

# Introduction to GitHub

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A BASIC OVERVIEW

# Overview

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- Introduction to GitHub
- Usage of GitHub
- GitHub Collaboration features
- Best practices to use GitHub
- Documentation on GitHub
- Benefits for students using GitHub

# What is GitHub?

- GitHub is a cloud-based hosting service for Git
- Stores Git repositories online
- Enables collaboration and sharing
- Provides backup and access from anywhere
- Popular in open-source and industry

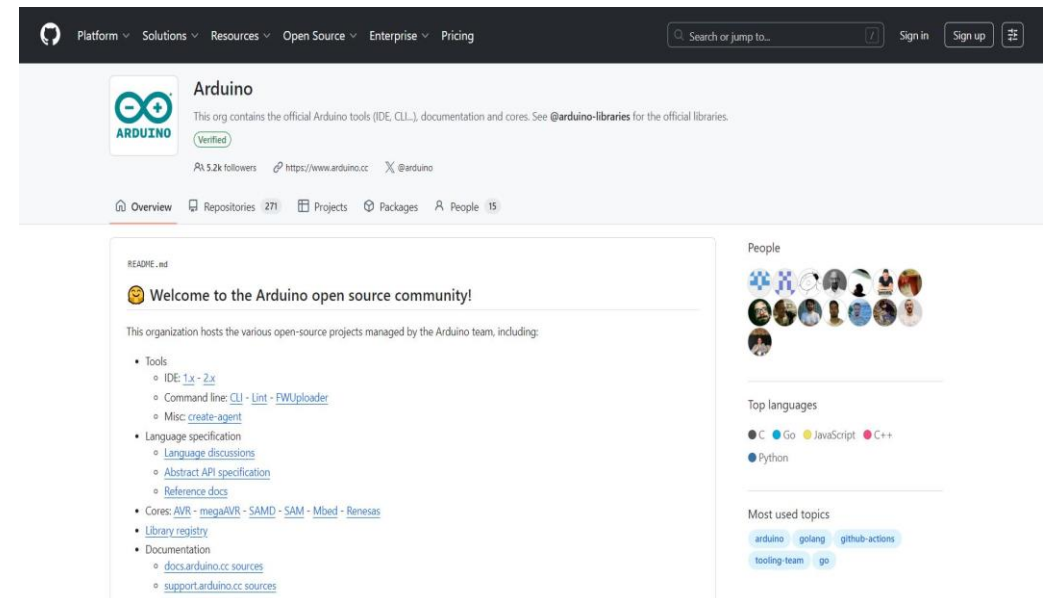


Fig: Arduino GitHub Repository

# When to Use GitHub?

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- Team projects
- Open-source contributions
- Project backup
- Code review
- Resume and portfolio building

# GitHub Collaboration Features

- Pull Requests – propose changes
- Issues – track bugs and tasks
- Forks – personal copy of a project
- Actions – automation and CI/CD

The screenshot displays the GitHub interface for the repository 'arduino/arduino-examples'. The top navigation bar includes links for Code, Issues (11), Pull requests (14), Actions, Security, and Insights. The repository is marked as 'Public'. On the right, there are buttons for Sponsor, Notifications, Fork (50), and Star (126). Below the navigation bar, the repository structure shows 'main' branch, 10 Branches, and 90 Tags. A search bar 'Go to file' and a 'Code' button are also visible.

The main content area is divided into two panels. The left panel, titled 'is:pr is:open', shows a list of Pull Requests:

- 14 Open, 56 Closed
- Hoist functions in ArduinoISP sketch (topic: code, type: enhancement) #82 opened on Jan 30, 2025 by T4rp • Review required
- Add Nicla Sense ME to compilation checks #77 opened on May 22, 2024 by aliphys • Changes requested
- Add Portenta X8 to compilation checks (topic: infrastructure, type: enhancement) #76 opened on May 22, 2024 by aliphys • Changes requested
- Remove magic numbers from Tone() examples (topic: code, type: enhancement) #64 opened on Jun 22, 2023 by krekr • Review required
- Change hardcoded Pin 13 to LED\_BUILTIN #56 opened on Jun 13, 2022 by ubidefo • Changes requested
- Fixes #33 (type: imperfection) #40 opened on Aug 2, 2021 by agdl • Review required

