

# Web Application Development

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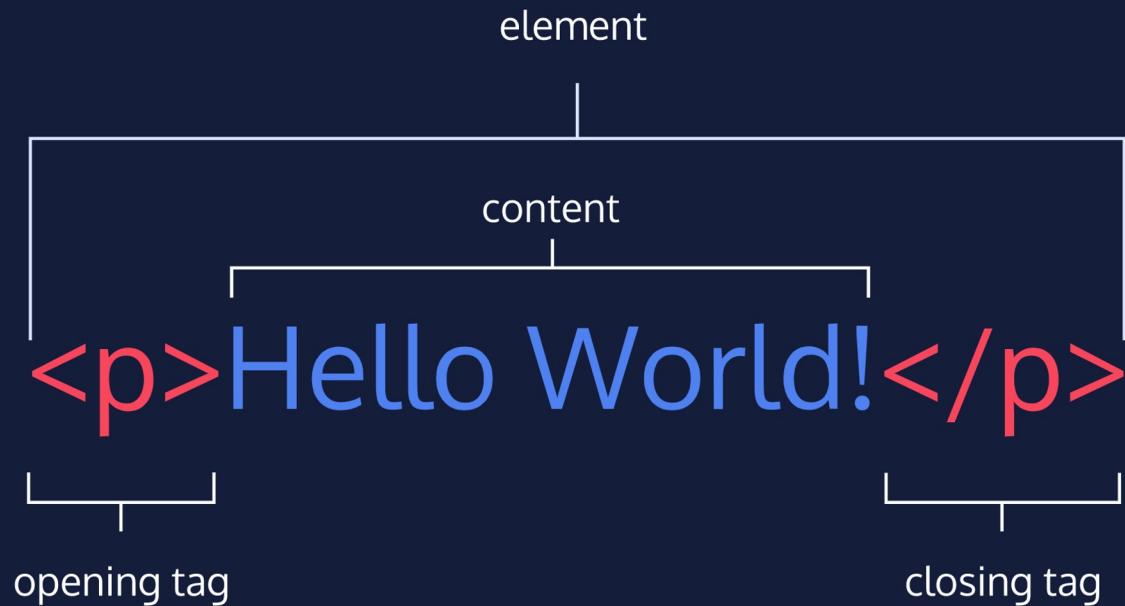
# Frontend

# HTML

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>This is a Heading</h1>
<p>This is a paragraph.</p>

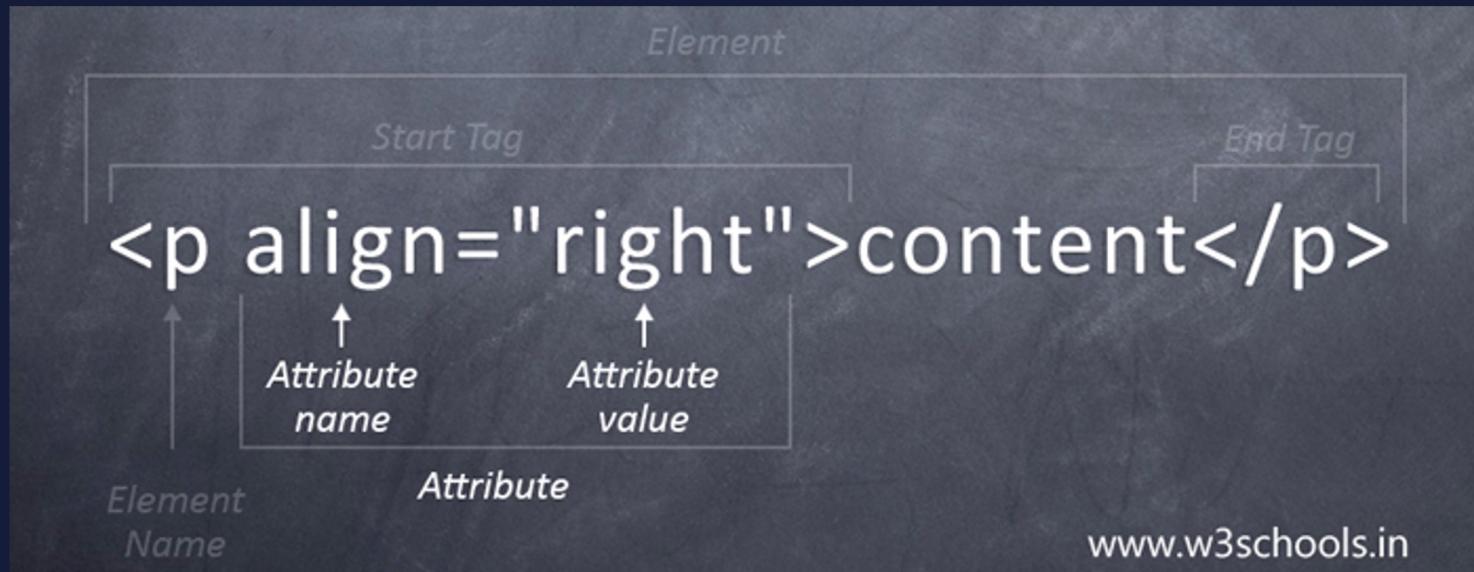
</body>
</html>
```



Attribute

  
`<div class="main"> content </div>`

name              value  
attribute        attribute



# HTML

