

## Training evaluation report

**Training session:** Embedded Linux Kernel and Development Training

**Training dates:** Nov. 30 - Dec. 2, 2010 (3 days)

**Country:** France

**Number of participants:** 12

**Returned evaluation forms:** 12

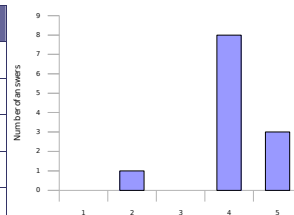
Thank you for having organized a Free Electrons training session!

Here is a wrap-up of evaluations from participants.

### Learning objectives

#### 1. How well did the course meet your learning objectives?

Rating	Answers	Description
1	0	Not met
2	1	
3	0	
4	8	
5	3	Fully met



4 - Good content, appreciate up-to-date material. Additional topics would be welcome (like real time, GPL, ...)

*Free Electrons' note: the agenda was already very dense, condensed from 5 days to 3 days. We just wouldn't have had time.*

5 - Nice interactions with the trainer. Appropriate level of explanations

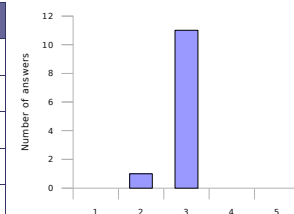
2 - Not all topics will be useful for my job (I'm not a developer)

4 - A little bit complicated, to understand such topics by text, maybe more basic explanations are needed.

4 - Good interactive lecture ; good didactical labs ; slides printout a little too small.

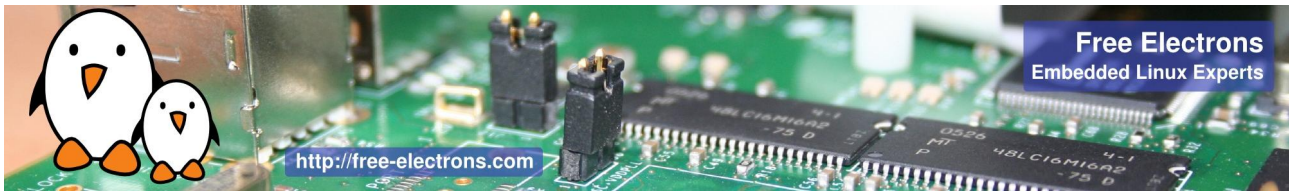
#### 2. How was the duration of the course?

Rating	Answers	Description
1	0	Too short. Couldn't learn enough in such a short time.
2	1	A little too short
3	11	Just fine
4	0	A little too long
5	0	Definitely too long. The concepts could be learned in much less time.



3 - Good distribution between lectures and labs.

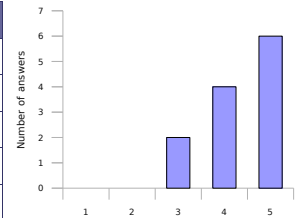
2 - It was clear we had to "cut" some topics ; this did not help to understanding some of them.



## Lecture materials

### 3. How helpful were the lecture materials?

Rating	Answers	Description
1	0	Not helpful. Made things more difficult to learn and understand.
2	0	
3	2	
4	4	
5	6	Really made things easier to understand and learn.



5 - Nice summary

3 - A little bit too verbose, sometimes. We would appreciate to have more schematics to better understand, even if code description remains a challenge!

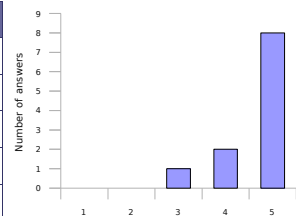
3 - See above. Some topics were too superficial, others too deep.

4 - I was interested in playing with git, but the lab didn't work.

3 - Slides printed a bit too small.

### 4. Will you recommend these materials to others?

Rating	Answers	Description
1	0	No. Not helpful without following the sessions.
2	0	
3	1	
4	2	
5	8	Definitely



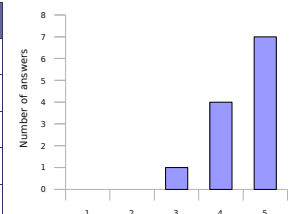
5 - Nice labs with the Calao board.

5 - The slides are still an excellent reference with very useful links.

3 - With some corrections, it will be really good.

