Using GitHub a learn.sparkfun.com tutorial

Available online at: http://sfe.io/t11

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What's a Repo?

Repo is short for **repository**. Think of a repo as a folder of files and all the changes made to the files are recorded. If there's ever a problem with a file you can go back in time to figure out what changes you made. The most common use for repos are for managing large code projects but repo tracking is good for a variety of applications in the hardware world including PCB layouts, firmware, datasheets and documentation.

For example, let us imagine someone has created an Arduino sketch to demonstrate how to read an analog sensor.

language:c byte myValue = 0; myValue = analogRead(A0);

There's a couple improvements that could be made to this code <u>(analogRead</u> returns an int not a byte!). If the code was just a file on someone's website you'd have to send them an email and suggest the improvements. This is a bit tedious, and when a project gets longer than a few lines of code, email is not a viable way to collaborate on projects. <u>GitHub</u> allows one person to manage their own projects (also called revision or version control) and it also allows lots of people to work together on large projects (source code management).

What is this git thing?

<u>Git</u> is a software management tool designed for extremely large coding projects (such as Linux). Because the majority of work that we do at SparkFun is on smaller projects, we use only a fraction of its capabilities. While Git uses a command line interface, <u>GitHub</u> was created to give Git a slicker looking web interface. Furthermore, GitHub released a <u>GitHub Desktop GUI for Windows</u> (graphical user interface) that makes moving repos around even easier.

We're going to cover a few things in this tutorial:

- Download ZIP How to get something from GitHub
- Manage How to manage your own stuff on GitHub
- Pull Requests How to improve something on GitHub
- Wiki and Issues There is lots more on GitHub including Wikis and Issue Tracking

Download ZIP

Just need to get some code from a public GitHub project? Here's how to get something from GitHub:

	O Unwatch	• 79	🖈 Unstar	242	¥ Fork	124
-∳~ Puls	e <u>III</u> Grapi	ns 🔅 Set	tings			
30						Edit
\bigcirc	1 release		11 6	contrib	outors	
0	1 release Create new file	Upload files	E 6	contrib	outors ne or down	load •
\$	1 release Create new file	Upload files with HTTPS	E G	Clor	outors ne or down U	load ▼ se SSH
© entation	1 release Create new file Clone Use Git	Upload files with HTTPS or checkout w	Find file	Clor	ne or down U veb URL.	load •
entation leases.	1 release Create new file Clone Use Git of https:	Upload files with HTTPS or checkout w //github.com	Find file	Clored Cl	outors ne or down U veb URL. g.git	load • se SSF

On every project there's an easy to use 'Download ZIP' button that will give you the entire contents of the project. This is useful if you just need to grab and go (you leech you). However, this is not the correct way if you plan to contribute back.

Adding combined hex file used in SFE Productio	n	
SFE-KADE authored a day ago		
2		
Changes.txt	10 months ago	v3.0 Re-write of co
MemoryFree.cpp	9 months ago	v3.11 Added freeM
MemoryFree.h	9 months ago	v3.11 Added freeM
OPENLOG_V311_Combined_3_30_12.hex	a day ago	Adding combined
OpenLog_v3.cpp.hex	9 months ago	v3.11 Added freeN
DpenLog v3.jpo	9 months ago	v3.11 Added freeM

Right-clicking won't work

Note: If you're navigating around a project and see a file you'd like to grab, right clicking and selecting save-as will not get you the file. You will get an HTML file instead of the raw file you might be expecting. You should either use the ZIP download button or clone the repo to a local folder. Keep reading! We'll show you how.

Managing Repos

To start, you'll need to create an account on GitHub. Don't worry, it's free for regular users.