```
<!DOCTYPE html> ← https://www.w3schools.com/tags/tag\_doctype.asp

<html>

<head></head>

<body>

<h1>My First Page</h1>

<p>This is my first page.</p>

<a href="#faq">Click here to read the Frequently Asked Questions</a>

<hr/>

<h3 id="faq">Frequently asked questions</h3>

<p>The first rule about fight club is that you do not talk about fight club.</p>

<p>However, if you do have questions, please e-mail me at foo@bar.com</p>

</body>

</html>
```

# Styles

- Inline
- Style tag
- Stylesheet file
- Programmatically (JS)

# Styles: style tag

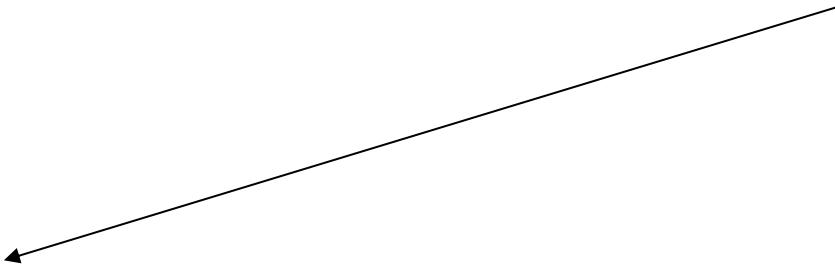
```
<!DOCTYPE html>

<html>

  <head>
    </head>
    <body>

      <h1 style="color: red">My First Page</h1>
      <p>This is my first page.</p>
      <a href="#faq">Click here to read the Frequently Asked Questions</a>
    </body>
</html>
```

Change color of a header



# Styles: inline

```
<!DOCTYPE html>

<html>
  <head>
    <style>
      h1 {
        color: red;
      }
    </style>
  </head>
  <body>
    <h1>My First Page</h1>
    <p>This is my first page.</p>
    <a href="#faq">Click here to read the Frequently Asked Questions</a>
    <h1>My Second Page</h1>
  </body>
</html>
```

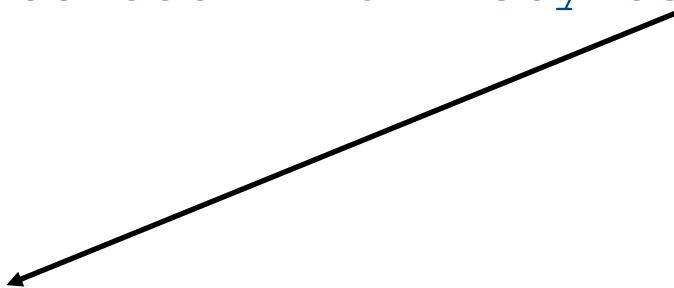
Change color of a header



# Styles: file

```
<link rel="stylesheet" href="styles.css">
```

```
h1 {  
    color: red;  
}
```



Cascading Style Sheets

[https://developer.mozilla.org/en-US/docs/Learn/CSS/First\\_steps/Getting\\_started](https://developer.mozilla.org/en-US/docs/Learn/CSS/First_steps/Getting_started)

# CSS

How it looks  
like in browser?



