

# Week 6: Electronics Design

- PCB Basics / Design Rules
- regional review
- prep meeting
- global class homework
- global class
- global class chat
- local class
- global open time

# PCB Basics / Design Rules

Following you find a small presentation to get a general idea on how to design circuits and a cheat sheet, than can help you while you're designing.

[cheat sheet](#)

[PCB Workshop presentation](#)

# regional review

Sam



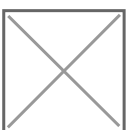
Irja



Dylan Heneck

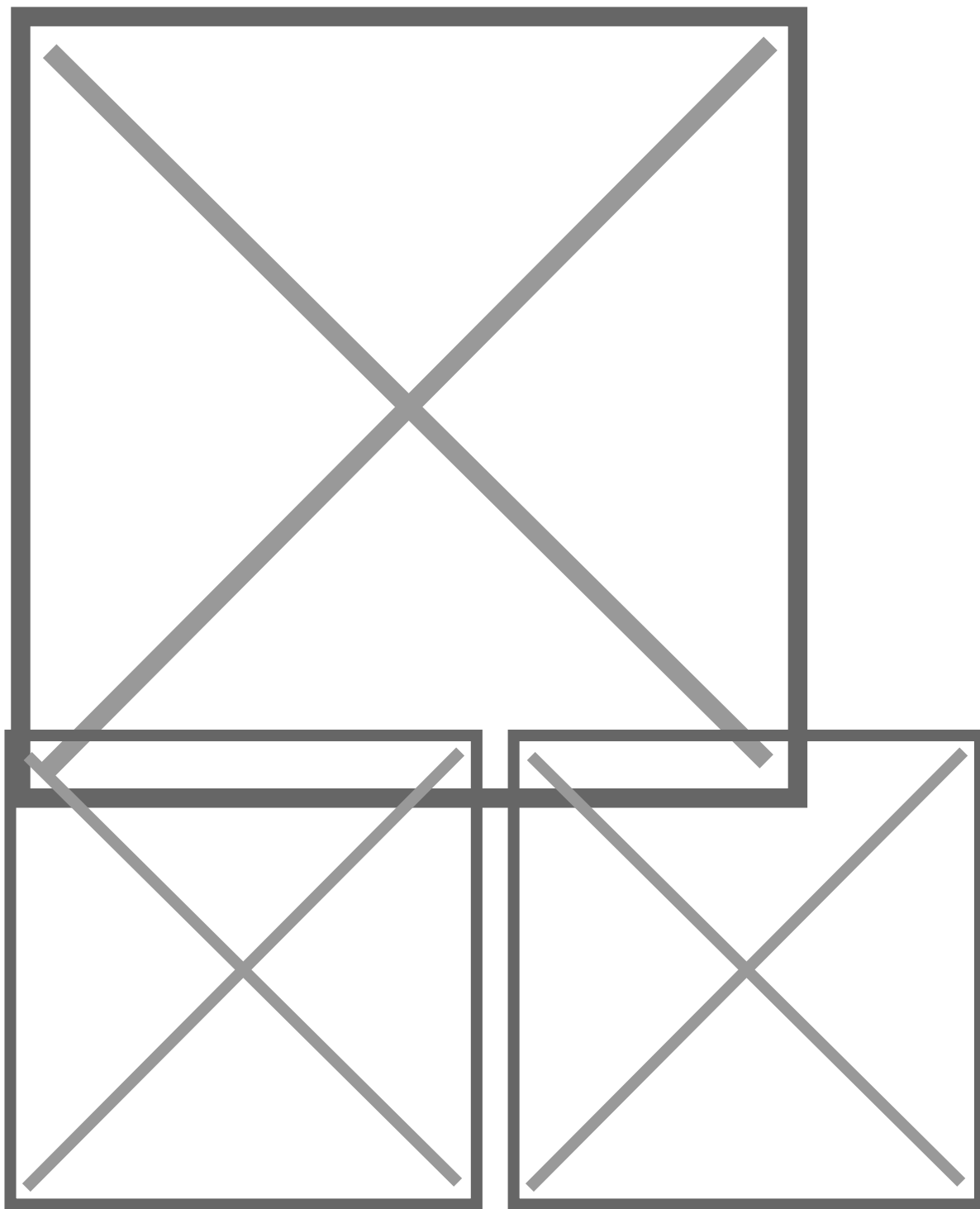


Patrick Dezséri

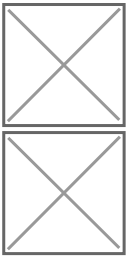




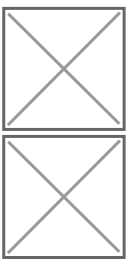
Jakob



# Bene



# Mkhitar Evoyan



# Forrest Oliphant



<https://www.hunyuan-3d.com/>

<https://hunyuan3-d.com/>

# Derenik Danielyan



Look mom, I am in FreeCad))))

# Arda

Chat: 13:18:39 Von jakob an Alle: how do you upload large stl files? Do you save them on your website?

13:19:00 Von Patrick an Alle: Replying to "how do you upload large stl files? Do you save the...": generally in 7z (zip file)

13:20:12 Von jakob an Alle: Replying to "how do you upload large stl files? Do you save the...": somehow it is still some megabites large after compression for me...

13:20:24 Von jakob an Alle: Replying to "how do you upload large stl files? Do you save the...": what is the size in your case of the compressed file?

13:27:06 Von Dylan an Alle: super nice

13:27:40 Von Patrick an Alle: Replying to "how do you upload large stl files? Do you save the...": {5620715A-92C8-45FF-B335-2520B7E06F70}.png

13:36:34 Von Krisjanis Rijnieks an Alle: sorry, was in the wrong room Patrick:☹☹

13:36:46 Von Mkhitar Evoyan an Alle: Neil said that we can create dropbox account and put it there and share the link

13:48:29 Von Forrest O. an Alle: Individual computer camera and mic work better than the room ones. cc: Waag & TU

14:00:54 Von Babken Chugaszyan an Alle: I have to go guys sorry! See you during the lecture! Patrick:☹☹

14:04:17 Von Mkhitar Evoyan an Alle: Sorry, my internet connection is not good.

14:05:44 Von Patrick an Alle: Replying to "Sorry, my internet connection is not good.": happens ;)

14:07:34 Von Patrick an Alle: Replying to "Nachricht wurde vor Ihrem Beitritt zum Meeting ges...": @Elen Grigoryan so I got it to work 1) FreeCAD couldn't export it so I used blender to create the GLB file 2) Check the file size. If it is bigger than 20MB it wont be pushed to git Elen Grigoryan:♥

14:09:08 Von Sedat YALÇIN an Alle: Cool Forrest Forrest O.:♥☹☹

14:12:14 Von jakob an Alle: Replying to "Cool Forrest": instant bookmark

14:13:39 Von Mkhitar Evoyan an Alle: I'm here

14:14:57 Von Benedikt Ilmenau an Alle: Your part is not easy to mill but still achivable  
[https://www.youtube.com/watch?v=PN2\\_Spv61rY](https://www.youtube.com/watch?v=PN2_Spv61rY) Derenik Danielyan:♥

# prep meeting

I noticed the 0603 resistors and capacitors that were added to fab inventory. Are we moving towards smaller footprints or they were added for a specific design?