	GitHub Desktop Overview Release Notes Help
	Simple collaboration from your desktop
	GitHub Desktop is a seamless way to contribute to projects on GitHub and GitHub Enterprise. Download GitHub Desktop Windows 7 or later Available for Mac and Windows By clicking the Developed button you agree to the End-User Licence Agreement.
+-	_ □ > _ □ > □ >
Filter repositories	Update from master View branch Ø Sync master *
Ind-and-replace Indgit2 Indgit2sharp	Use a loop Prevent rendering elements indefinitely Image: A local compare instead of > Ma An Chou <> 152405a Image: A local compare instead of > Image: A local compare instead of > By making a mark when screen is filled with results and By making a mark when screen is filled with results and

There are plenty of Git clients for Mac and Linux but this tutorial will focus on Windows. If you're a Windows or Mac user I highly recommend you try out the <u>GitHub Desktop GUI</u>. The following tutorial will focus on this client so please download and install the software.

During installation, it will ask you for things such as your login information, name and email address. All of this information will be associated with the commits you make.

During installation, it may ask you to scan for repos on your computer. I recommend youdon't do this. The scan can take a long time and because you're reading this tutorial, you probably won't have any repos.

Once the GUI is launched you'll probably not have any local repos. Let's go get one from the SparkFun GitHub account. Let's grab the <u>GitHub Tutorial</u> repo. Once you are logged in to GitHub, click on the 'Fork' button.

Gist	Blog	Help		0	chipad	ldict	ţ	*	P
			C Watch	• *	Star	0	y	Fork	0
ests	0	Issues 0	V	Viki			Grap	hs	-
ırks.									
l-Only	https	://github.com/spar)	kfun/Github_T	utorial	.git (🖹 Rea	ad-Onl	y acces	S
1								Т	ags

We have now created a 'fork' or a copy of this repo and is located within your GitHub account. Note the words in the upper left corner of the window "chipaddict/Github_Tutorial" and the words underneath "forked from sparkfun/Github_Tutorial". This shows that you have this project on your account (your account name will be different).

chipaddict / Gith	ub_Tutorial			រិា្ត Pull	Request	ⓓ Watch ▪	\star Star	0 P Fork
Code	Network	ţ	Pull Requests	Wi	ki	Graphs		Settings
A very basic and flawed pi	ece of code to sh	ow how Githu	ıb GUI works.		7			
Clone in Windows	♀ ZIP	HTTP SSH	Git Read-Only	https://github.	com/chipa	ddict/Github_T	utorial.g	Read+Write access
🎙 branch: master 🔹	Files Co	mmits B	ranches 1					Tags
ithub_Tutorial / 🕑	1							② 2 commit
Corrected a typo in print s	tatement							
Lenseidle authored 37 mi	nutes ago						👔 lates	t commit 660d091b9f
.gitattributes	an h	our ago	Initia	al commit with seria	l output wo	rking. [nseidle]		
.gitignore	an h	our ago	Initia	al commit with seria	l output wo	rking. [nseidle]		
Github Tutorial.ino	37 n	ninutes ago	Con	rected a typo in print	t statement	[nseidle]		

Now you can make lots of changes to this repo without affecting the original project. This is helpful if someone has some example code that is close to what you need but needs lots of modifications for your plans.

Now that you have your own copy of the project online, click on the 'Clone or Download' button then the 'Open in Desktop' button. If you are not logged in, it may take you to the GitHub Windows page.

	j₽ 1 branch	🛇 0 releases		<u>ÅL</u> 3	contributors	
Branch: master • New pull reques	t.	Create new fil	e Upload files	Find file	Clone or dow	nload •
wbadry committed with ToniCo	rinne Added link to tutorials	Clor	e with HTTPS	0		Use SSH
📄 .gitattributes	Initial commit with serial output working.	Use 0	Sit or checkout wi	ith SVN usin	g the web URL.	
.gitignore	Initial commit with serial output working.	htt	ps://github.com	/sparkfun/	Github_Tutoria	ß
Github_Tutorial.ino	Increased delay by 150ms		Open in Desktop	la.	Download ZI	P
README.md	Added link to tutorials	Cione spankturi	ASithub Tutorial to v	our compute	11 mont	hs ago
III README.md		and	ase it in GitHub Desk	top.		