```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
<style>
body {
    background-color: #77a;
    text-align: center;
    color: white;
    font-family: Arial, Helvetica, sans-serif;
}
</style>
</head>
<body>

<h1>This is a Heading</h1>
<p>This is a paragraph.</p>
<p>Edit the code in the window to the left, and click "Run" to view the
result.</p>


</body>
</html>
```

# HTML

**This is a Heading**

This is a paragraph.

Edit the code in the window to the left, and click "Run" to view the result.



# Guess the color

```
● ● ●  
  
<!DOCTYPE html>  
<html>  
<head>  
<title>Page Title</title>  
<style>  
body {  
    background-color: blue;  
}  
</style>  
</head>  
<body style="background-color: green">  
  
<h1>This is a Heading</h1>  
  
</body>  
</html>
```

# Styles

- Inline > Style tag > Stylesheet file

The screenshot shows a code editor interface with two panes. The left pane is labeled "HTML ▾" and contains the following HTML code:

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4  <title>Page Title</title>
5  <style>
6  body {
7    background-color: blue;
8  }
9  </style>
10 </head>
11 <body style="background-color: green">
12
13 <h1>This is a Heading</h1>
14
15 </body>
16 </html>
```

The right pane is labeled "CSS ▾" and contains the following CSS code:

```
1  body {
2    background-color: red;
3  }
```

Below the panes, there is a preview area with a green background. In the center of the green area, the text "This is a Heading" is displayed in white, bold, black font.

# Layouts

- Table
- Div with fixed size
- Div + float
- Flex
- CSS Grid

!?

# Quiz time



<https://quizizz.com/join>

# JavaScript (JS)

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>

<script>...</script>

</body>
</html>
```

# JavaScript (JS)

- <script>alert()</script>
- <button onclick="document.write('Hello, world!')">Click me</button>
- <script type="text/javascript" src="path-to-javascript-file.js"></script>

# JavaScript (JS)

```
● ● ●

<!DOCTYPE html>
<html>
<body>

<button onclick="setInterval(myFunction, 1000);">Show timer</button>

<script>
function myFunction() {
    document.getElementById('timer').innerHTML = Date();
}
</script>

<div id="timer"></div>

</body>
</html>
```

# JavaScript (JS)

```
<!doctype html>
<html>
<head>
    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.0-beta3/dist/css/bootstrap.min.css" rel="stylesheet">
    <title>Hello, world!</title>

    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/css/bootstrap.min.css">
    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>
</head>

<body>
<div class="container">

    <button type="button" class="btn btn-primary" data-toggle="modal" data-target="#myModal">Open Modal</button>