<https://componentsearchengine.com>

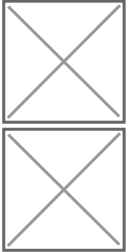
Neil switches from his own tool to KiCAD!!!!

<https://quantumminilabs.de/your-quantum-future-vortragsreihe-auf-der-hannover-messe/>



# global class homework

## Sierra Nieves



**Final Project:** Functional Fashion (Heart Rate Monitor)

[http://fab.cba.mit.edu/classes/863.18/Harvard/people/lins/final\\_project.html](http://fab.cba.mit.edu/classes/863.18/Harvard/people/lins/final_project.html)

## Albert Smith



**Final Project:** shuffling cards

<https://bookstore.ams.org/view?ProductCode=MBK/146>

Midhun Joseph

## Lynch Li



For 3D scanning, I used PolyCam.

# Florimond Chu



**Final Project:**

# Sharvari Akerkar



Chain mail:



<https://fab.cba.mit.edu/classes/863.18/Architecture/people/emily/week4.html>

**Final Project:** bird feeder

# Anna Reneau

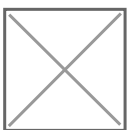
School of Saberfighting Teaches How to Fight with Lightsabers

fab saber

**Final Project:** Tron identity disc



# Julian Bassler





Elsa Cui



**Final Project:** Intelligent Automatic Flower Watering Device

Mihir Shah

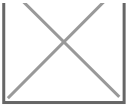


Diarmuid Kelly

David Wilson

[https://akash-edamana-2f0181.fabcloud.io/Template/Week\\_5.html](https://akash-edamana-2f0181.fabcloud.io/Template/Week_5.html)

<https://fabacademy.org/2025/labs/puebla/students/leonardo-zamora/> Ofelia Sevilla



Robot Operating System 3D scanner

<https://fabacademy.org/2025/labs/techworks/students/omar-albalbaki/Robot%20Operating%20System%203D%20scanner%201a30e8ca7ada8054be77fb1c0cf64898.html>

# global class

package 1206 --> 0.12x0.06 inch = 3.048x1.524mm

FabXIAO

TLA = Three Letter Acronym

5 mil/thou = 0.005 inch = 0.127 mm

# global class chat

14:34:03 Von Krisjanis Rijnieks an Alle: I noticed the 0603 resistors and capacitors that were added to fab inventory. Are we moving towards smaller footprints or they were added for a specific design? Miriam, Adrián - Fab Lab León:[]

14:36:56 Von Rico Kanthatham an Alle: Thanks Kris!!! Adrián - Fab Lab León:[]

14:37:31 Von Árni - Fab Lab Akureyri an Alle: A living saint

14:38:19 Von Pablo Fab Lab Leon an Alle: []

14:40:01 Von Rico Kanthatham an Alle: kamakura has met their global eval

14:40:05 Von Pradnya S an Alle: Yes

14:40:17 Von Rico Kanthatham an Alle: good

14:40:21 Von Saverio Shanghai an Alle: Set up a time already

14:40:22 Von Nuria Robles | LEON an Alle: Good idea !

14:40:26 Von Árni - Fab Lab Akureyri an Alle: For us: No issues, just a slow and difficult start for various reasons. Ball has started rolling, will request a global eval soon

14:40:29 Von Jani Ylioja an Alle: not working yet

14:40:30 Von Steven an Alle: Local-Global is ok for us Noor Ahmed Raza Pirwani:[]

14:40:37 Von Pablo Fab Lab Leon an Alle: Yes, meetings are happening. Nice to meet students and instructors faces :) Adrián - Fab Lab León, Amany, SAHEEN PALAYI:[]

14:40:50 Von Miriam an Alle: I think it is working great. Very helpful.

14:41:04 Von Pradnya S an Alle: Interactive so helpful

14:41:08 Von SAHEEN PALAYI an Alle: Replying to "Yes, meetings are happening. Nice to meet students...": Waiting for next []

14:41:34 Von Hiroe\_Wast-harima an Alle: West Harima had Global- Local meeting. Adrián - Fab Lab León:[]

14:41:37 Von Noor Ahmed Raza Pirwani an Alle: Replying to "Local-Global is ok for us": Share the link, if you are Steven from Singapore. []

14:41:54 Von Claire Lake Mac Libraries Fab Lab an Alle: Won't let me push the button and one is complete for my student

14:41:58 Von Adrián - Fab Lab León an Alle: Replying to "West Harima had Global- Local meeting.": Yes, and was very helpful

14:42:11 Von Lars Mattern - HRW Fablab an Alle: No local-global meeting in bottrop, yet

14:42:32 Von Salman an Alle: Check list

14:42:33 Von Nuria Robles | LEON an Alle: Replying to "Won't let me push the button and one is complete f...": 100% and Green button?

14:43:01 Von Noha | Fab Lab Egypt an Alle: Replying to "Won't let me push the button and one is complete f...": Did you mark it as completed ? not just 100%

14:43:22 Von andri-fab lab reykjavik an Alle: Replying to "Won't let me push the button and one is complete f...": it is not enough be at 100%. You need to Mark Unit as Complete

14:44:22 Von Pablo Fab Lab Leon an Alle: Nice AI applications! I love the second part. Norella Coronell, Miriam, Adrián - Fab Lab León:☐☐

14:45:04 Von Claire Lake Mac Libraries Fab Lab an Alle: Fixed it realised I hadn't clicked the green complete button, this is what happens when it's been more than six months since doing it last ☐☐ Luciana Asinari, Pablo Fab Lab Leon, Adrián - Fab Lab León:☐☐ Nuria Robles | LEON:☐☐

14:47:26 Von SAHEEN PALAYI an Alle: We need to teach the students the design rules right? But that comes with production week group assignment.

14:48:24 Von Saheen Palayi an Alle: ok

14:49:17 Von Jani Ylioja an Alle: input week has very similar group work to electronics design

14:50:51 Von Saheen Palayi an Alle: Replying to "input week has very similar group work to electron...": I think this week the introductions of the test equipment right? input week is looking deep in to DSO

14:51:06 Von Miriam an Alle: So for the group project this week, they should be using the testing equipment on any dev board?

14:52:12 Von Noor Ahmed Raza Pirwani an Alle: yes it make sense

14:52:13 Von Krisjanis Rijnieks an Alle: I would split the equipment in several weeks Oscar Diaz, andri-fab lab reykjavik:☐☐

14:52:23 Von Krisjanis Rijnieks an Alle: as oscilloscope alone is a lot Luc Hanneuse - AgriLab, andri-fab lab reykjavik:☐☐

14:52:29 Von Saheen Palayi an Alle: can we switch the group assignment : ) so we get the Design rules

14:52:29 Von Krisjanis Rijnieks an Alle: and logic analyzer is a lot

14:53:15 Von Claire Lake Mac Libraries Fab Lab an Alle: You can design without design rules and then correct after you do the testing

14:53:36 Von Salman an Alle: Or just get to know tools this week

14:53:47 Von Saheen Palayi an Alle: Replying to "You can design without design rules and then corre...": may need to reroute sometimes

15:07:00 Von Patrick an Alle: There is also the paint-on support in prusa to make specific supports placement

15:07:38 Von Ahmed Al-Kooheji an Alle: the top can be a 2nd part that press fits also

15:08:02 Von Evert Stefán Jensson an Alle: Replying to "There is also the paint-on support in prusa to mak...": also in Bambustudio

15:08:07 Von Patrick an Alle: Cute ☺️ Adrián - Fab Lab León:♥️

15:08:24 Von Ahmed Al-Kooheji an Alle: nice idea!