Windows may ask you for permission to allow the link to launch and use the GitHub software. This is ok. The GitHub GUI will open and a download will begin.

Because we just forked this repo there are no changes. Previous versions of the GitHub Desktop GUI had a timeline dot. If you click on any of the dots at the top we can go back in time and see what's changed over time. Otherwise, there will be a tab on the left hand side listing the changes and history. You can see the file that was changed and what was added (in green) to the file.

+*	P master •	Changes History	n Pull request
Filter repositories	Compare •		O Sync
Beehive_WiFi Closet Liahting	matter		o
Engineering_Design_Rules_Checklist	0 changes		
V Grbub, Tutorial V HONNo HTU21D, Braskout HTU21D, Braskout UtyPad, Pube maa30105	No changes	No local cl Would you like to open this r	hanges repository in Explorer?
MAX203105_Pericle_Sensor_Breakout OperACD CoperACD CoperAcg Roll_Reakout SoluBasic SoluBasic Sfl_Repo_Template	Summary Description		
0			

Hey thanks Waleed! He suggested a change to the README and added a link back to this tutorial. Smart.

a	□ ŷ master •	Changes Bistory N Pull request O
Filter repositories	Compare •	O Synx
Beehive_WiFi	master	••
Closet_Lighting		
📋 Engineering_Design_Rules_Checklist	Added link to tutorials	Added link to tutorials
ESP8266_Thing_Dev	To nontria ago by Manieo D-baory	📲 Waleed El-Badry 🗢 63134fa 🛛 🖸 GitHub 👌 Revert 💉 Collapse all
Y Github_Tutorial	Increased delay by 150ms 3 years ago by Mike H	Add link to Saprklun GitHub tutorials
() H20hNo	Corrected a tuno in print statement	* DEADMEnd
HTU21D_Breakout	4 years ago by Nathan Seidle	
Infrared_Proximity_Breakput-VCNL4000	Initial commit with serial output.	1 + # Github_Tutorial
A Uk/Pad.Puke	4 years ago by Nathan Seidle	2 + A very basic and flawed piece of code to show how Github GUI works. 3 + The accompanied tutorial can be found bara:
max30105		4 + https://learn.sparkfun.com/tutorials/using-github
MAX30105_Particle_Sensor_Breakout		
CopenLog		
RJ11_Breakput		
🛆 Serial_Basic		
A SFE_Repo_Template		
A		

Even further back in time we can see there was a comment **Corrected a typo in print statement**' and below that we can see the lines of code that were altered - red was removed, green was added. We can do lots of fun stuff like 'revert commit' and 'roll back this commit' but for now, let's see how revision tracking works.



For older versions, click on the gear in the upper right corner and selection **Options...**'. For the latest version, this will be located '**File** > **Clone repository...**'.



You will be able to find where your repositories are being stored under **Clone path**'. I changed this to store my repositories in a <u>Dropbox folder</u>. I use Dropbox liberally in conjunction with GitHub so that I can work on projects across devices and then push code up to GitHub once the project has reached a level of stability.

	Accounts	Clone path	
pohive_WV5	Nathan Seidle Log o	d C/Users/bob.barker/Dropbox/Projects	Browse
oset_Lighting	seidle nseidle	Create and clone new repositories into this directory by default.	
ng naaring_Daugn_P SP8266_Thing_Dav	Free plan (no private repositories) Mana	(Q) Scan for repositories	
Simub_Tutorial	+ Add GitHub Enterprise account	Find repositories on your hard drive.	
(20hNo	Configure git	Default shell	
(TU21D_Breakout	Bob Barker		
nhared_Proximity_Bin	bob@barker.com	Git Bash	
lyPad_Pulse nav30105	This will be used in the commits you create. Keep in mind that if you publish commits, anyone will have access to this email. This will channe your allohal alteration.	PowerShell Custom	1
NAX30105_Particle_Sc OpenICCD	Appearance	Privacy	
OpenLog	Light	Help us improve by sending anonymous usage data	
UT1_Breakout	Dark		

You should now know where your repos are stored. Navigate to that directory and open up the *Github_Tutorial.ino* file. From the Arduino IDE or Windows Notepad let's correct the variable declaration from **byte** to an **int**. Save the modification and return to the GitHub GUI.