### 5. If you have Linux project opportunities, will you use these materials again?

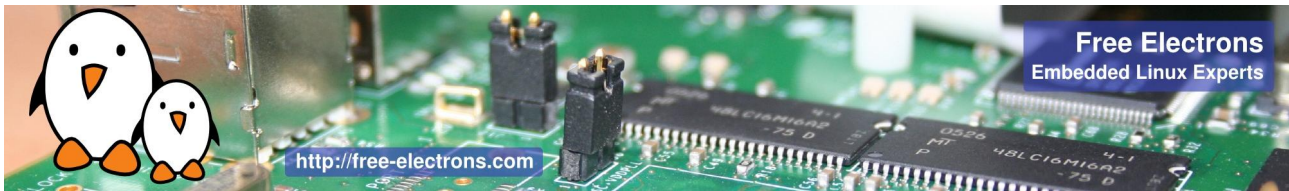
Rating	Answers	Description
1	0	No. I will look for other sources of information.
2	0	
3	1	
4	4	
5	7	Definitely



5 - The simplified examples were easy to understand ; re-using them will be even more efficient.

3 - Not sure ; I don't write Linux code. It will help me in "syncing" with customers though.

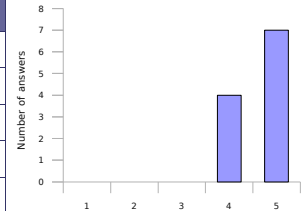
4 - And web resources



## Instructor added value

### 6. How knowledgeable was the instructor?

Rating	Answers	Description
1	0	Not enough for my own technical experience.
2	0	
3	0	
4	4	
5	7	More than enough for my own experience.

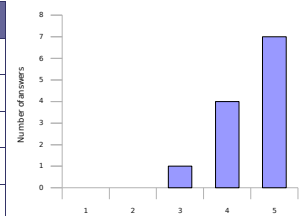


5 - The instructor was able to share his own experience of kernel developer: it is a nice added value.

4 - He knows what he's talking about.

### 7. Did instructor oral explanations add value to the lecture materials?

Rating	Answers	Description
1	0	No added value to reading the materials.
2	0	
3	1	
4	4	
5	7	Yes. The instructor really made very useful oral explanations.



5 - The instructor was even able to find interesting examples in the Linux kernel source code!

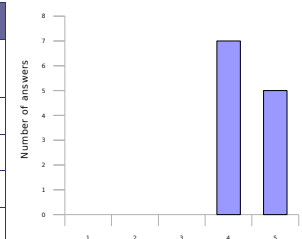
4 - I think that Sebastien could have done a better presentation in French. Unfortunately, we had to have the training in English due to our Italian colleague.

4 - He was able to clarify and give more info on most of the topics.

3 - More basic explanation: topic is difficult, I agree but need a more structured talk in way we can easily understand what is presented.

### 8. How well did the instructor answer questions from the audience?

Rating	Answers	Description
1	0	Poorly. Didn't try to understand the questions well or rarely managed to find useful answers.
2	0	
3	0	
4	7	
5	5	Answered very well to questions from the audience



5 - Appreciated to take note of questions and provide answers later.

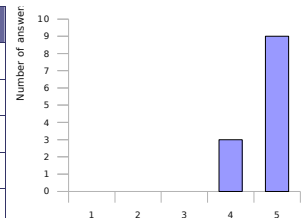
5 - Nice and realistic examples were given and demonstrated live!

4 - Some questions were very in-depth. Even for an expert, it is acceptable to not have all the answers. All the more, he makes the effort to look for answers during the evening for the day after.

4 - Most of the times. If he did not know, he answered the day after.

### 9. Was the instructor helpful with practical labs?

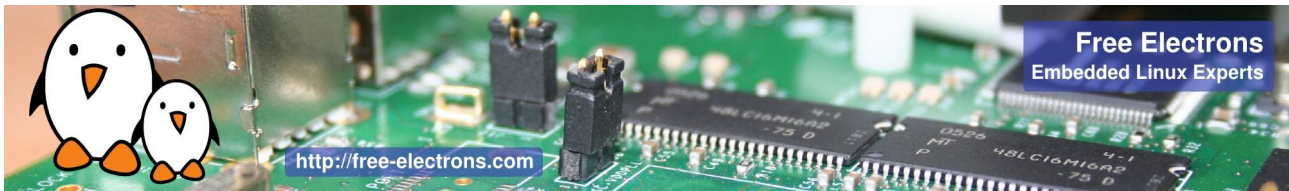
Rating	Answers	Description
1	0	No, not enough available and helpful during the labs.
2	0	
3	0	
4	3	
5	9	Yes. The instructor definitely helped to make labs a learning opportunity.