15:08:39 Von Ahmed Al-Kooheji an Alle: haha the bridge is def too long

15:08:57 Von Saheen Palayi an Alle: Replying to "the top can be a 2nd part that press fits also": that violate the assignment question of the week I think

15:08:58 Von Ahmed Al-Kooheji an Alle: 2nd plate to print the top with press fit

15:09:56 Von Steven an Alle: Tilt the model 45% on its edge & you should be able to print without support?

15:10:17 Von Shintaro Ito:Node japan kannai an Alle: Thus the hamster became a prisoner.....  
Patrick, Ricardo Marques:☺️ Patrick, Pablo Fab Lab Leon, Adrián - Fab Lab León, Sanjivani Fab Lab ||  
ακαsh mhaís:☺️

15:11:05 Von Ricardo Marques an Alle: Replying to "Tilt the model 45% on its edge & you should be abl...": may need minor supports and a brim to hold it in place.

15:11:48 Von Claire Lake Mac Libraries Fab Lab an Alle: Replying to "Thus the hamster became a prisoner.....": Next project - put it in a prison hamster wheel ☺️

15:13:24 Von Shintaro Ito:Node japan kannai an Alle: Replying to "Thus the hamster became a prisoner.....": She needs a larger 3D printer or a 3D printer small enough to fit in the Prison! Claire



Lake Mac Libraries Fab Lab:[]

15:13:33 Von Steven an Alle: Replying to "Tilt the model 45% on its edge & you should be abl...": Use a larger brim or raft, change the base of the cage so that there is a flat edge with larger contact area on the bed.

15:13:36 Von Ahmed Al-Kooheji an Alle: Replying to "the top can be a 2nd part that press fits also": hmmm i see

15:15:15 Von Neil an Alle:  
[http://fab.cba.mit.edu/classes/863.18/Harvard/people/lins/final\\_project.html](http://fab.cba.mit.edu/classes/863.18/Harvard/people/lins/final_project.html)

15:15:40 Von andri-fab lab reykjavik an Alle: Go Albert!

15:15:46 Von Árni - Fab Lab Akureyri an Alle: Go go go!

15:19:40 Von Justyn an Alle: I used Abound app and an iphone se (2022) & used a stool that I manually turned...shot 64 frames and had great results...it's on my page

15:20:46 Von Shintaro Ito:Node japan kannai an Alle: coool

15:20:52 Von Maximino Matus an Alle: I was trying to scan myself but it did not really work for printing []

15:21:48 Von Maximino Matus an Alle: Max3D.jpg Árni - Fab Lab Akureyri, Rico Kanthatham, Lars Mattern - HRW Fablab:[]

15:22:32 Von Pablo Fab Lab Leon an Alle: Replying to "Max3D.jpg": hope you learn to remove glasses to scan yourself XD

15:22:40 Von Rico Kanthatham an Alle: tree supports

15:23:26 Von Maximino Matus an Alle: Replying to "Max3D.jpg": [][]

15:23:28 Von Shintaro Ito:Node japan kannai an Alle: Replying to "Max3D.jpg": @Maximino Matus With fusion360, I was able to load a mesh of a person's 3D scan data and repair and reduce the volume with one click. Maybe this will be useful for you.

15:23:37 Von Adrián - Fab Lab León an Alle: Replying to "tree supports": you can Paint the supports and select organic

15:23:42 Von Ahmed Al-Kooheji an Alle: there is something called PLA interface, if you have a bambu with an AMS, it will use it where the support ends and the model starts to more easily pop out. Mixed results though. I never used the roll i have personally.

15:23:55 Von Lynch Li an Alle: Hi Neil, last week I was called on, but I wasn't there at the time. I only did the 3D printing and scanning assignment. Can I just present last week's assignment?

15:24:44 Von Ahmed Al-Kooheji an Alle: there is something called PLA interface, if you have a bambu with an AMS, it will use it where the support ends and the model starts to more easily pop out. Mixed results though. I never used the roll i have personally.  
<https://us.store.bambulab.com/products/support-for-pla-petg>

15:25:22 Von Rico Kanthatham an Alle: How about place the cube on one corner...so all angles will be 45degrees or more...limit supports to the outside and bottom?

15:25:34 Von Ahmed Al-Kooheji an Alle: there is something called PLA interface, if you have a bambu with an AMS, it will use it where the support ends and the model starts to more easily pop out. Mixed results though. I never used the roll i have personally.  
<https://us.store.bambulab.com/products/support-for-pla-petg>

15:25:40 Von Ahmed Al-Kooheji an Alle: Screenshot 2025-02-26 172518.png Shintaro Ito:Node japan kannai, Ahmed Al-Kooheji:[]

15:27:26 Von Midhun an Alle: [https://fabacademy.org/2024/labs/kochi/students/midhun-joseph/assignments/final\\_project/DIS-CARD%20v2.html](https://fabacademy.org/2024/labs/kochi/students/midhun-joseph/assignments/final_project/DIS-CARD%20v2.html) Adrián - Fab Lab León, Lars Mattern - HRW Fablab, Superfablab Kochi, Saheen Palayi:♥

15:27:49 Von Midhun an Alle: similar kind of project

15:28:02 Von Shintaro Ito:Node japan kannai an Alle: Perfect shuffling is as hard as perfect random number generation.....

15:28:22 Von Maximino Matus an Alle: Replying to "Max3D.jpg": []Gracias! Shintaro Ito:Node japan kannai:[]

15:28:56 Von Forrest O. an Alle: 52 card pickup! A favorite family game. Ricardo Marques, Lars Mattern - HRW Fablab, Daniel Mateos:[]

15:29:52 Von Shintaro Ito:Node japan kannai an Alle: Flying Cards

15:31:33 Von Florimond Chu (FabLab SP) an Alle: [https://www.kiwico.com/sg/store/dp/card-shuffling-machine-project-kit/3841?srsItid=AfmBOordmG1fAEV\\_b2vyK5MQ8pGH2jcm4KjXZW1RJ1rTCKRbxsl4LCvn](https://www.kiwico.com/sg/store/dp/card-shuffling-machine-project-kit/3841?srsItid=AfmBOordmG1fAEV_b2vyK5MQ8pGH2jcm4KjXZW1RJ1rTCKRbxsl4LCvn) Card shuffling machine.

15:33:49 Von Elsa Cui an Alle: <https://fabacademy.org/2025/labs/formshop/students/elsa-cui/about.html>

15:34:31 Von FabLab TU Ilmenau an Alle: the picture of your ender is 88MB! Ricardo Marques, Garrett Nelson, Patrick, Shintaro Ito:Node japan kannai:[] Nuria Robles | LEON:[] Adrián - Fab Lab León, Doaa El-Bess, Eman Elkfrawy, Jeremy Losaw, Hiroe Takeda:[]

15:35:12 Von Pablo Fab Lab Leon an Alle: its a big Ender... Doaa El-Bess, Adrián - Fab Lab León, Amr Yaser Abdulrahim, Jani Ylioja, Kerstin, Jesal Mehta:[] Ricardo Marques, Patrick, Adrián - Fab

Lab León, 35844, Anna Sophia Brokuf, Elen Grigoryan:[]

15:37:15 Von Neil an Alle: .png: 89M

15:37:26 Von Neil an Alle: .jpg: 192k

15:37:49 Von Omar Baalbaki(SK 7) an Alle: how did she managed to push it though ?