V	oid loop()
{	<mark>byte</mark> myValue = 0; myValue = <mark>\nalogRead(A</mark> 0);
	<pre>Serial.print("The value is: "); Serial.println(myValue);</pre>
}	delay(100);

GitHub has noticed that a file has changed! For older versions, you should see a dot on the changes button. Otherwise, you will noticed that there are items in the **Changes** tab.

+- 1	□ ŷ master •	Distances History	n Pull request
Filter repositories	Compare •		O Sync
Beehive_WiFi	matter		o
Closet_Lighting		황영도, 승규는 분석에 모두 모두 분석한 모두	
Engineering_Design_Rules_Checklist	Added link to tutorials	Corrected a typo in print statement	
ESP8266_Thing_Dev	10 months ago by Waleed El-Badry	Nathan Seidle 🗢 060d091	🖸 GilHub 👌 Revert 💉 Collapse all
Y Github_Tutorial	Increased delay by 150ms 3 years ago by Mike H	Value was mispelled. This change should have no affect	on the code.
① H20hNo	Constant a form in wint statement	- Cithich Tutarial inc	
HTU21D_Breakout	4 years ago by Nathan Seidle	Github_lutorial.ino	۲
Infrared_Proximity_Breakout-VCNL4000	Initial commit with serial output	24 24 byte myValue = 0;	
C UkPad Pulse	4 years ago by Nathan Seidle	25 25 myValue = analogRead(A0);	
mas30105		27 - Serial.print("The value is: ");	
ANAV31975 Durticle Sensor Resoluted		27 + Serial.print("The value is: "); 28 28 Serial.println(myValue);	
A		29 29	
OpenucD		30 30 delay(100);	
OpenLog			
RJ11_Breakout			
A Serial_Basic			
A SFE,Repo,Template			
A			

You will see the main screen change as well showing the changes that git has detected:

+-	D P master*	Changes History	n Pull request
Filter repositories	Compare •		© Sync
Beehive_WiFi Closet_Lighting	master		0
Engineering_Design_Rules_Checklist	✓ 1 change	Github_Tutorial.ino	
ESP8256_Thing_Dev Grbub_Tutorial H2OhNo H2OhNo	Github, TutoriaLino	□ ···· ∉ -21,7 +21,7 ∉ vaid setup() 12	
Innarez, Houming, Steakout VCN44000 UlyPad, Pulse max30105 MAX30105, Particle, Sensor, Breakout		27 27 Serial.print("The value is: ");	Þ
A OpenLCD CipenLog R111_Breakout	Burmary Description		
Serial_Basic			

Wow! The small change we made is now nicely highlighted.

Now let's talk about how repos work. You have alocal working copy, a local repo, and a global repo.

Local Working Copy

Local working copy: You generally write code, layout PCBs, and hack on documentation on your local computer on a local copy. Throughout the day you would use the GitHub window to 'commit' these changes to the a local repo. The changes you've made throughout the day are *not* known to the world, only to your local repo on your local computer.



Local Repo

Local repo: Now let's commit the change we've made to our local repo. We must comment about what we changed before we can

commit it. Thoroughly describe what you did and then hit 'Commit to master'.

As a general rule, try to commit small changes, frequently. If you wait 4 months between commits it is going to be very difficult for you to remember why you changed 5 lines of a subfunction.

After pressing commit, the Sync button appears.