    <div class="modal fade" id="myModal" role="dialog">
        <div class="modal-dialog">
            <div class="modal-content">
                <div class="modal-header" style="display: block;">
                    <button type="button" class="close" data-dismiss="modal">&times;</button>
                    <h4 class="modal-title">Modal Header</h4>
                </div>
                <div class="modal-body">
                    <p>Some text in the modal.</p>
                </div>
                <div class="modal-footer">
                    <button type="button" class="btn btn-default" data-
dismiss="modal">Close</button>
                </div>
            </div>
        </div>
    </div>
</div>
</body>
</html>
```

[https://www.w3schools.com/bootstrap/bootstrap\\_examples.asp](https://www.w3schools.com/bootstrap/bootstrap_examples.asp)  
<https://getbootstrap.com/docs/4.0>

# JavaScript (JS)

- <https://www.learn-js.org/>
  - Hello, World!
  - Variables and Types
  - Arrays
  - Manipulating Arrays
- <https://javascript.info/>

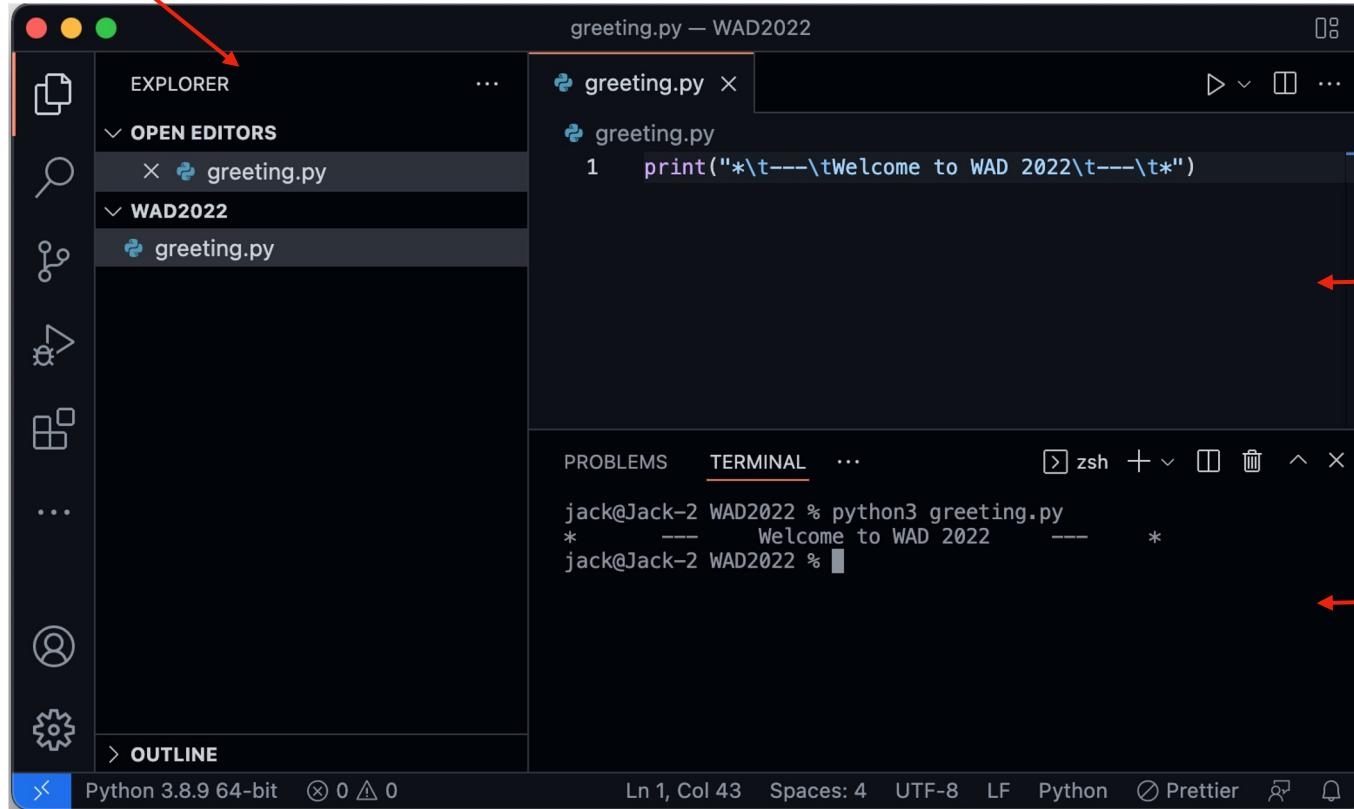
# Literature



- HTML Basics: [https://developer.mozilla.org/en-US/docs/Learn/Getting started with the web/HTML basics](https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web/HTML_basics)
- CSS Basics: [https://developer.mozilla.org/en-US/docs/Learn/Getting started with the web/CSS basics](https://developer.mozilla.org/en-US/docs/Learn/Getting_started_with_the_web/CSS_basics)
- JavaScript course: <https://learnjavascript.online/app.html>
- HTML+CSS with examples: [https://www.w3schools.com/html/html\\_css.asp](https://www.w3schools.com/html/html_css.asp)
- CSS Grid examples: <https://gridbyexample.com/examples/>
- How to use Chrome Dev Tools: <https://developer.chrome.com/docs/devtools/>
- Many examples in the left menu:  
[https://www.w3schools.com/howto/howto\\_css\\_images\\_side\\_by\\_side.asp](https://www.w3schools.com/howto/howto_css_images_side_by_side.asp)

# IDE

File explorer



Visual Studio Code

Code (text) editor

Terminal

# Download Visual Studio Code

Free and built on open source. Integrated Git, debugging and extensions.



↓ Windows

Windows 7, 8, 10, 11

User Installer  
System Installer  
.zip

64 bit	32 bit	ARM
64 bit	32 bit	ARM
64 bit	32 bit	ARM



↓ .deb

Debian, Ubuntu

↓ .rpm

Red Hat, Fedora, SUSE

.deb  
.rpm  
.tar.gz

64 bit	ARM	ARM 64
64 bit	ARM	ARM 64
64 bit	ARM	ARM 64

Snap Store



↓ Mac

macOS 10.11+

.zip  
Universal  
Intel Chip  
Apple Silicon

[Download Visual Studio Code](#)

# Visual Studio Code Extensions

Extension: HTML CSS Support — WAD2022

EXTENSIONS: MAR... ⌂ ⌂ ⌂ ...

HTML

- HTML Snippets** ⌂ 7.1M ★ 4.5  
Full HTML tags including HT...  
Mohamed Abusaid [Install](#)
- HTML CSS Support** ⌂ 31ms  
CSS Intellisense for HTML  
ecmel [⚙️](#)
- IntelliSense fo...** ⌂ 4.3M ★ 3.5  
CSS class name completion f...  
Zignd [Install](#)
- JS-CSS-HTML...** ⌂ 2.9M ★ 1.5  
Format ,prettyfify and beautify ...  
lonely [Install](#)