15:37:49 Von Benedikt Ilmenau an Alle: The question that everyone have in mind is, how did you upload this big file to your website? I thought that we have a 10 mb limit per push.

15:37:58 Von Adrián - Fab Lab León an Alle: Replying to "how did she managed to push it though ?": web interface Omar Baalbaki(SK 7), Patrick:[]

15:38:10 Von Omar Baalbaki(SK 7) an Alle: Replying to "how did she managed to push it though ?": ahaaaa

15:38:17 Von Saheen Palayi an Alle: Replying to "The question that everyone have in mind is, how di...": Gitlab . add files

15:38:43 Von Saverio Shanghai an Alle: Lynch says her wifi is a bit slow and can't hear greatly

15:38:42 Von Benedikt Ilmenau an Alle: Replying to "how did she managed to push it though ?": Would it be ok, if we upload bigger design files in this way?

15:39:49 Von Neil an Alle: otherlab inflatable arm

15:39:57 Von Pablo Fab Lab Leon an Alle: Replying to "how did she managed to push it though ?": talk to your instructor :)

15:40:06 Von Patrick an Alle: memo we have the repo size page (but I do not know the update cycles) [https://gitlab.fabcloud.org/academany/fabacademy/2025/site/-/blob/main/sizes.md?ref\\_type=heads](https://gitlab.fabcloud.org/academany/fabacademy/2025/site/-/blob/main/sizes.md?ref_type=heads)

15:40:28 Von Saverio Shanghai an Alle: will do []

15:41:08 Von Saheen Palayi an Alle: Replying to "how did she managed to push it though ?": @Benedikt Ilmenau try zip it. make it under 10 Mb , if still larger than that try publishing in sketch fab, or GitHub then link in ur documentation

15:43:05 Von Adrián - Fab Lab León an Alle: Trainnn!!! Miriam, Marius Araújo, Omar Baalbaki(SK 7), Hiroe Takeda, Claire Lake Mac Libraries Fab Lab, Kerstin, Daniel Osika, Jani Ylioja, Lars Mattern - HRW Fablab:[]

15:47:42 Von Amr Yaser Abdulrahim an Alle: snug supports have more stability and also covers only the wanted area ^^ . I experienced that week

15:47:50 Von Patrick an Alle: The prusa Slicer Page is really good

15:47:58 Von Patrick an Alle: Replying to "The prusa Slicer Page is really good":  
30cd916294dd7ac737ac7c09e1edfbb9.jpg Adrián - Fab Lab León, Marius Araújo:♥



15:48:03 Von Patrick an Alle: Replying to "The prusa Slicer Page is really good":  
[https://help.prusa3d.com/article/support-material\\_1698](https://help.prusa3d.com/article/support-material_1698)

15:48:44 Von Ricardo Marques an Alle: Replying to "snug supports have more stability and also covers ...": And they print quicker than the default ones. testing out the support advanced settings is well worth it.

15:49:22 Von Patrick an Alle: Replying to "The prusa Slicer Page is really good": PS: The tree like thing in the picture is the support not the model

15:49:45 Von Marius Araújo an Alle: Replying to "The prusa Slicer Page is really good": Incredible, really

15:49:45 Von Ricardo Marques an Alle: I may need a full-scale one to use as na alarm clock



15:51:00 Von Marius Araújo an Alle: Replying to "I may need a full-scale one to use as na alarm clo...": There should be a battering ram train carriage in Czech maker train Florimond Chu (FabLab SP): Adrián - Fab Lab León, Ricardo Marques:

15:51:14 Von Saverio Shanghai an Alle: Tomas Feminier's final project in Woma in 2016 was a Wall Clock made of wood with retroillumination

15:51:15 Von Saverio Shanghai an Alle:  
<https://archive.fabacademy.org/fabacademy2016/woma/students/209/#about>


15:51:57 Von Jani Ylioja an Alle: <https://fabacademy.org/2024/labs/oulu/students/joni-rajala/assignments/steps/w10-solenoid/>

15:52:20 Von Adrián - Fab Lab León an Alle:  
<https://fabacademy.org/2021/labs/leon/students/sergio-herranz/project/3final-project/> Time the time

15:54:10 Von Pablo Fab Lab Leon an Alle: On week 5...and i cant earn enough money to but all your projects XD Lars Mattern - HRW Fablab: Marius Araújo, Adrián - Fab Lab León, Patrick:

15:54:46 Von Justyn an Alle: image.png

15:55:29 Von Justyn an Alle: image.png

15:55:26 Von Saverio Shanghai an Alle: you have the Make Something Big assignmet covered already 

15:55:46 Von Marius Araújo an Alle: Replying to "On week 5...and i cant earn enough money to but al...": You have to re-make them all ☐☐ Daniel Osika:☐☐

15:55:51 Von Justyn an Alle: is that a good example of not easily subtractive model

15:57:10 Von Ahmed Al-Kooheji an Alle: wet filament maybe

15:57:33 Von Saheen Palayi an Alle: Replying to "is that a good example of not easily subtractive m...": yea the egg inside owl ? this satisfy the assignment.

15:57:37 Von Ahmed Al-Kooheji an Alle: or over extrusion from nossle due to bad settings maybe

15:57:38 Von Omar Baalbaki(SK 7) an Alle: hygroscopic

15:59:02 Von Marius Araújo an Alle: On bowden machines, it can happen more, also due to not enough retraction. It can be tweaked Pablo Fab Lab Leon, Adrián - Fab Lab León:☐☐

16:00:42 Von Julian Baßler an Alle: Gonna show some more chainmail in the open time, get ready ;) Jesal Mehta, Adrián - Fab Lab León, Lars Mattern - HRW Fablab, Pablo Fab Lab Leon, Kerstin, Sharvari | RIIDL:☐☐

16:04:15 Von Claire Lake Mac Libraries Fab Lab an Alle: You could add birdNet to identify which birds are using your feeder <https://core-electronics.com.au/projects/bird-calls-raspberry-pi/> Árni - Fab Lab Akureyri, Patrick:☐☐ Ricardo Marques:☐☐

16:05:49 Von Svavar Konradsson Fab Lab Isafjordur an Alle: Go Anna!

16:06:08 Von Árni - Fab Lab Akureyri an Alle: You got it Anna!

16:06:15 Von Adrián - Fab Lab León an Alle: Cool sticker!!

