



# Cheatsheet: Arduino Command Line

<a href="#">General</a>	<a href="#">2</a>
General Information	2
Resources	2
Cores And Fully Qualified Board Names	2
<a href="#">Arduino IDE Application</a>	<a href="#">3</a>
General Information	3
Command Line Usage	3
<a href="#">Arduino CLI Tool</a>	<a href="#">5</a>
General Information	5
Command Line Usage	5
<a href="#">Revisions</a>	<a href="#">7</a>

---

---

## General

---

---

### General Information

- This cheatsheet provides the most common command line usage for both the Arduino IDE application and the Arduino CLI tool.

### Resources

- [Using The Arduino Command Line](#) article on [WoolseyWorkshop.com](#).

### Cores And Fully Qualified Board Names

- Cores are the platforms to which supported boards belong. The included boards.txt files contain the boards supported for a particular core platform.
- Fully Qualified Board Names (FQBN) are board identifiers used for specifying individual boards with the Arduino IDE and the Arduino CLI.
- core = <package>:<architecture>, fqbn = <package>:<architecture>:<board>, where
  - <package> = vendor identifier; typically arduino
  - <architecture> = microcontroller architecture; e.g., avr, megaavr, sam, etc.
  - <board> = board name defined within core boards.txt files; e.g., uno, uno2018, yun, etc.
- FQBN Examples
  - arduino:avr:uno (Arduino Uno R3)
  - arduino:megaavr:uno2018 (Arduino Uno WiFi R2)

---

---

## Arduino IDE Application

---

---

### General Information

- [Download](#)
- [Documentation](#)
- Executable name
  - Linux: arduino
  - macOS: Arduino
  - Windows: arduino\_debug.exe

### Command Line Usage

- General syntax: `$ arduino [<options>] [<path>/<sketch>.ino]`
- Show version
  - `$ arduino --version`
- Open the IDE
  - `$ arduino`
- Open a sketch in the IDE
  - Syntax: `$ arduino <path>/<sketch>.ino`
  - Example: `$ arduino Blink.ino`
    - Executed from within project directory.
  - Example: `$ arduino ~/Documents/Arduino/Blink/Blink.ino`
- Install a board (core)
  - Syntax: `$ arduino --install-boards "<package>:<architecture>[:<version>]"`
  - Example: `$ arduino --install-boards "arduino:sam"`
  - Example: `$ arduino --install-boards "arduino:avr:1.6.2"`
- Verify (compile) a sketch
  - Syntax: `$ arduino [--board <fqbn>[:<parameter>]] --verify <path>/<sketch>.ino`
  - Example: `$ arduino --verify Blink.ino`
    - Executed from within project directory with current board preference.
  - Example: `$ arduino --board arduino:avr:uno --verify ~/Documents/Arduino/Blink/Blink.ino`
  - Example: `$ arduino --board arduino:megaavr:uno2018:mode=off --verify ~/Documents/Arduino/Blink/Blink.ino`
- Upload a sketch to board
  - Syntax: `$ arduino [--board <fqbn>[:<parameter>]] --port <port>] --upload <path>/<sketch>.ino`
  - Example: `$ arduino --upload Blink.ino`
    - Executed from within project directory with current board preference.
  - Example: `$ arduino --board arduino:avr:uno --port /dev/cu.usbserial-A6028SP5 --upload ~/Documents/Arduino/Blink/Blink.ino`
  - Example: `$ arduino --board arduino:megaavr:uno2018:mode=off --port /dev/cu.usbmodem14202 --upload ~/Documents/Arduino/Blink/Blink.ino`

- **Get preferences**
  - **Syntax:** `$ arduino --get-pref <preference>`
  - **Example:** `$ arduino --get-pref board`
    - Returns current board preference, e.g., uno, uno2018, etc.
- **Save preferences**
  - **Syntax:** `$ arduino <options> --save-prefs`
  - **Example:** `$ arduino --board arduino:avr:uno --port /dev/cu.usbserial-A6028SP5 --save-prefs`
  - **Example:** `$ arduino --board arduino:megaavr:uno2018:mode=off --port /dev/cu.usbmodem14202 --save-prefs`
- **Install a library**
  - **Syntax:** `$ arduino --install-library "<library>[:<version>]"`
  - **Example:** `$ arduino --install-library "WiFi101"`
  - **Example:** `$ arduino --install-library "Bridge:1.0.0"`

---

---

## Arduino CLI Tool

---

---

### General Information

- Source, download, and documentation available on [GitHub](#)
- Executable name: `arduino-cli`

### Command Line Usage

- General syntax: `$ arduino-cli <command> [<options>] [<path>/<sketch>]`
- Get help
  - Syntax: `$ arduino-cli [<command>] --help`
  - Syntax: `$ arduino-cli help [<command>]`
  - Example: `$ arduino-cli --help`
  - Example: `$ arduino-cli help`
  - Example: `$ arduino-cli compile --help`
  - Example: `$ arduino-cli help compile`
- Show version
  - `$ arduino-cli version`
- Update core (platform) indexes
  - `$ arduino-cli core update-index`
  - Updates configuration files and should be run after each new Arduino CLI installation.
- List installed cores
  - `$ arduino-cli core list`
- Search for cores
  - Syntax: `$ arduino-cli core search <search>`
  - Example: `$ arduino-cli core search arduino`
  - Example: `$ arduino-cli core search wifi`
- Install a core (board platform)
  - Syntax: `$ arduino-cli core install <core>`
  - Example: `$ arduino-cli core install arduino:megaavr`
- List supported boards
  - `$ arduino-cli board listall`
- Discover connected board(s)
  - `$ arduino-cli board list`
- List board details
  - Syntax: `$ arduino-cli board details <fqbn>[:parameters]`
  - Example: `$ arduino-cli board details arduino:megaavr:uno2018`
- Create a new sketch
  - Syntax: `$ arduino-cli sketch new <sketch>`
  - Creates `<sketch>` folder in default sketch directory with associated `.ino` file.
- Compile (verify) a sketch
  - Syntax: `$ arduino-cli compile --fqbn <fqbn>[:parameters] [<path>/<sketch>]`
  - Example: `$ arduino-cli compile --fqbn arduino:avr:uno`
    - Executed from within project directory.

- **Example:** `$ arduino-cli compile --fqbn arduino:megaavr:uno2018:mode=off ~/Documents/Arduino/Blink`
- **Creates board specific .elf and .hex files within sketch directory.**
- **Upload a sketch to board**
  - **Syntax:** `$ arduino-cli upload --fqbn <fqbn>[:parameters] --port <port> [<path>/<sketch>]`
  - **Example:** `$ arduino-cli upload --fqbn arduino:avr:uno --port /dev/cu.usbserial-A6028SP5`
    - Executed from within project directory.
  - **Example:** `$ arduino-cli upload --fqbn arduino:megaavr:uno2018:mode=off --port /dev/cu.usbmodem14202 ~/Documents/Arduino/Blink`
- **Search for libraries**
  - **Syntax:** `$ arduino-cli lib search <lib>`
  - **Example:** `$ arduino-cli lib search wifi101`
- **Install a library**
  - **Syntax:** `$ arduino-cli lib install <library>[:<version>]`
  - **Example:** `$ arduino-cli lib install WiFi101`
  - **Example:** `$ arduino-cli lib install Bridge@1.0.0`

---

---

## Revisions

---

---

Version	Date	Modifications
1.0	April 14, 2019	Initial version.