



# **SNS COLLEGE OF TECHNOLOGY**

**Coimbatore-35**

**An Autonomous Institution**

Accredited by NBA – AICTE and Accredited by NAAC – UGC  
with 'A+' Grade

Approved by AICTE, New Delhi & Affiliated to Anna  
University, Chennai

## **DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

### **19ECT213-IoT SYSTEM ARCHITECTURE**

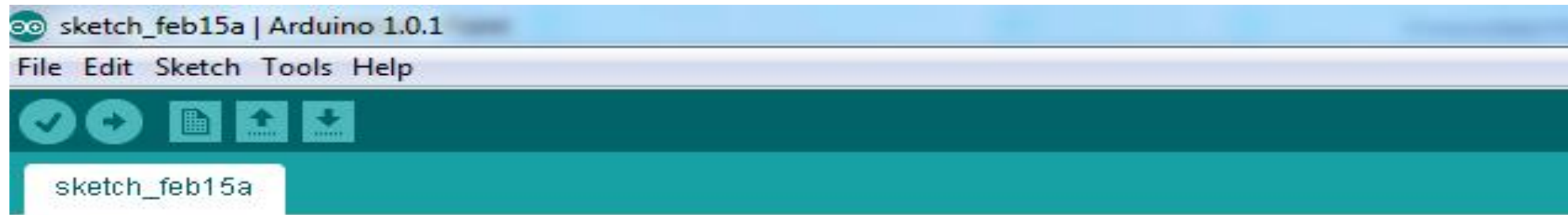
II YEAR/ IV SEMESTER

UNIT 2 – MICROCONTROLLER AND INTERFACING TECHNIQUES FOR IoT DEVICES

TOPIC 1 – ARDUINO LIBRARIES: LIBRARY ADDING AND REMOVING

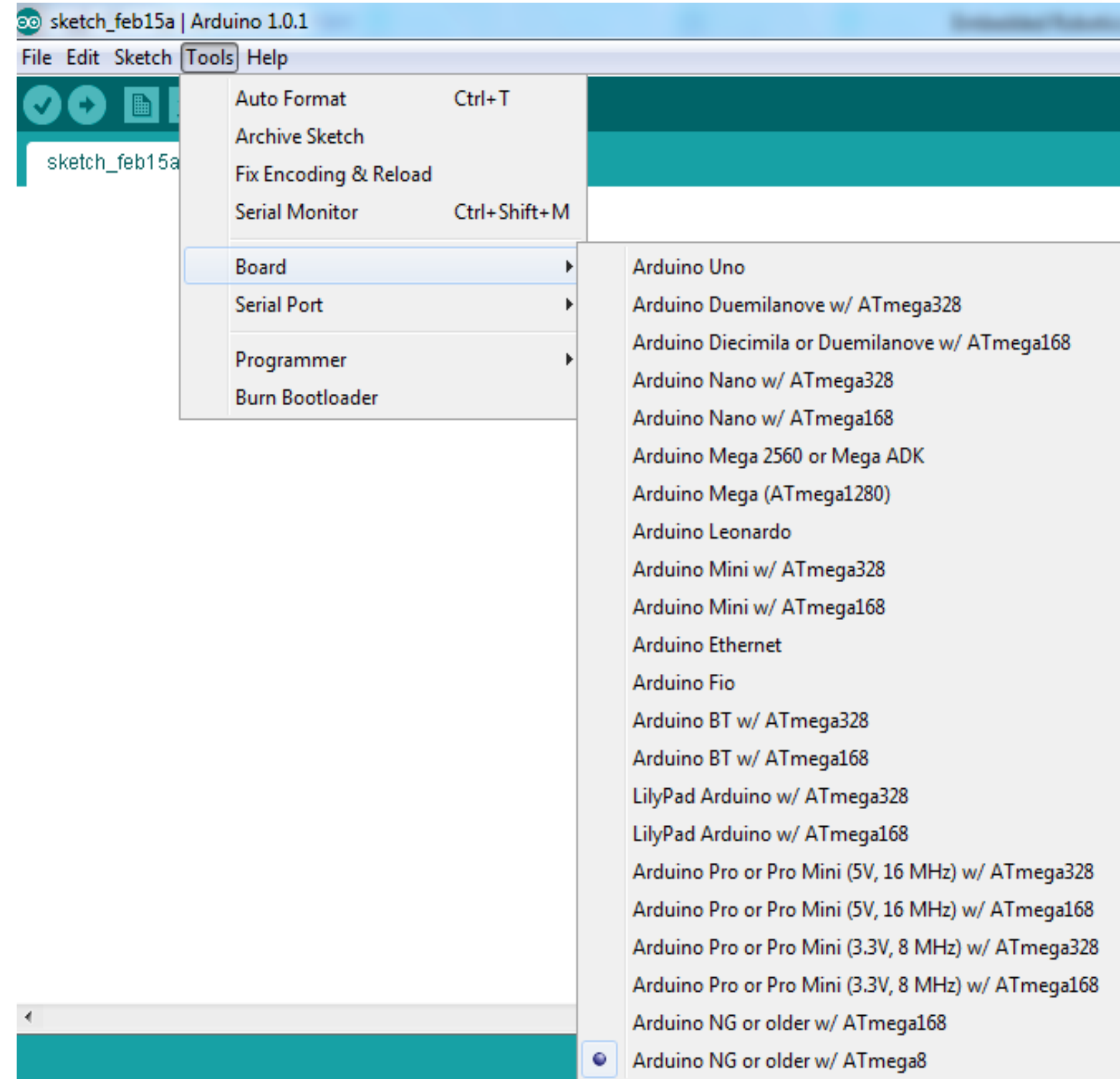
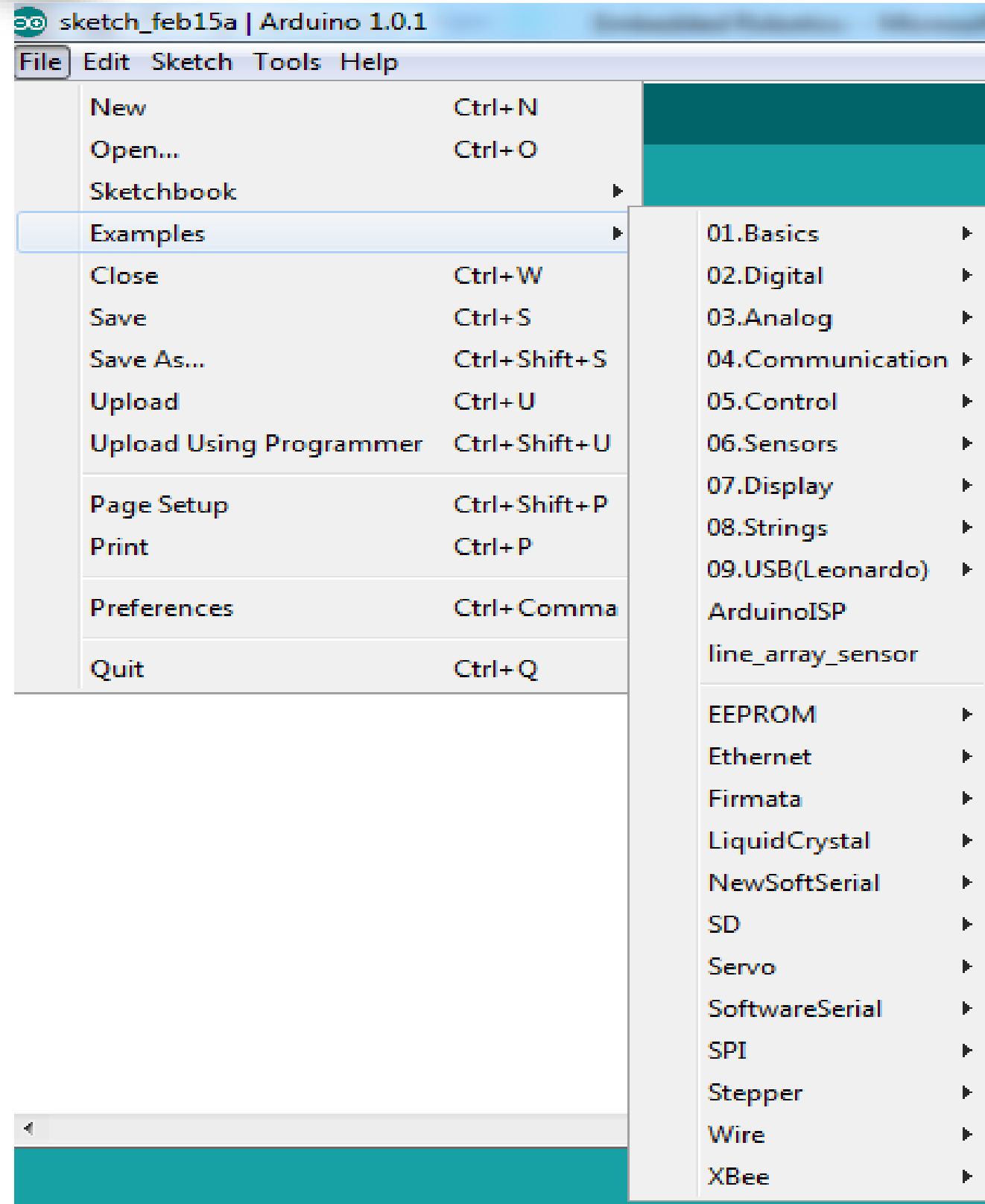