The right panel, titled 'is:issue state:open', shows a list of Issues:

- Open: 11, Closed: 9
- [ACELL04] Include the Portenta X8 and Nicla Sense ME as part of the CI workflow (type: enhancement) #75 · aliphys opened on May 22, 2024
- tonePitchFollower schematic doesn't match text description (topic: code, type: imperfection) #38 · TheOldBrick opened on May 19, 2021
- 08.Strings > StringLength has several problems #36 · TheOldBrick opened on Apr 2, 2021
- the content of the example file ReadASCIIString.ino feels odd to me. #35 · mj2068 opened on Mar 30, 2021
- 11.ArduinoISP/ArduinoISPino: with 'void pulse(int pin, int times)', it typically pulses times + 1, which #22 · brewmaniz opened on Oct 29, 2020
- Problems with the Debounce tutorial #12 · oakkitten opened on Nov 26, 2018

Fig: GitHub collaboration Features

# GitHub Best Practices

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- Commit frequently
- Write clear commit messages
- Pull before pushing
- Use branches for features
- Keep repositories organized

# Creating Documentation Using GitHub

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- Commonly used to host project documentation
- Documentation lives inside the repository
- Written in simple text formats (Markdown)
- Easy to update and collaborate on

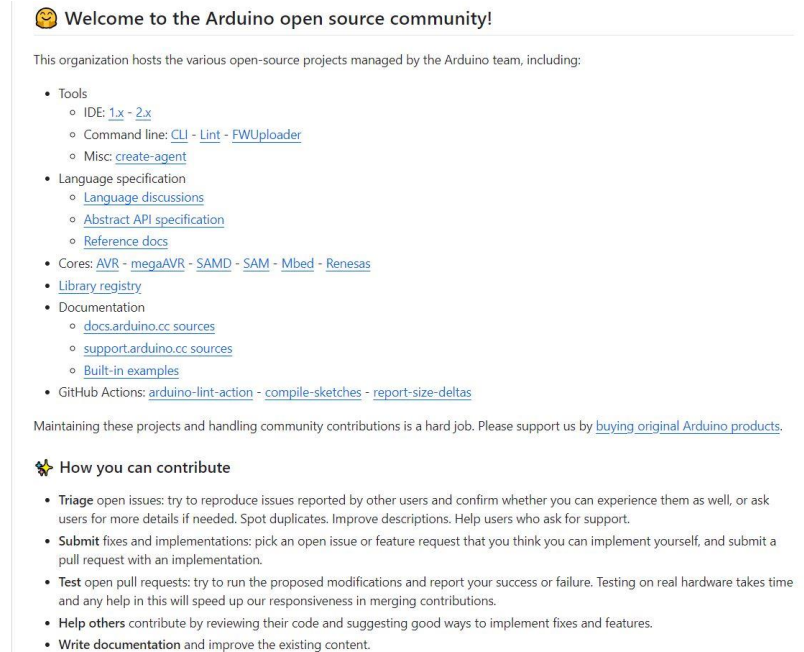


Fig: Documentation in GitHub

# What is Markdown?

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- Lightweight formatting language
- Easy to read and write
- Uses simple symbols (#, \*, -)
- Automatically rendered by GitHub



# Common Documentation Files on GitHub

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- README.md
  - Main project description
  - Explains what the project does
  - Shows how to install and use it
- CONTRIBUTING.md
  - Rules for contributing
- LICENSE
  - Legal usage terms
- docs/ folder
  - Detailed documentation files

# GitHub Pages (Documentation Websites)

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- GitHub can host documentation as a website
- Uses Markdown + static site generators
- Common tools: Jekyll, MkDocs
- Free hosting for public repositories

# GitHub Benefits for Students

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- Industry-relevant skill
- Teamwork experience
- Organized project history
- Easy project submission
- Public portfolio for internships/jobs

# Thank You

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## Any Questions?