16:06:21 Von Pablo Fab Lab Leon an Alle: Tucan with a lighsaber...what could go wrong... Patrick, Claire Lake Mac Libraries Fab Lab:☐☐

16:06:27 Von Rico Kanthatham an Alle: lightsaber choreography?? run a workshop at FAB25!! Enterprise fablab, Daniel Mateos:☐☐ Claire Lake Mac Libraries Fab Lab, Patrick, Anna Sophia Brokuf, Daniel Mateos:☐☐ Adrián - Fab Lab León, Ted:☐☐

16:06:55 Von Miriam an Alle: Replying to "lightsaber choreography?? run a workshop at FAB25!...": Along with the dude that does the light saber workshop

16:07:24 Von Claire Lake Mac Libraries Fab Lab an Alle: Replying to "lightsaber choreography?? run a workshop at FAB25!...": Yes!

16:07:38 Von Adrián - Fab Lab León an Alle: Amtrak ad hehe (always trains)☐☐ Árni - Fab Lab Akureyri:☐☐

16:07:57 Von Rico Kanthatham an Alle: Replying to "lightsaber choreography?? run a workshop at FAB25!...": Neil would make a great Jedi master! Patrick, Claire Lake Mac Libraries Fab Lab, Lars Mattern - HRW Fablab:☐☐

16:08:12 Von Neil an Alle:  
<http://archive.fabacademy.org/2017/fablabseoul/students/211/finalProject.html>

16:08:14 Von Rico Kanthatham an Alle: Replying to "lightsaber choreography?? run a workshop at FAB25!...": Cmon Miriam...graphic please!

16:08:25 Von Saverio Shanghai an Alle: Amazing Rodrigo! Adrián - Fab Lab León, Rico Kanthatham, Nancy-shanghai, Ted, Shintaro Ito:Node japan kannai:☐☐

16:08:25 Von Miriam an Alle: Replying to "lightsaber choreography?? run a workshop at FAB25!...": Hahaha

16:08:36 Von Miriam an Alle: Replying to "lightsaber choreography?? run a workshop at FAB25!...": Of Neil as Jedi master? Adrián - Fab Lab León, Claire Lake Mac Libraries Fab Lab, Patrick, Lars Mattern - HRW Fablab:♥

16:10:04 Von Patrick an Alle: Replying to "lightsaber choreography?? run a workshop at FAB25!...": Somehow I feel like he would look better as a sith lord ☐☐ (design wise) Rico Kanthatham:☐☐

16:11:01 Von Pablo Fab Lab Leon an Alle: I love reykjavik...its where the good projects are XD Adrián - Fab Lab León, Claire Lake Mac Libraries Fab Lab, Svavar Konradsson Fab Lab Isafjordur:♥ Rico Kanthatham, andri-fab lab reykjavik:☐☐

16:12:42 Von andri-fab lab reykjavik an Alle: Good job Anna!

16:12:55 Von Þórarinn Bjartur Breiðfjörð Gunnarsson an Alle: Good work Anna! andri-fab lab reykjavik:☐☐

16:13:10 Von Jani Ylioja an Alle: Elsa Cui

16:13:10 Von Jarni Rai Castillo Yarlequé an Alle: I can;

16:13:11 Von Nancy-shanghai an Alle: Elsa Cui was called last week

16:13:15 Von Rico Kanthatham an Alle: elsa cui...i think

16:13:33 Von Kerstin an Alle: Julian ☐☐

16:16:19 Von Miriam an Alle: Replying to "lightsaber choreography?? run a workshop at FAB25!...": 202502270016150000.jpg Adrián - Fab Lab León, Rico Kanthatham, Pablo Fab Lab Leon, Tshering Wangzom JNWSFL bhutan, Lars Mattern - HRW Fablab, Ricardo Marques, Lei Feng - Chaihuo, Ted:♥ Nuria Robles | LEON:☐☐ Marius Araújo, Camila Luna - FabLab Cuenca / ASQ:☐☐

16:16:19 Von Miriam an Alle: Replying to "lightsaber choreography?? run a workshop at FAB25!...": lol chat gpt

16:17:05 Von Daniel Osika an Alle: There will be soon a new multicolour 3d printer on kickstarter <https://www.instagram.com/p/DGN9PkVgJRY/>

16:17:07 Von Svavar Konradsson Fab Lab Isafjordur an Alle: Super nice spinning top! Bart -SP Fablab:[]

16:17:14 Von Devanshi Mengar | riidl an Alle: crazyyyy

16:17:18 Von Miriam an Alle: That is cool Florimond Chu (FabLab SP), Doaa El-Bess:[]

16:17:20 Von Jeremy Losaw an Alle: mega

16:17:22 Von Aristarco an Alle: Wild!

16:17:26 Von Rico Kanthatham an Alle: amazing Julian!

16:17:27 Von Pablo Fab Lab Leon an Alle: []

16:17:29 Von Árni - Fab Lab Akureyri an Alle: That's a product right there

16:17:33 Von Julia - Fab Lab Barcelona an Alle: Wow!!

16:17:49 Von Claire Lake Mac Libraries Fab Lab an Alle: So cool

16:17:50 Von Silvana Espinoza Gomez an Alle: []

16:17:53 Von Árni - Fab Lab Akureyri an Alle: You can you can use that for marketing! "Best spinning top I've ever seen"

16:18:00 Von Naldi Carrion an Alle: It is really nice!!!

16:19:20 Von Charath Chandar Natarajan an Alle: <https://fabacademy.org/2025/labs/salem/students/charath-natarajan/week03.html> Gayatri prasad: []

16:19:24 Von Rico Kanthatham an Alle: Apple watch wearers...send Elsa a Thank You! Pradnya S, Nuria Robles | LEON, Adrián - Fab Lab León, Nancy-shanghai:♥ Saverio Shanghai, Elen Grigoryan:[]

16:19:23 Von Lars Mattern - HRW Fablab an Alle: Well done, Julian !!!

16:20:37 Von Nuria Robles | LEON an Alle: Replying to "Apple watch wearers...send Elsa a Thank You!": Thanks, @Elsa Cui !!

16:20:43 Von hongtai an Alle: COOL

16:22:45 Von Charath Chandar Natarajan an Alle:  
<https://fabacademy.org/2025/labs/salem/students/charath-natarajan/week03.html>

16:22:53 Von Charath Chandar Natarajan an Alle: {69853CEC-18A7-4DA7-88DB-A9FD5D058B21}.png

16:23:18 Von Adrián - Fab Lab León an Alle: Batman!!! chana chana Batman!!! Pablo Fab Lab Leon:  
☐ Silvana Espinoza Gomez, Jesal Mehta:☐ Lars Mattern - HRW Fablab:☐

16:23:31 Von Rico Kanthatham an Alle: Love it Mihir! Pablo Fab Lab Leon, Claire Lake Mac Libraries  
Fab Lab:☐ Jesal Mehta, Adrián - Fab Lab León, Jeremy Losaw:☐

16:24:02 Von Nancy-shanghai an Alle: Apple watch wearers...send Elsa a Thank You! Yeah. She  
also make components for Samsung Sony Huawei watches and speakers Garrett Nelson, Árni - Fab  
Lab Akureyri:☐ Nuria Robles | LEON:☐ Svavar Konradsson Fab Lab Isafjordur, Árni - Fab Lab  
Akureyri:☐

16:24:22 Von Rico Kanthatham an Alle: Replying to "Apple watch wearers...send Elsa a Thank You!  
Yeah....": Thank you Elsa!!!