# ARDUINO IDE



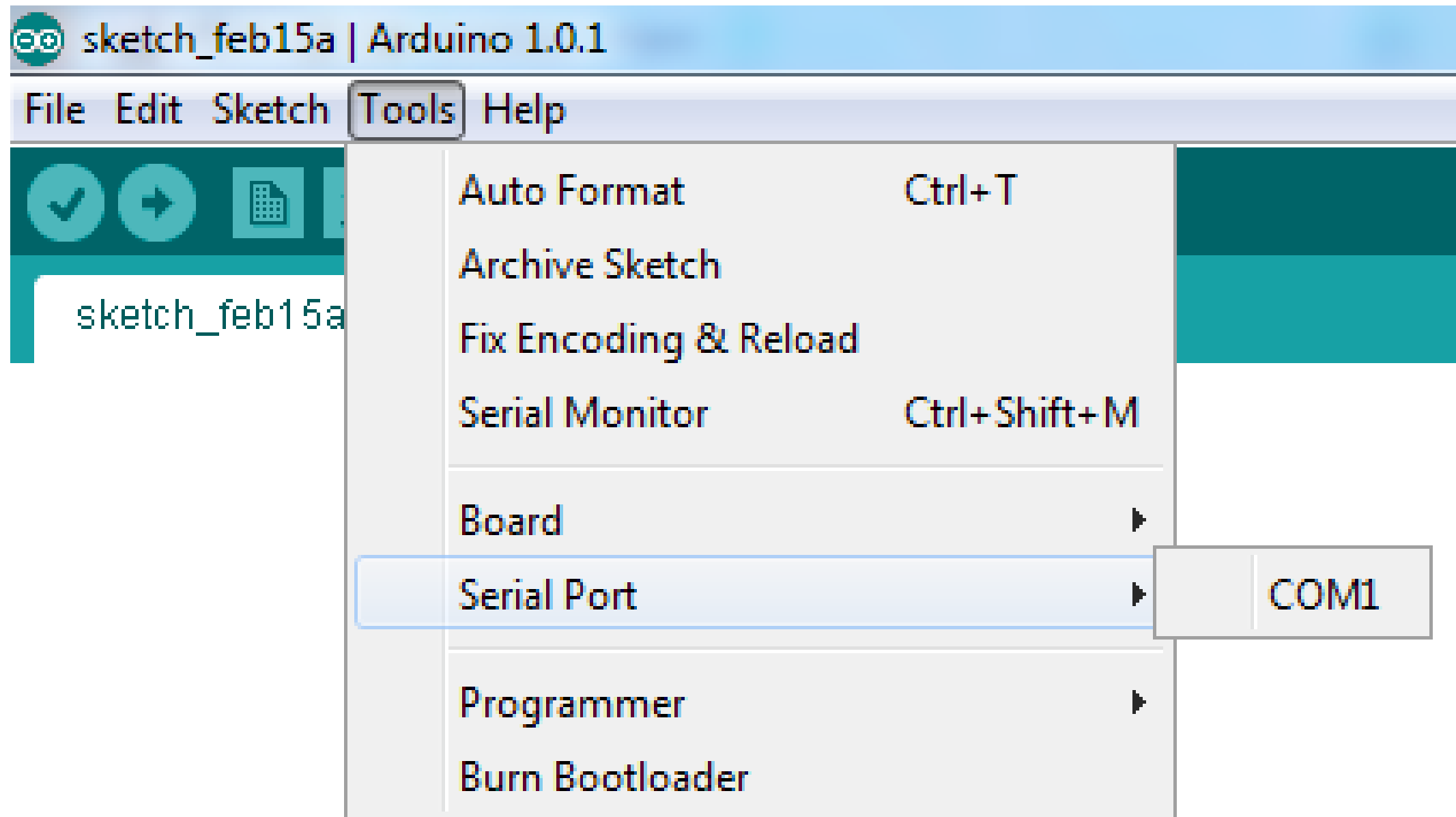


# ARDUINO IDE





# ARDUINO IDE





## FEATURES OF ARDUINO IDE



- Open-source
  - makes it easy - write code and upload it to the board.
- Runs on
  - Windows
  - Mac OS X
  - Linux
- C++ Based codes
- RTOS - Hard Task – Super Loop based approach