+• •	🛛 🎾 master •	Changes History	D Pull request 0				
Filter repositories	Compare •		O 577				
Beehive_WiFi	matter						
Closet_Lighting	1993년 - 전···································						
🗄 Engineering_Design_Rules_Checklist	e 0 changes						
ESP8266_Thing_Dev							
Github_Tutorial							
1) H20hNo							
HTU21D_Breakout							
Infrared_Proximity_Breakout-VCNL4000	No changes	No local o	changes				
C LilyPad_Pulse	no changes	Would you like to open this	s repository in Explorer?				
max30105							
MAX30105_Particle_Sensor_Breakout							
OpenLCD	Summary						
OpenLog	Description						
RJ11_Breakout							
Sevial_Basic							

We now have *no uncommitted changes* but we **do** have *unsynced commits*. This means we've committed the changes to our local repo but we have not yet pushed (synchronized) the changes to our global repo.

Global Repo

Global repo: Press 'Sync'. This will push the changes that we made within our local repo up to GitHub and to our account.

+- 1	P master •	Dhanges History	n Pull request
Filter repositories	Compare •		O Sync
D Beehive_WiFi	master		
Closet_Lighting	성영상 읽는 것을 모두 모두 모양했는		
🖹 Engineering_Design_Rules_Checklist	0 changes		
ESP8266_Thing_Dev			
V Github_Tutorial			
① H2OhNo			
HTU21D_Breakout			
Infrared_Proximity_Breakput-VCNL4000	No changes	No local ch	nanges
🖰 LilyPad_Pulse	no changes	Would you like to open this n	epository in Explorer?
💭 max30105			
MAX30105_Particle_Sensor_Breakout			
	Summary		
OpenLog	Description		
RJ11_Breakout			4
🛆 Serial_Basic			L2
A SFE_Repo_Template			
A			

Nice job Bob! We have successfully pushed this corrected code up to the global repo on GitHub. Now go online and look at your repo.

very basic and flaw	ed piece of code	e to show how Github GUI works. https://le	arn.sparkfun.com	/tutorials/			Edit
S commits		្ទិ 1 branch	⊙ 0 releases	🚨 3 contributors			
Branch: master • New	w pull request		Create new file	Upload files	Find file	Clone or dov	vnload v
This branch is 1 commi	it ahead of sparkfu	in:master.			(1) Pull	request 📋 C	ompare
seidle Corrected by	yte to int			Lat	test commit	2882b3a 4 minu	ites ago
gitattributes		Initial commit with serial output working.				4 ye	ars ago
gitignore		Initial commit with serial output working.				4 ye	ars ago
Github_Tutorial.ino		Corrected byte to int.				4 minu	ites ago
README.md		Added link to tutorials				11 mon	ths ago

We can see the notes from the commit we made as well as the status of this fork vs the original sparkfun repo: *This branch is 1 commit ahead of sparkfun:master*''.

The GitHub web interface is similar to the Windows GUI but adds many advanced options. Use the web for changing properties of the project; use the GUI for routine commits to the local repo and global syncs.

Beyond Free

GitHub has a variety of pricing models but there's a free version that has all the power and as many public repositories as you want (yay <u>Open Source Hardware</u>!) but if you want private repos, you have to pay. SparkFun pays for the Organizational level because we love GitHub, use them extensively for our web development and use GitHub for our public hardware projects. We generally create a private repo for a new project and turn it public as we near the release date for the product.

GitHub is free Work togethe	iced for everyo e to use for public and open so r across unlimited private repo	ource projects.
	paid plan. Join GitHub for free	
Personal	Organization	Enterprise
\$7 / month Build your own projects on GitHub.com and invite collaborators to join you in unlimited private repositories. Free for students as part of the	 ger user / month Work with your team on GitHub.com in unlimited private repositories. Manage team and user level permissions. Starting at \$25 / month which 	\$21 per user / month Host your team's code on your own servers or in a private cloud with your existing security controls. Sold in packs of 10 users
Student Developer Pack.	Includes your first 5 users.	and billed annually. Start a free Enterprise trial

That's it for this section. These steps of forking a repo or creating your repo should allow you to create code projects, PCB layouts (we push Eagle files up to GitHub all the time), documents, images and even binary files.