16:24:52 Von Patrick an Alle: Replying to "Batman!!! chana chana Batman!!!": fun fact This fish is  
Otocinclus batmani

16:24:54 Von Patrick an Alle: Replying to "Batman!!! chana chana Batman!!!": batman.jpeg

16:24:58 Von Pradnya S an Alle: Replying to "Batman!!! chana chana Batman!!!": It's sound me like  
Marathi (regional language) chana - good☐ Adrián - Fab Lab León:☐

16:25:11 Von Nancy-shanghai an Alle: Somehow she said Samsung Sony in Chinese lol Too nervous  
Rico Kanthatham, Nancy-shanghai:☐

16:27:01 Von Garrett Nelson an Alle: Is that using OpenSCAD?

16:27:41 Von Rico Kanthatham an Alle: wow...now THAT's a cool name

16:27:42 Von Forrest O. an Alle: Ireland, was that <https://beegraphy.com> (browser 3d  
parameteric)?

16:27:59 Von Enterprise fablab an Alle: Replying to "Ireland, was that <https://beegraphy.com>  
(browser 3...": Yes

16:28:06 Von Enterprise fablab an Alle: Replying to "Ireland, was that <https://beegraphy.com>  
(browser 3...": !

16:29:44 Von Forrest O. an Alle: Replying to "Ireland, was that <https://beegraphy.com> (browser  
3...": Armenian startup, I've played with it just a little. Elen Grigoryan:♥



16:30:08 Von Pradnya S an Alle: Nice

16:30:48 Von Enterprise fablab an Alle: Replying to "Ireland, was that <https://beegraphy.com> (browser 3...": @Forrest O. yes me too... its very buggy Forrest O.:☐

16:31:31 Von Saheen Palayi an Alle: sorry network gone here in Kochi

nice timing : (

Árni - Fab Lab Akureyri, Pablo Fab Lab Leon:☐

16:32:52 Von Jarni Rai Castillo Yarlequé an Alle: Nice

16:33:04 Von Amr Yaser Abdulrahiem an Alle: I have the same camera can I get in touch with you to try it @Omar Baalbaki(SK 7)

16:33:19 Von Omar Baalbaki(SK 7) an Alle: Replying to "I have the same camera can I get in touch with you...": Absolutely!

16:33:21 Von Rico Kanthatham an Alle: Push you button!

16:33:23 Von Rico Kanthatham an Alle: 2025-02-27 00\_29\_23-.jpg

16:33:25 Von Garrett Nelson an Alle: Replying to "I have the same camera can I get in touch with you...": Same request Omar Omar Baalbaki(SK 7):☐

16:33:32 Von Rico Kanthatham an Alle: Replying to "Push you button!": \*your

16:33:41 Von Garrett Nelson an Alle: Replying to "I have the same camera can I get in touch with you...": It's a shame that Intel has essentially abandoned the real sense cameras Omar Baalbaki(SK 7):☐

16:33:46 Von Elsa Cui an Alle: Replying to "Apple watch wearers...send Elsa a Thank You! Yeah....":  
☐

16:33:57 Von Elsa Cui an Alle: Replying to "Apple watch wearers...send Elsa a Thank You!": ☐

16:34:08 Von Claire Lake Mac Libraries Fab Lab an Alle: Replying to "2025-02-27 00\_29\_23-.jpg": I need to make a new one

16:34:15 Von Miriam an Alle: Neil as Sith Lord with a purple lightsaber cuz it's cool

16:34:23 Von Amr Yaser Abdulrahiem an Alle: Replying to "I have the same camera can I get in touch with you...": great ^^ I will try to find in mattermost thanks ^^ Omar Baalbaki(SK 7):♥

16:34:34 Von Rico Kanthatham an Alle: Replying to "2025-02-27 00\_29\_23-.jpg": cmon...mine is a xiao on a mini breadboard!

16:34:50 Von Omar Baalbaki(SK 7) an Alle: Replying to "I have the same camera can I get in touch with you...": Please get in touch: here is my mail: omar.baalbaki.2001@gmail.com @Amr Yaser Abdulrahiem @Garrett Nelson Amr Yaser Abdulrahiem:♥

16:35:16 Von Ofelia Sevilla - Ulima an Alle: I scanned a plant of my garden with an app called Luma 3D and printed it in resin.

16:35:18 Von Ofelia Sevilla - Ulima an Alle: {C299E793-62A3-496B-A2D7-7D2E0B1833FA}.png

16:35:19 Von Ofelia Sevilla - Ulima an Alle: {1CA3FBA4-4B07-4AB7-9B37-65BE27E8758B}.png  
Claire Lake Mac Libraries Fab Lab, Doaa El-Bess:♥ Garrett Nelson:☐

16:35:32 Von Claire Lake Mac Libraries Fab Lab an Alle: Replying to "2025-02-27 00\_29\_23-.jpg": I will commit to making for next week :)

16:36:04 Von Jarni Rai Castillo Yarlequé an Alle: elephants with different morphologies

16:36:07 Von Jarni Rai Castillo Yarlequé an Alle: style\_elephant\_V2.jpg Doaa El-Bess, Gayatri prasad:♥

16:38:33 Von Rico Kanthatham an Alle: Iceland wins the FMCU participation award! Árni - Fab Lab Akureyri, andri-fab lab reykjavik:♥

16:38:47 Von Rico Kanthatham an Alle: 2025-02-27 00\_38\_06-.jpg

16:39:28 Von Rico Kanthatham an Alle: Hello Shanghai! Saverio Shanghai:☐

16:39:41 Von Rico Kanthatham an Alle: 2025-02-27 00\_39\_13-.jpg

16:40:08 Von Rico Kanthatham an Alle: Leon...where are you?

16:40:16 Von Rico Kanthatham an Alle: 2025-02-27 00\_39\_54-FMCU.jpg

16:40:27 Von Marius Araújo an Alle: Mine's just a dev board, using one of the buttons as trigger

16:40:31 Von Marius Araújo an Alle: fmcu.JPG Ricardo Marques:☐

16:40:33 Von Miriam an Alle: lol I will make my button right now just to make Rico happy Rico Kanthatham:☐ Ricardo Marques:☐

16:40:42 Von Rico Kanthatham an Alle: Brazil?

16:40:55 Von Rico Kanthatham an Alle: Argentina?

16:41:03 Von Rico Kanthatham an Alle: 2025-02-27 00\_40\_30-.jpg

16:41:47 Von Rico Kanthatham an Alle: Replying to "2025-02-27 00\_40\_30-.jpg": gotta be brazil

16:42:30 Von Rico Kanthatham an Alle: Replying to "lol I will make my button right now just to make R...": hmmm...still don't see you. Let me restart

16:42:51 Von Marius Araújo an Alle: Replying to "Brazil?": Yeah, someone in Sorocaba

16:42:57 Von Marius Araújo an Alle: Replying to "Brazil?": Fab lab facens Rico Kanthatham:[]

16:43:28 Von Marius Araújo an Alle: Replying to "lol I will make my button right now just to make R...": Yeah, have of force refresh

16:43:43 Von Marius Araújo an Alle: Replying to "lol I will make my button right now just to make R...": Quite nicely populated today

16:43:51 Von Miriam an Alle: Replying to "lol I will make my button right now just to make R...": I don't have a connector

16:44:23 Von Rico Kanthatham an Alle: Replying to "lol I will make my button right now just to make R...": Arteria...is that you Marius?

