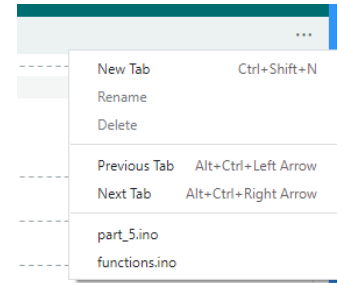
- For larger coding projects, the code should be separated into linked smaller **.ino** files.

## More complex sketches will require multiple files

- For larger coding projects, the code should be separated into linked smaller **.ino** files.
- The benefits for this approach include:
  - The overall coding project is easier to manage and supports modularisation of the code.
  - Supports code re-use in different coding project.
  - Easier to understand the code operation.
  - Supports documentation of the code.
  - Easier to create and debug the code.

## Creating additional .ino files

- To create an additional .ino file, select the three dots (top right of the window), and select **New Tab**.
- In the pop-up window that appears, type in a suitable **file name** and press **OK**.
- The new file appears as a new tab and can be edited. When the top level .ino file is compiled (the top level .ino file has the same name as the Sketch), the other .ino files are automatically available.
- For more advanced projects, compare this approach to standard C/C++ coding approaches.



## Uses

- Use additional .ino files to make the coding project more manageable and understandable:
  1. Create multiple, smaller files.
  2. Use additional .ino files for functions that are called from other .ino files.
  3. Group functions together that should be together (e.g., serial port functions).
  4. Create a new file that acts as a **README** file for documentation purposes.

**Any questions?**



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