# ARDUINO GETTING STARTED



- Get an Arduino board and USB cable
- Download the Arduino environment
- Connect the board
- Install the drivers
- Launch the Arduino application
- Code Program for the application
- Select your board
- Select your serial port
- Upload the program





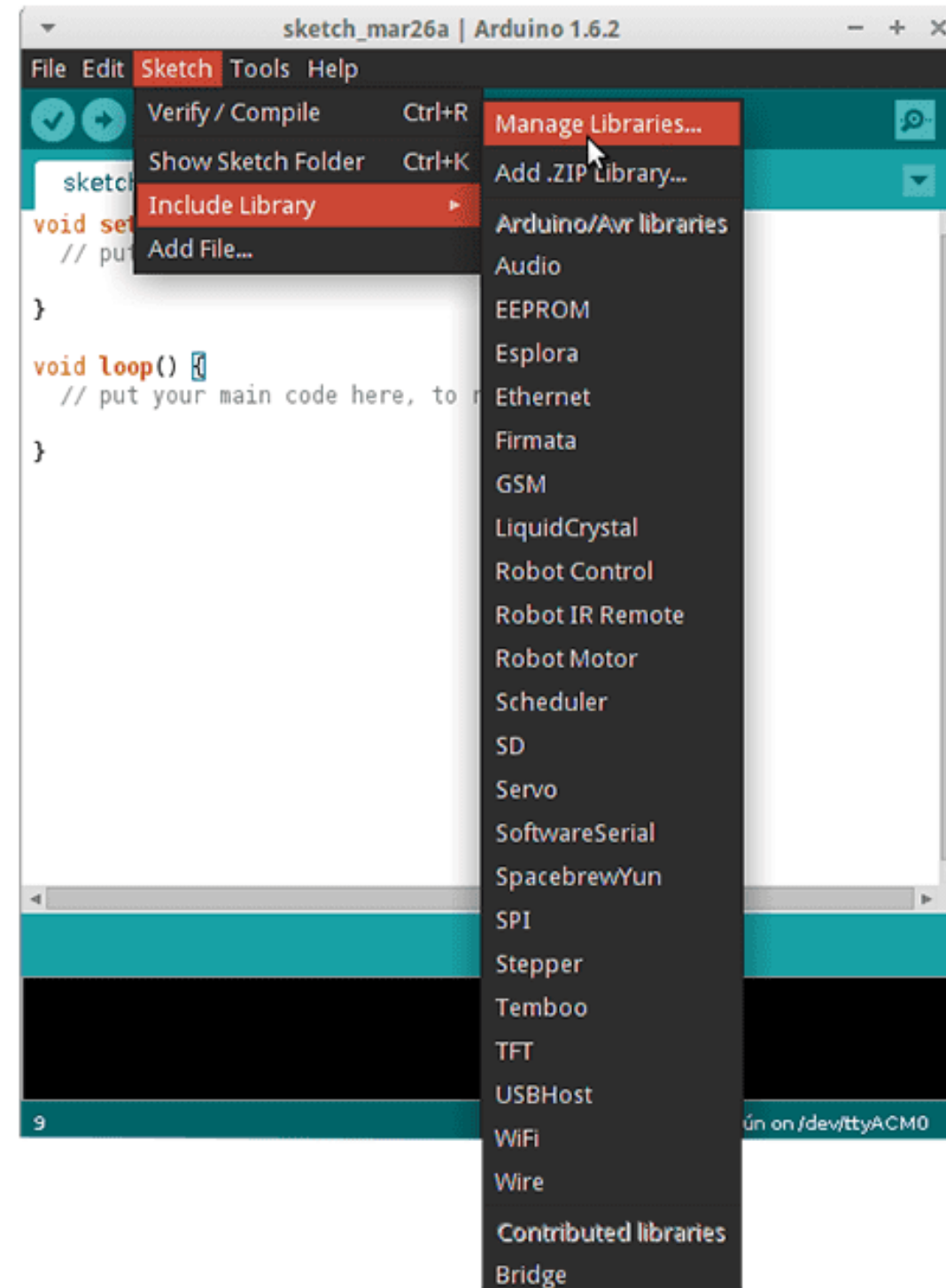
## ARDUINO LIBRARIES



- The Arduino environment can be extended through the use of libraries, just like most programming platforms. Libraries provide extra functionality for use in sketches, e.g. working with hardware or manipulating data.
- To use a library in a sketch, select it from Sketch > Import Library.
- A number of libraries come installed with the IDE, but you can also download or create your own