16:44:34 Von Marius Araújo an Alle: Replying to "lol I will make my button right now just to make R...": Yes [] Ricardo Marques:[] Rico Kanthatham:[]

16:53:05 Von Patrick an Alle: for those who have difficulties with electricity Just thing about it like water if you need a lot of water you need bigger pipes

This analogy also work with the resistance (longer the tube, the bigger the resistance, bigger the tube smaller the resistance)

Saheen Palayi:[]

16:54:49 Von Adrián - Fab Lab León an Alle: Replying to "Leon...where are you?": I pressed, but i think didn't work very properly Miriam:[]

16:54:54 Von Saheen Palayi an Alle: Replying to "for those who have difficulties with electricity J...": and valves in the plumbing system can be relate to a transistor or a mosfet, ( source , gate drain ) Midhun, Patrick:[]

16:55:10 Von Adrián - Fab Lab León an Alle: Replying to "Leon...where are you?": Now

16:55:36 Von Adrián - Fab Lab León an Alle: Replying to "Leon...where are you?": {AC51398A-AA54-4D6C-AB58-A63A9DAFD340}.png Marius Araújo:[]

16:57:01 Von Miriam an Alle: Replying to "Leon...where are you?": Mine not work [] Adrián - Fab Lab León, Marius Araújo:[]

16:57:27 Von Hiroe\_Wast-harima an Alle: Replying to "Leon...where are you?": Mine not work, too Miriam, Adrián - Fab Lab León:[]

16:58:33 Von Pablo Fab Lab Leon an Alle: Replying to "for those who have difficulties with electricity J...": So i need a plumber to teach electronics? ☹️ Rico Kanthatham, Adrián - Fab Lab León, Marita Chang, Patrick, Superfablab Kochi, Saheen Palayi:☹️

16:59:11 Von Patrick an Alle: Powerfull capacitors can kill you! that is why we do not disassemble power supplies even if they are unplugged from the wall

16:59:16 Von Rico Kanthatham an Alle: component 'package size' comparison Adrián - Fab Lab León:♥️

16:59:18 Von Rico Kanthatham an Alle:  
480545054\_2443021659374006\_1568651119285978843\_n.jpg Adrián - Fab Lab León, Ricardo Marques:♥️ Patrick:☹️

16:59:31 Von Patrick an Alle: Replying to  
"480545054\_2443021659374006\_1568651119285978843\_n.j...": nice

17:01:22 Von Claire Lake Mac Libraries Fab Lab an Alle: Replying to "Leon...where are you?": I seem to recall a change was made to the site last year ☹️

17:02:04 Von Adrián - Fab Lab León an Alle: Replying to "Leon...where are you?": Reload the program...

17:02:48 Von Miriam an Alle: Replying to "Leon...where are you?": I am using a board that has esp32 s3

17:03:24 Von Saheen Palayi an Alle: Replying to "for those who have difficulties with electricity J...": diode:- one side flow valve in plumbing system ☹️ Patrick:☹️ Midhun:☹️

17:03:25 Von Rico Kanthatham an Alle: A great book for those very new to electronics. Worth the USD20 price. An older addition is available for viewing online.

"Getting Started in Electronics"

<https://archive.org/details/getting-started-in-electronics/mode/2up>

Lei Feng - Chaihuo, Patrick, Shintaro Ito:Node japan kannai:☹️

Marius Araújo, Anna Sophia Brokuf:☹️☹️

17:03:26 Von Adrián - Fab Lab León an Alle: Replying to "Leon...where are you?": I use the XIAO ESP32 C3

17:04:23 Von Miriam an Alle: Replying to "Leon...where are you?": I don't have any at home haha Adrián - Fab Lab León:☹️

17:04:26 Von Patrick an Alle: Replying to "for those who have difficulties with electricity J...": PS: your heart is a one side flow system ^^ Saheen Palayi:☹️ Ricardo Marques:☹️

17:05:10 Von Saheen Palayi an Alle: Replying to "for those who have difficulties with electricity J...": LED :- leaking one side flow valve then ☐☐ Patrick, Jesal Mehta:☐☐ Midhun:☐☐

17:05:11 Von Rico Kanthatham an Alle: Replying to "A great book for those very new to electronics. Wo...": Pages 6-41 recommended reading for this week

17:05:35 Von Pablo Fab Lab Leon an Alle: Replying to "A great book for those very new to electronics. Wo...": I have this book ready to read it from 2012 ☐☐ Marius Araújo:☐☐ Rico Kanthatham, Adrián - Fab Lab León:☐☐

17:08:12 Von Rico Kanthatham an Alle: Replying to "A great book for those very new to electronics. Wo...": you can do it Pablo-san...this year is the year!

17:12:43 Von Ricardo Marques an Alle: if you're thinking of using transistors directly to control a motor you may need to look at tvs diodes to protect the transístor depending on the circuit.

17:13:31 Von Adrián - Fab Lab León an Alle: Be carefull with the regulators and mosfets, They look alike on the outside, but they are not the same. ☐☐

17:14:26 Von Marius Araújo an Alle: Replying to "Be carefull with the regulators and mosfets, They ...": Ask me how I know Tshering Dorji JNWSFL, Rico Kanthatham, Shintaro Ito:Node japan kannai:☐☐ Ricardo Marques, Patrick, Adrián - Fab Lab León:☐☐

17:15:11 Von Patrick an Alle: 9lktu3.jpg Doaa El-Bess, Marita Chang, erwin, Adrián - Fab Lab León, Tshering Wangzom, Árni - Fab Lab Akureyri, Marius Araújo, Claire Lake Mac Libraries Fab Lab, Lars Hofmann, Camila Luna, Elen Grigoryan, Þórarinn Bjartur Breiðfjörð Gunnarsson:☐☐

17:15:53 Von Adrián - Fab Lab León an Alle: Replying to "Be carefull with the regulators and mosfets, They ...": We know... hehehe Marius Araújo:☐☐

17:22:24 Von Rico Kanthatham an Alle: CAD, IDE, MCU...EDA

...confused yet?

Camila Luna, Patrick, Adrián - Fab Lab León, Jesal Mehta:☐☐

Marius Araújo, Patrick:☐☐

17:22:53 Von Adrián - Fab Lab León an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": ISP, I2C, UPDI...