- HTML Preview** ⌂ 1.6M ★ 3.5  
Provides ability to preview HT...  
Thomas Haakon Town... [Install](#)
- HTML Boilerplate** ⌂ 1.3M ★ 5

Extension: HTML CSS Support X

HTML CSS Support

ecmel | ⌂ 9,038,822 | ★

CSS Intellisense for HTML

[Disable](#) ⌂ [Uninstall](#) ⌂ [⚙️](#)

This extension is enabled globally.

[Details](#) [Feature Contributions](#) [Changelog](#) [Run](#)

## Visual Studio Code CSS Intellisense for HTML

HTML id and class attribute completion for Visual

Python 3.8.9 64-bit ⌂ 0 △ 0

# Version control system

- Tracking code changes
- Tracking who made changes
- Coding collaboration



THIS IS GIT. IT TRACKS COLLABORATIVE WORK  
ON PROJECTS THROUGH A BEAUTIFUL  
DISTRIBUTED GRAPH THEORY TREE MODEL.

COOL. HOW DO WE USE IT?

NO IDEA. JUST MEMORIZIZE THESE SHELL  
COMMANDS AND TYPE THEM TO SYNC UP.  
IF YOU GET ERRORS, SAVE YOUR WORK  
ELSEWHERE, DELETE THE PROJECT,  
AND DOWNLOAD A FRESH COPY.



# Git

# Git basic concepts

- Repository
- Staging
- Commit
- Push/Pull



<https://www.w3schools.com/git/default.asp?remote=github>

<https://www.w3schools.com/git/exercise.asp>

# Commit messages

	COMMENT	DATE
O	CREATED MAIN LOOP & TIMING CONTROL	14 HOURS AGO
O	ENABLED CONFIG FILE PARSING	9 HOURS AGO
O	MISC BUGFIXES	5 HOURS AGO
O	CODE ADDITIONS/EDITS	4 HOURS AGO
O	MORE CODE	4 HOURS AGO
O	HERE HAVE CODE	4 HOURS AGO
O	AAAAAAA	3 HOURS AGO
O	ADKFJSLKDFJSOKLFJ	3 HOURS AGO
O	MY HANDS ARE TYPING WORDS	2 HOURS AGO
O	HAAAAAAAAANDS	2 HOURS AGO

AS A PROJECT DRAGS ON, MY GIT COMMIT MESSAGES GET LESS AND LESS INFORMATIVE.

# The seven rules of a great Git commit message

© Chris Beams

1. Separate subject from body with a blank line
2. Limit the subject line to 50 characters
3. Capitalize the subject line
4. Do not end the subject line with a period
5. Use the imperative mood in the subject line
6. Wrap the body at 72 characters
7. Use the body to explain what and why instead of how

# GitHub

- Git service
- Largest host of source code in the world
- Owned by Microsoft



# Create your account

Username \*

2rtUmSMsAH 

Email address \*

github@mail.itmo.xyz 

Password \*

..... 

Make sure it's at least 15 characters OR at least 8 characters including a number and a lowercase letter. [Learn more.](#)

Email preferences

Send me occasional product updates, announcements, and offers.

Verify your account



Create account

Search GitHub



Sign in

Sign up



<https://github.com/>



Almost done, @2rtUmSMsAH!

To complete your GitHub sign up, we just need to verify your email address:  
[github@mail.itmo.xyz](mailto:github@mail.itmo.xyz).

Verify email address

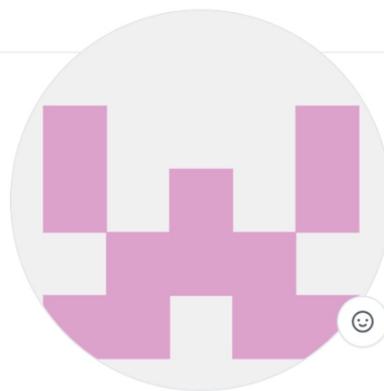
Once verified, you can start using all of GitHub's features to explore, build, and share projects.



Search or jump to...

/ Pull requests Issues Marketplace Explore

Notifications + 🎨



2rtUmSMsAH

Edit profile

Joined 35 seconds ago

Overview

Repositories

Projects

Packages



ProTip! Updating your profile with your name, location, and a profile picture helps other GitHub users get to know you.