# INSTALLING/ADDING ARDUINO LIBRARY







# INSTALLING/ADDING ARDUINO LIBRARY



The screenshot shows the Arduino Library Manager interface. At the top, there are filters for 'Type' (set to 'All') and 'Topic' (set to 'All'), along with a search bar labeled 'Filter your search...'. Below the filters, several libraries are listed. The 'EEPROM' library is highlighted, and its version dropdown menu is open, showing options for 'Version 1.2', 'Version 1.1', and 'Version 1.0'. The 'Version 1.2' option is selected. To the right of the dropdown is an 'Install' button. The description for the EEPROM library reads: 'Enables reading and writing to the permanent board storage. For all Arduino boards BUT Arduino DUE. More info'.



# INSTALLING/ADDING ARDUINO LIBRARY



The screenshot shows the 'Library Manager' window in the Arduino IDE. At the top, there are dropdown menus for 'Type' (set to 'All') and 'Topic' (set to 'All'), followed by a search bar labeled 'Filter your search...'. Below this, a list of installed libraries is displayed:

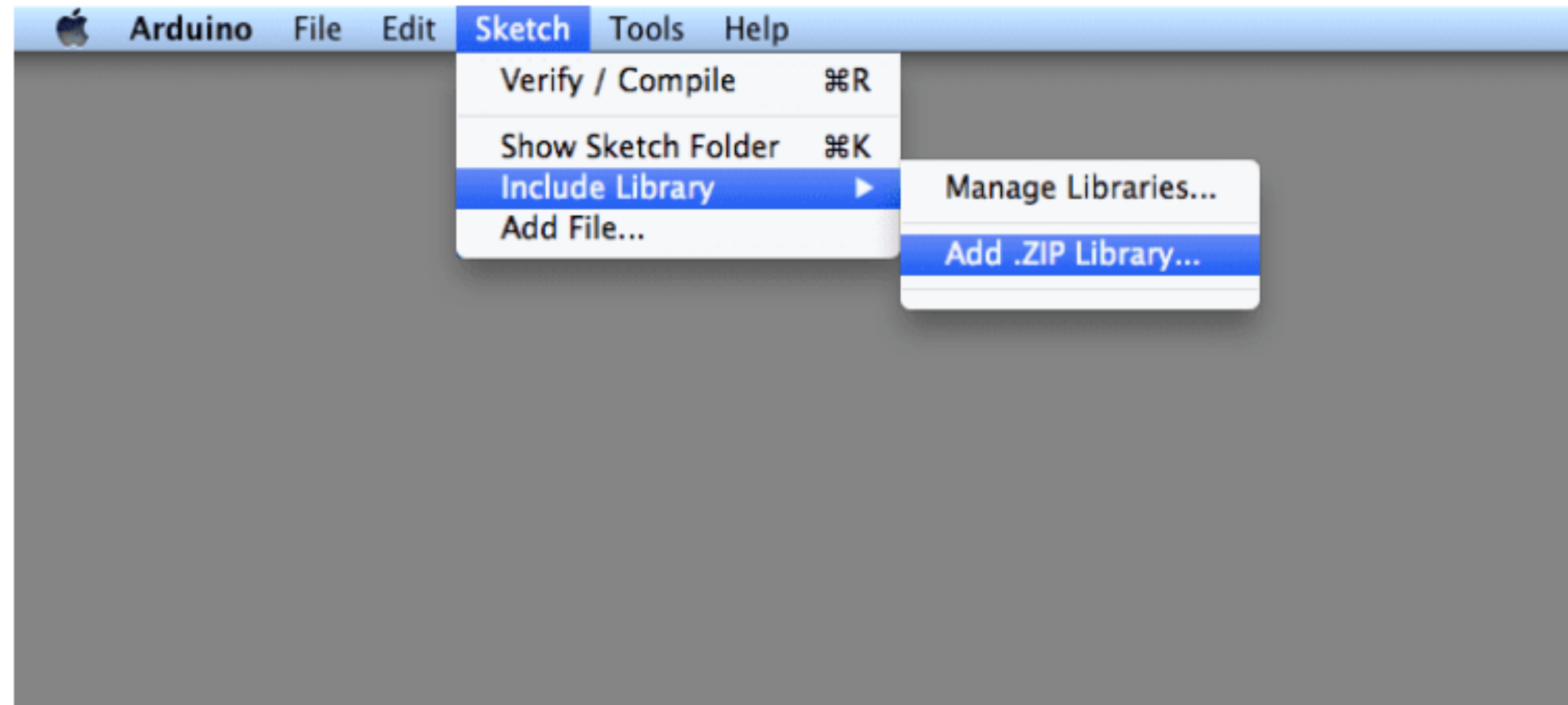
- Audio Built-In by Arduino Version 1.0 INSTALLED**  
Allows playing audio files from an SD card. For Arduino DUE only. With this library you can use the Arduino Due DAC outputs to play audio files.  
The audio files must be in the raw .wav format.  
[More info](#)
- Bridge by Arduino Version 1.2 INSTALLED**  
Enables the communication between the Linux processor and the AVR. For Arduino Yún and TRE only. The Bridge library feature: access to the shared storage, run and manage linux processes, open a remote console, access to the linux file system, including the SD card, establish http clients or servers.  
[More info](#)  
Buttons:
- EEPROM Built-In by Arduino, Christopher Andrews Version 2.0 INSTALLED**  
Enables reading and writing to the permanent board storage. For all Arduino boards BUT Arduino DUE.  
[More info](#)
- Esplora Built-In by Arduino Version 1.0 INSTALLED**  
Grants easy access to the various sensors and actuators of the Esplora. For Arduino Esplora only. The sensors available on the board are: 2-Axis analog joystick with center push-button, 4 push-buttons, microphone, light sensor, temperature sensor, 3-axis accelerometer, 2 TinkerKit input connectors. The actuators available on the board are: bright RGB LED, piezo buzzer, 2 TinkerKit