In this section we found a bug and corrected it, but we have not yet let the original project know about the error. The next section will cover how to send corrections and improvements back to the original project through pull-requests.

Pull Requests

Repositories are great for managing and tracking changes made to code over time. But the real power comes into play when you collaborate with multiple people on a project. When people have multiple improvements, how do we combine them? Pull requests allow contributors to give back to the main project.

We've made some improvements to our version of the *Github_Tutorial* project. Now let's click on the Pull Request button to let the owner of the project know about the improvements we've made.

Y nseidle / Gi forked from spark	thub_Tutorial		•	Unwatch • 1	★ Star	0	¥ Fork	428
⇔ Code 👔	Pull requests 0	III Projects 0 III Wiki 4- Pulse	📊 Graphs 🛛 🔅 Setti	ngs				
A very basic an	d flawed piece of	code to show how Github GUI works.	https://learn.sparkfun.co	m/tutorials/				Edit
© 5	commits	្រំ 1 branch	© 0 releases		<u>88</u> 3	contri	butors	
Branch: master •	New pull request		Create new fi	le Upload files	Find file	Co	ne or down	load =
This branch is 1	commit ahead of sp	parkfun:master.			(†) Pull	reque	st 🖹 Cor	mpare
seidle Com	ected byte to int. 🔚			Lat	test commit a	2802b3	a 15 minute	es ago
gitattributes		Initial commit with serial output	working.				4 year	s ago
📄 .gitignore		Initial commit with serial output	working.				4 year	s ago
Github_Tuto	rial.ino	Corrected byte to int.					15 minute	s ago
README.md		Added link to tutorials					11 month	is ago

Here's where we describe the changes that we've made so that the owner of the main project (SparkFun is the owner in this example) knows what to expect. As with most comments, be as verbose as possible. The changes you've made are obvious to you but to a project owner with thousands of lines of codes and dozens of pull requests it can become confusing.

1	base fork: sp	arkfuru/Github_Tutorial =	base: master +	1	nead f	ork: n	seidl	e/Gitl	ub_Te	utori	al +	con	npare: I	master	•		
-	✓ Able to me	e rge . These branches ca	n be automatically	merg	ed.												
-	Correc	ted byte to int.												5		Reviewers	
	Write	Preview		٨A	• в	i	"	$\langle \rangle$	Ø		= 1	: * =	+	• @	R	No reviews request one	
	The orig corrects	inal code has a bug. an the variable mismatch.	alogRead returns a	n int.	This	chan	ge									Assignees No one—assign yourself	
																Labels	
																None yet	
																Milestone	
																No milestone	
	Attach 6	les hy dragging & droppi	na, selecting them, a	or pas	ting f	rom t	he d	pbo	ird.						-		

Once you've written a note about the changes you're proposing click on **Create pull request**'. Once we've sent the pull request, the owner of the main project is notified. Please don't hesitate to send a pull request to SparkFun for this tutorial. We'd love to hear from you!

Code	Network	Pull Requests 1	Issues 1	Wiki	Graphs
pen chipa	addict wants to merge 1 comm	it into sparkfun; master from ch	ipaddict:master		2
Discussio	n 🗢 Commits 🕧 🗄	Files Changed 1			
Col	addict opened this pull request in recting variable de	a few seconds eclaration from byte	to int	Edit	Open + 1 additio
No o	ne is assigned			No milestone	- 1 deletion
The o	original code has a bug. analog acts the variable mismatch.	Read returns an int. This change			
1 partic	sipant 🔘				
1 partic	ob Barker added a commit			18 hours ago	
1 partic	cipant 💽 ob Barker added a commit kob Barker Corrected byte	to int		18 hours ago 1f5c18a	
1 partic	ob Barker added a commit Nob Barker Corrected byte commits to this pull request by p	to int	hipaddict/Github_Tutorial	18 hours ago 1f5c18a	
1 partic	cipant () ob Barker added a commit kob Barker Corrected byte commits to this pull request by p rite Preview	to int	hipaddict/Github_Tutorial Comments are para	18 hours ago 1f5c18a ed with GitHub Flavored Markdown	
1 partic B Can add more Wr Lea	cipant 💽 ob Barker added a commit kob Barker Corrected byte commits to this pull request by p rite Preview ave a comment	to int	hipaddict/Github_Tutorial Comments are para	18 hours ago 1f5c18a ed with GitHub Flavored Markdown	