Edit profile

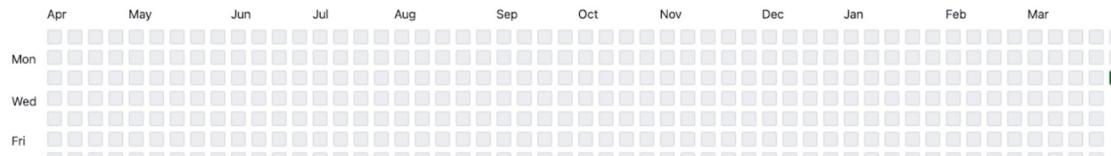
X

Popular repositories

You don't have any public repositories yet.

1 contribution in the last year

Contribution settings ▾



Learn how we count contributions.

Less More

This is your **contribution graph**. Your first square is for joining GitHub and you'll earn more as you make [additional contributions](#). More contributions means a darker green square for that day. Over time, your chart might start looking [something like this](#).



Search or jump to...

Pull requests Issues Marketplace Explore



## Create your first project

Ready to start building? Create a repository for a new idea or bring over an existing repository to keep contributing to it.

[Create repository](#)

[Import repository](#)

## Recent activity

When you take actions across GitHub, we'll provide links to that activity here.



## All activity

### Introduce yourself

The easiest way to introduce yourself on GitHub is by creating a README in a repository about you! You can start here:

jackhula / README.md

- 1 - 🌟 Hi, I'm @jackhula
- 2 - 🎓 I'm interested in ...
- 3 - 🌱 I'm currently learning ...
- 4 - 💫 I'm looking to collaborate on ...
- 5 - 📩 How to reach me ...
- 6

[Dismiss this](#)

[Continue](#)

## Explore repositories

tikv/tikv

Distributed transactional key-value database, originally created to complement TiDB

● Rust ⭐ 10.8k

near/nearcore

Reference client for NEAR Protocol

● Rust ⭐ 1.4k

lowRISC/opentitan

OpenTitan: Open source silicon root of trust

● SystemVerilog ⭐ 1.3k

[Explore more →](#)

### Discover interesting projects and people to populate your personal news feed.

Your news feed helps you keep up with recent activity on repositories you [watch](#) or [star](#) and people you [follow](#).

# Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository](#).

Owner \*

Repository name \*



jackhula

wad-itmo-2022



Great repository names are short and memorable. Need inspiration? How about [furry-octo-chainsaw](#)?

Description (optional)

WAD ITMO 2022 project



Public

Anyone on the internet can see this repository. You choose who can commit.



Private

You choose who can see and commit to this repository.

**Initialize this repository with:**

Skip this step if you're importing an existing repository.

**Add a README file**

This is where you can write a long description for your project. [Learn more](#).

**Add .gitignore**

Choose which files not to track from a list of templates. [Learn more](#).

**Choose a license**

A license tells others what they can and can't do with your code. [Learn more](#).

**Create repository**

< Code

Issues

Pull requests

Actions

Projects

Wiki

Security

Insights

Settings

## Quick setup — if you've done this kind of thing before

 Set up in Desktop

or

HTTPS

SSH

<https://github.com/jackhula/wad-itmo-2022.git>



Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

## ...or create a new repository on the command line