## INSTALLING/ADDING ARDUINO LIBRARY BY ZIP



Libraries are often distributed as a ZIP file or folder. The name of the folder is the name of the library. Inside the folder will be a .cpp file, a .h file and often a keywords.txt file, examples folder, and other files required by the library. Starting with version 1.0.5, you can install 3rd party libraries in the IDE. Do not unzip the downloaded library, leave it as is.



In the Arduino IDE, navigate to Sketch > Include Library > Add .ZIP Library. At the top of the drop down list, select the option to "Add .ZIP Library".

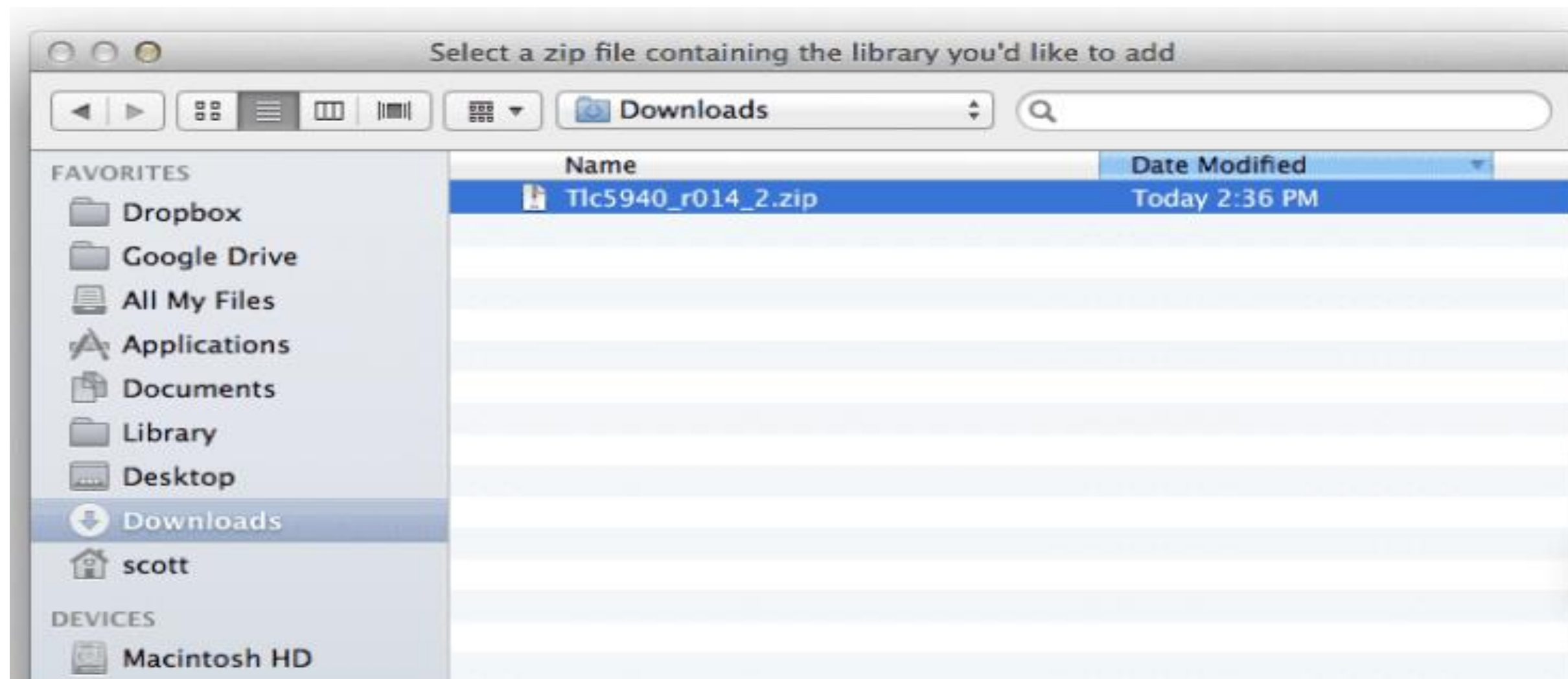


## INSTALLING/ADDING ARDUINO LIBRARY



Return to the *Sketch > Include Library menu.* menu. You should now see the library at the bottom of the drop-down menu. It is ready to be used in your sketch. The zip file will have been expanded in the *libraries* folder in your Arduino sketches directory.