This is where the owner of the project can review the submitted code (sometimes called a patch). GitHub provides a great discussion system so that the patch can be discussed. You can even comment on individual lines of code.

Here's what the pull request looks like from the owner's point of view. The owner has the option to merge this pull request or discuss it.

	-O- Bob Bar	ker added a commit	18 hours ago
	Bob Bar	ker Corrected byte to int	💭 1f5cl8a
	m nseidle	commented on 1f5c18a Github_Tutorial.ino:L24	just now
	Yep, definit	ely a problem there.	
-			S. Marga pull convert
This	pun request	can be automatically merged.	le weige hun iednest
This	Write	Preview	Comments are parsed with GitHub Flavored Markdown
() This	Write Thanks fo work.	can be automatically merged. Preview r contributing back! This looks great! But I'm going to	Comments are parsed with GitHub Flavored Markdown
() This (Write Write Thanks fo work.	can be automatically merged. Preview r contributing back! This looks great! But I'm going to ages by dragging & dropping them or choose an ima	Comments are parsed with GitHub Flavored Markdown o leave this bug in place so that the tutorial continues to age

In general, create pull requests that are smaller and more simple in nature. This will make it easier for the project owner to wrap their head around. It's easier to accept pull requests that contain 5 or 10 changes, but a monumental task if you've completely rewritten 400 lines of code.

Issues and Wiki

Filing an Issue

There are some additional tools built into GitHub as well.**Issue Tracking** allows folks to post problems or issues with a given project. It's kind of like a ticketing system or tech support but with the ability to comment on a specific line of code.

Here's is an example of creating an issue. Nothing too extraordinary but it allows for a good dialog between collaborators. You can see all the open issue on the **Github_Tutorial** project <u>here</u>.

		Network	Pull Reque	sts 0	Issues	0
						<u>(</u>)
se Issu	es M	ilestones				Search
U	sing vari	ables for pin names				
1	Write	Preview	Cor	mments are parse	ed with GitHub Flave	ored Markdo
Y	ou may wa	ant to use an indirect na	me for <u>AQ</u> such as:			
	int flexSer	nsor = <u>A0;</u>				
	myValue :	= analogRead(flexSens)	or);			
		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	imaga		

GitHub Wiki

Every repo also has a <u>Wiki</u> available for use. This is handy for documentation, FAQs about your project, etc.

sparkfun / Git	thub_Tutorial		(& Watch •	\star Star < 0	🐉 Fork 🔄
Code	Network	Pull Requests 0	Issues 1	Wiki	(m)	Graphs
Home Pages	Wiki History Git Ac	cess			-	
Home				New Page	Edit Page	Page History
Welcome to the Githut	p_Tutorial wiki!					
Markdown is awes	ome					
Last edited by chipaddict,	in a few seconds					

Node.js has a good example of using a wiki along side their repo.



At SparkFun, we don't often use the GitHub wiki and instead focus on<u>hookup guides</u> utilizing our own tutorial system. That said, for your personal projects the GitHub Wiki is a great, flexible place to have documentation for a given project or product. Collaborators can also help maintain and improve the documentation.

Try using Git and GitHub for your next project. There's an undeniable learning curve but it will make it much easier to collaborate with people.

Resources and Going Further

Now that you've got repos under control we recommend you check out these tutorials:

- Ready to up your game? Help us make the world better! Read how touse GitHub to help us improve our libraries and hardware.
- Checkout the MAX30105 repo to see how we set it up. There's also a separate repo for the Arduino library.

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