```
echo "# wad-itmo-2022" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin https://github.com/jackhula/wad-itmo-2022.git
git push -u origin main
```



## ...or push an existing repository from the command line

```
git remote add origin https://github.com/jackhula/wad-itmo-2022.git
git branch -M main
git push -u origin main
```



# Special repository for a profile

Owner \*

Repository name \*



itmo-cs-dev ▾

/

itmo-cs-dev



itmo-cs-dev is available.

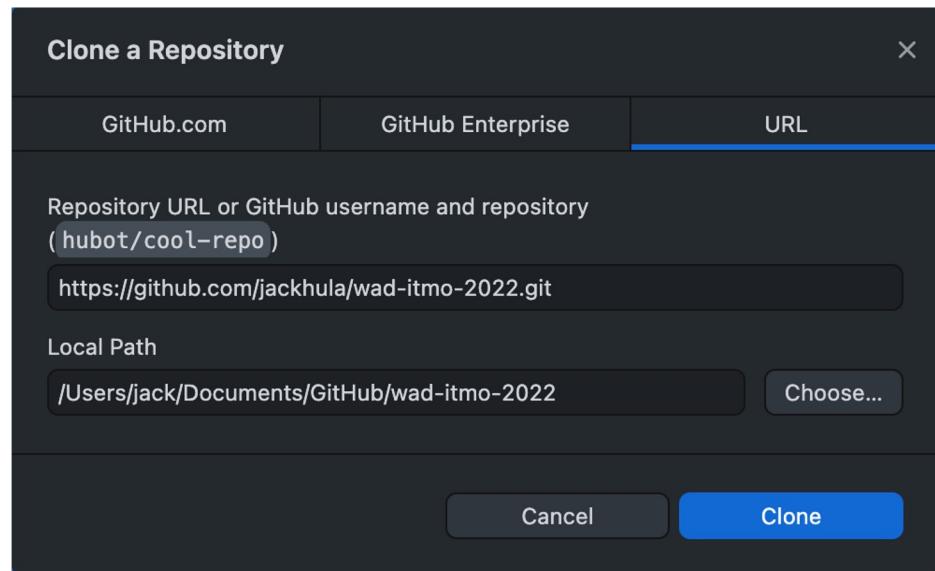
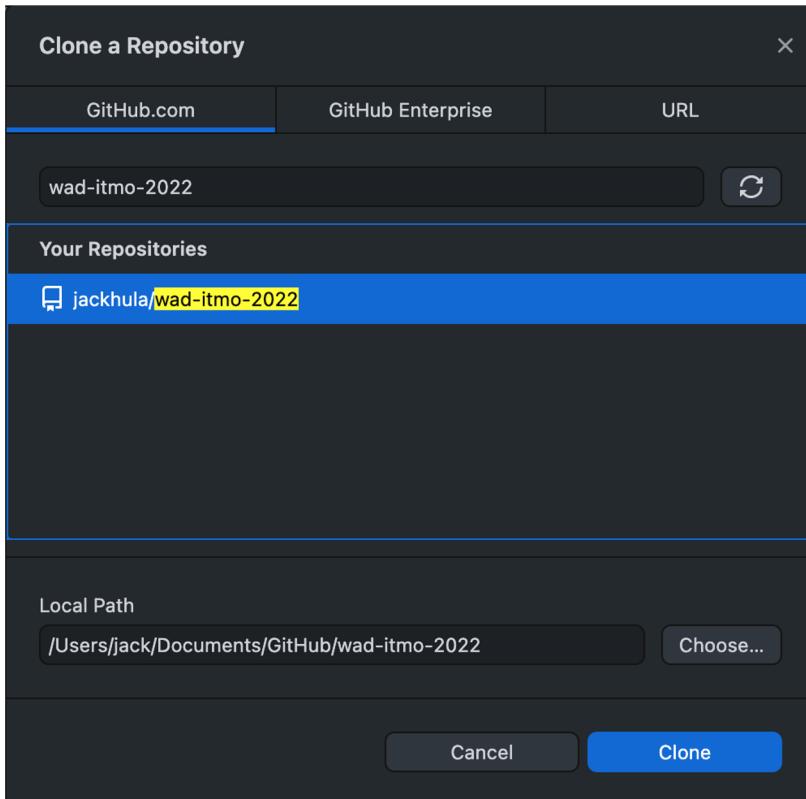


itmo-cs-dev/itmo-cs-dev is a ✨ special ✨ repository that you can use to add a README.md to your GitHub profile. Make sure it's public and initialize it with a README to get started.

# Cloning to local