NB: the Library will be available to use in sketches, but with older IDE versions examples for the library will not be exposed in the *File > Examples* until after the IDE has restarted.

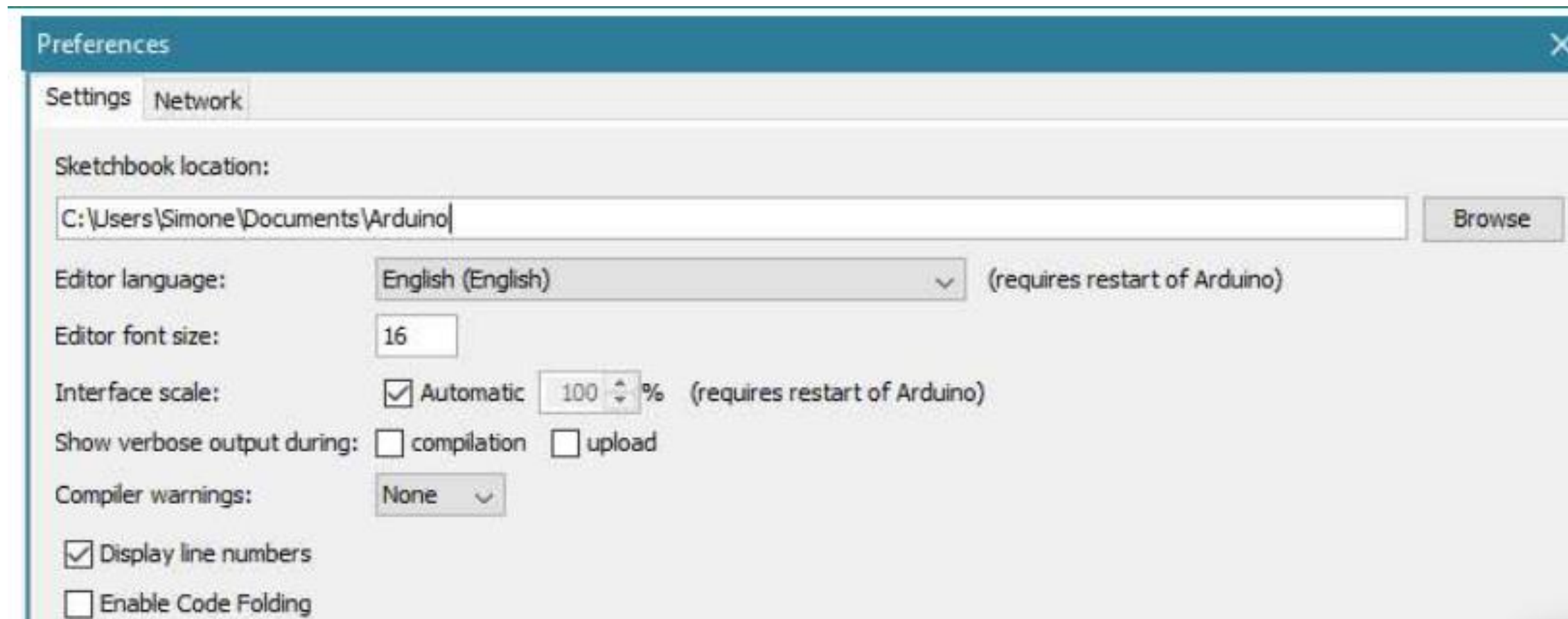




## MANUAL INSTALLING/ADDING ARDUINO LIBRARY



- When you want to add a library manually, you need to download it as a ZIP file, expand it and put in the proper directory.
- The ZIP file contains all you need, including usage examples if the author has provided them.
- The library manager is designed to install this ZIP file automatically as explained in the former chapter, but there are cases where you may want to perform the installation process manually and put the library in the *libraries* folder of your sketchbook by yourself.