17:22:59 Von Rico Kanthatham an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": we should make a Bingo game from Fab Acronyms Marius Araújo:☐☐☐☐ Adrián - Fab Lab León, Patrick, Pablo Fab Lab Leon, Jesal Mehta:☐☐

17:23:15 Von Rico Kanthatham an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": UART I2S

17:23:26 Von Rico Kanthatham an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": PWM

17:23:26 Von Marius Araújo an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": @Pablo Fab Lab Leon for Global Open Time

17:23:58 Von Árni - Fab Lab Akureyri an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": irc, icq, ama, fab, pcb, dnd, lol, ftw, wtf!? Adrián - Fab Lab León, Jesal Mehta:☹

17:24:14 Von andri-fab lab reykjavik an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": ROFL

17:24:19 Von Neil an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": TLA Árni - Fab Lab Akureyri, Pablo Fab Lab Leon, Ricardo Marques, Adrián - Fab Lab León, Marius Araújo, andri-fab lab reykjavik, Jesal Mehta:☹

17:24:39 Von Neil an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": Three Letter Acronym Tshering Wangzom, Marita Chang:☹ Patrick, Roberto, Miriam:☹

17:24:43 Von Rico Kanthatham an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": trick question! Tshering Wangzom, Marita Chang:☹

17:25:14 Von Rico Kanthatham an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": FAB!!! Adrián - Fab Lab León:☹

17:28:39 Von henk an Alle: kicad 9 was just released! Bir Maya Rai JNWSFL, Omar Baalbaki(SK 7):☹ Ricardo Marques, Marius Araújo:☹

17:30:30 Von Adrián - Fab Lab León an Alle: Attiny412 ☹ Saheen Palayi:☺ Miriam:☹

17:32:01 Von Patrick an Alle: Replying to "Attiny412 ☹": I might ruin this for you but whenever I see that word I have jawas from star wars in mind Camila Luna, Claire Lake Mac Libraries Fab Lab, Adrián - Fab Lab León:☹

17:34:53 Von Saheen Palayi an Alle: Replying to "kicad 9 was just released!": about Kicad 9.0

<https://www.hackster.io/news/open-source-eda-star-kicad-hits-version-9-0-0-gains-a-wealth-of-new-features-46cea6be042e>

17:35:30 Von Miriam an Alle: Replying to "Attiny412 ☹": 202502270135270000.jpg Patrick, Adrián - Fab Lab León, Pablo Fab Lab Leon:☹

17:36:51 Von Adrián - Fab Lab León an Alle: Replying to "kicad 9 was just released!": It's a bit hasty to use KiCAD 9 for students, it may not be stable. Better 7 or 8.

17:36:52 Von Pablo Fab Lab Leon an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": Bingo is ready for Saturday! Come and join us during Global Open Time. Camila Luna, Adrián - Fab Lab León, Rico Kanthatham, Tshering Wangzom:♥ Ricardo Marques:☹ Adrián - Fab Lab León:☹

Marius Araújo:[]

17:40:20 Von Rico Kanthatham an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": @Pablo Fab Lab Leon I forgot 'LED'

17:40:44 Von Pablo Fab Lab Leon an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": i added a bunch of them :P Rico Kanthatham, Camila Luna, Marius Araújo:[]

17:40:59 Von Adrián - Fab Lab León an Alle: EasyEDA. Online <https://easyeda.com/> Marius Araújo:[][]

17:41:11 Von Marius Araújo an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": RTFM? Adrián - Fab Lab León:[]

17:41:11 Von Ricardo Marques an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": 3 letters only? igbt

17:42:05 Von Pablo Fab Lab Leon an Alle: Kris, the master of libraries [] Marius Araújo, Miriam:[][] Adrián - Fab Lab León:[] Forrest O., Svavar Konradsson - Fab Lab Isafjordur:[]

17:44:11 Von Rico Kanthatham an Alle: Replying to "Kris, the master of libraries []": {2E836DC7-55E6-4B05-8046-D6935D97A708}.png Adrián - Fab Lab León:[] Patrick:[] Nuria Robles | LEON:[]

17:44:53 Von Patrick an Alle: so OpenSCAD for EDA ?

17:46:23 Von Miriam an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": <https://youtu.be/jOTfBliKSQYY?si=Uxz3oidOSXPD-lpD>

17:46:30 Von Miriam an Alle: Replying to "CAD, IDE, MCU...EDA ...confused yet?": What's your EDA?

17:46:31 Von Aalto Fablab an Alle: Replying to "Kris, the master of libraries []": thank you my children thank you Adrián - Fab Lab León, Árni - Fab Lab Akureyri, Rico Kanthatham, Marius Araújo:♥ Nuria Robles | LEON:[]

17:47:10 Von Aalto Fablab an Alle: Replying to "Kris, the master of libraries []": may thou kicad library help to materialize your wildest project ideas Enterprise fablab, Patrick, Árni - Fab Lab Akureyri, Adrián - Fab Lab León, Marius Araújo, Pablo Fab Lab Leon, Elen Grigoryan, Eman Elkfrawy, olof:[]

17:55:43 Von Adrián - Fab Lab León an Alle: For textiles, FabriXIAO. <https://fabacademy.org/2020/labs/leon/students/adrian-torres/fabrixiao.html> Miriam:[]

17:56:28 Von Saheen Palayi an Alle: Function generator ?

17:56:39 Von henk an Alle: links to logic analyzers from the slides on debugging <https://fabacademy.org/2025/recitation/debugging/#/12/1> Adrián - Fab Lab León, Patrick, Miriam:[]

17:57:02 Von Ricardo Marques an Alle: looking at pwm on na oscilloscope is very easy to try. plus they all have exemple/calibration signals.

17:57:35 Von Justyn an Alle: there is an oscilloscope in our lab, but I dont much about it

17:57:59 Von henk an Alle: Replying to "there is an oscilloscope in our lab, but I dont mu...": so this is your week! Ricardo Marques:☐☐ Adrián - Fab Lab León:☐☐

17:58:00 Von Saheen Palayi an Alle: Replying to "looking at pwm on na oscilloscope is very easy to t...": function generator + DSO = wave forms

17:59:18 Von Adrián - Fab Lab León an Alle: Remember, Global Open Time is back this Saturday. 10:00 AM Boston Time. <https://chat.academany.org/fabacademy-2025/channels/global-open-time>



# local class

Building circuits the hard way. An introduction to freeform electronics

Introduction and KiCad Project Creation - "Getting To Blinky" KiCad Tutorial - Part 1

Talking Reverse Engineering with an Absolute Legend!

libraries

[Fab Electronics Library for KiCad](<https://gitlab.fabcloud.org/pub/libraries/electronics/kicad>)

# global open time

- use kicad 8, 9 still has some problems
- have 2 leds: power & debugging  
debugging: run a blink program and make sure your mcu is still alive.  
how to use the pin with the led? just solder pin header before or after the led.
- 2 layers  
put pin through the board -> bam, 2 layers  
you can connect then the two pins on the backside with a cable. there is no shame in that btw.
- suggestion: use labels. makes your design a bit easier.
- use disconnected mark in kicad if pins are not connected
- use power flags if you get errors regarding power
  - you need to tell kicad where power is coming into the board
  - hit p on keyboard
- pull-up & pull-down: check adrians doc
  - if you do not connect the open switch directly to pin, there will be noise due to --- internal processes in the chip
  - add pulldown resistor with low resistance so that noise rather goes to ground.
  - how big pulldown resistors to be? (ricardo marques)
  - for buttons you can use like 5k,
  - LEDs between 500 and 1k
  - i2c depends on a few variables but between 900 and 5k.
  - for 3.3v logic don't go over 2.5k
- getting started with electronics page 6 to 41. for this weeks assignment
- make beautiful pcb, not a square. it is the design week
  - check ccc talk
- make power lines of fatter thickness on a pcb
  - you see it better
  - signal lines you want to be thin
  - thick power lines can handle more current
- some more about pullup/pulldown by ricardo marques
  - if you don't use pulldown pullup, there is a tristate. it's not defined what voltage is on the pin. internals of mC.
  - this is explained further by neil in input devices
- only use bat gnd and bat vin if usb is not used. otherwise they will conflict.  
(source: rico)