```
[jack@Jack-2 git_test % ls
[jack@Jack-2 git_test % git clone https://github.com/jackhula/wad-itmo-2022.git ]
Cloning into 'wad-itmo-2022'...
warning: You appear to have cloned an empty repository.
[jack@Jack-2 git_test % ls
wad-itmo-2022
[jack@Jack-2 git_test % cd wad-itmo-2022
[jack@Jack-2 wad-itmo-2022 % ls -la
total 0
drwxr-xr-x  3 jack  staff   96 Mar  9 15:40 .
drwxr-xr-x  3 jack  staff   96 Mar  9 15:40 ..
drwxr-xr-x  9 jack  staff  288 Mar  9 15:40 .git
jack@Jack-2 wad-itmo-2022 % ]]
```

# Cloning to local



# README.md

A screenshot of the Visual Studio Code (VS Code) interface, showing a dark-themed workspace. The title bar reads "README.md — wad-itmo-2022". The left sidebar (Explorer) shows two open editors: "GROUP 1" containing "README.md" and "GROUP 2" containing "Preview README.md". Below these are sections for "WAD-ITMO-2022" and another "README.md". The main editor area displays the following Markdown content:

```
1 # WAD 2022
2 ## ITMO
3 Web application
development course.
```

The word "WAD 2022" is bolded and underlined. The word "ITMO" is bolded. The text "Web application development course." is regular. A red arrow points from the bolded "WAD 2022" in the main editor to the bolded "WAD 2022" in the preview panel. Another red arrow points from the bolded "ITMO" in the main editor to the bolded "ITMO" in the preview panel. The preview panel also shows the bolded "WAD 2022" and "ITMO" and the regular text "Web application development course.". A blue dashed box highlights the "Preview README.md" tab in the sidebar. A blue callout box labeled "Markdown syntax" points to the "ITMO" text in the preview panel.

# .gitignore

A screenshot of the Visual Studio Code (VS Code) interface. The title bar shows ".gitignore — wad-itmo-2022". The left sidebar (Explorer) lists files and folders: ".gitignore" (marked as modified), ".gitignore" (marked as untracked), "README.md" (marked as untracked), and "tmp.txt". The main editor area displays the content of the ".gitignore" file, which contains the line "tmp.\*". The bottom status bar shows the current branch is "master\*", along with other standard status bar items like file count, ignore status, and Prettier integration.

```
tmp.*
```

# Literature



- How to write good commit messages:  
<https://chris.beams.io/posts/git-commit/>
- Complete book about git: <https://git-scm.com/book/en/v2>
- GitHub flow guide: <https://guides.github.com/introduction/flow/>
- Git cheat sheet: <https://github.github.com/training-kit/downloads/github-git-cheat-sheet/>
- Git simple examples: <https://rogerdudler.github.io/git-guide/>

# GitHub Pages

# GitHub Pages Demo

Docs: <https://pages.github.com/>

1. Create repository named [your\\_username.github.io](https://github.com/your_username/your_username.github.io)
2. `git clone https://github.com/username/username.github.io`
3. Create index.md file with content, commit and push: `git push -u origin master`
4. Your site is available at [https://your\\_username.github.io](https://your_username.github.io)

# Questions?