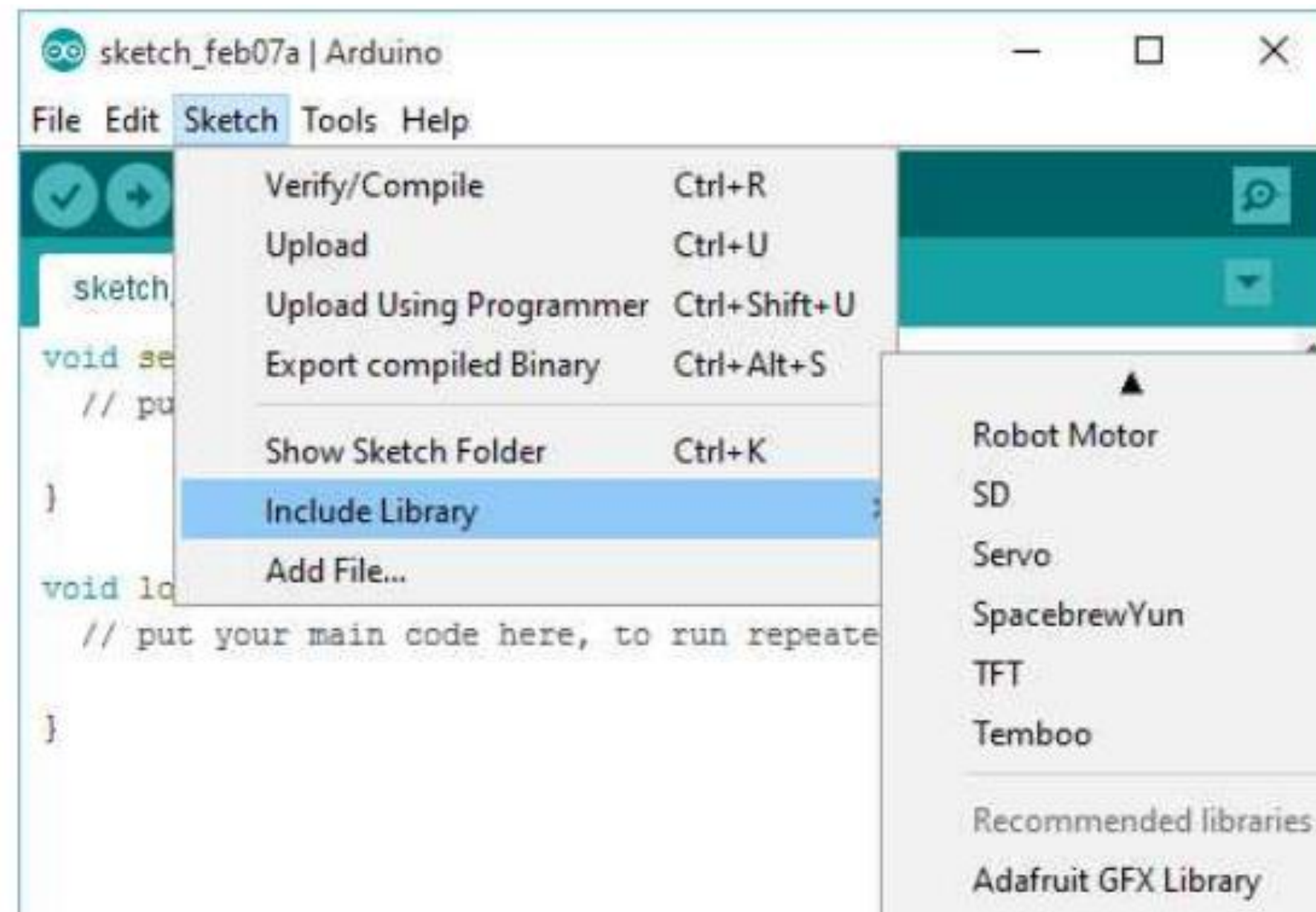




# INSTALLING/ADDING ARDUINO LIBRARY



Start the Arduino Software (IDE), go to *Sketch > Include Library*. Verify that the library you just added is available in the list.





*Thank  
You*