5 - He helped us diagnose issues in our code and therefore it helped us to understand our mistakes.

4 - Yes, pointed to the right way.

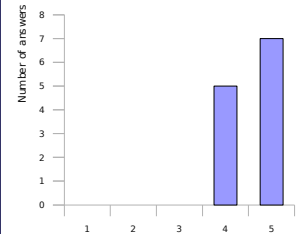
5 - Very helpful for the lab ; very good.



## Training labs

### 10. How useful were the training labs?

Rating	Answers	Description
1	0	Not useful. Didn't add significant value to the lectures.
2	0	
3	0	
4	5	
5	7	Very useful. Helped to highlight things not understood and build useful experience.



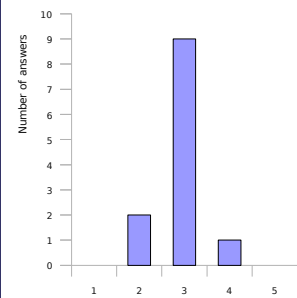
5 - It allowed us to discover that we are able to implement basic Linux drivers by ourselves.

5 - Would be nice to not loose time on stupid typing i.e. would be nice to have more building blocks ; Provide some easy way to grep through kernel code.

*Free Electrons note: you're probably talking about the last serial driver lab. We will improve this particular lab in the future, or will replace it by another one.*

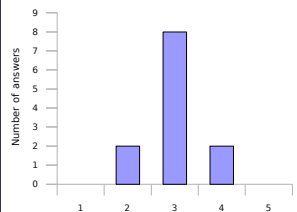
### 11. How difficult were the training labs?

Rating	Answers	Description
1	0	Too difficult. Didn't help or even discouraged a beginner to get more familiar with the tools and concepts.
2	2	A bit too difficult. Would be better if the lab instructions gave a bit more details about explanations.
3	9	Just fine. Prompted me to look for answers, get my own experience and find my own solutions.
4	1	Too easy for my own technical level.
5	0	Too easy for everyone. Should challenge participants more and help everyone to practice on real issues.



### 12. Was enough time dedicated to the practical labs?

Rating	Answers	Description
1	0	No. More practice is needed
2	2	A little bit more time would help.
3	8	Just fine
4	2	A little bit less time would be enough.
5	0	Don't need to spend so much time on labs. On-the-job practice is best anyway.



3 - Nice timing : theoretical aspects before practicing.

3 - May be show a little more the solution code along the lab (instead of providing it at the end) to give a reference code.

4 - Some of them took too much time (serial driver). Git lab did not work and we spent 2 hours trying to make it work!

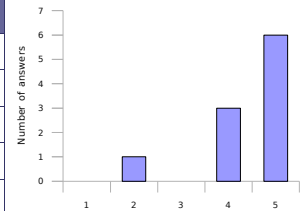
2 - No time to do all the labs ; also would be great to have other labs like video, audio, networking... rather than serial.



## Training conditions

13. How do you rate training conditions (room size, equipment, environment...)?

Rating	Answers	Description
1	0	Poor.
2	1	
3	0	
4	3	
5	6	Very good.



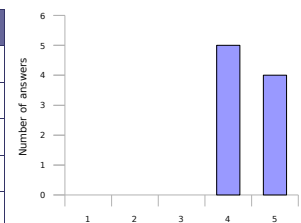
2 - One laptop per user would be better.

*Free Electrons note: we have to limit the number of laptops to 8. If 15 laptops were in use, you would have to divide the instructor time into 15, and the class would progress too slowly as a consequence.*

5 - Nice lab hardware to work on a real device.

14. How do you rate the training equipment (mainly computers)?

Rating	Answers	Description
1	0	Poor. Not powerful enough to execute practical labs.
2	0	
3	0	
4	5	
5	4	Very good. Very little time waiting, more time learning.



5 - It is nice to let the students install Ubuntu 10.04 on our own laptops.

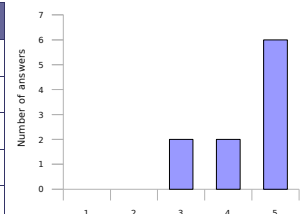
4 - Should always provide code archives ahead of time. We lost too much time because of the git archive and our too slow network.

4 - Nice target!

5 - Good idea to use the Calao board!

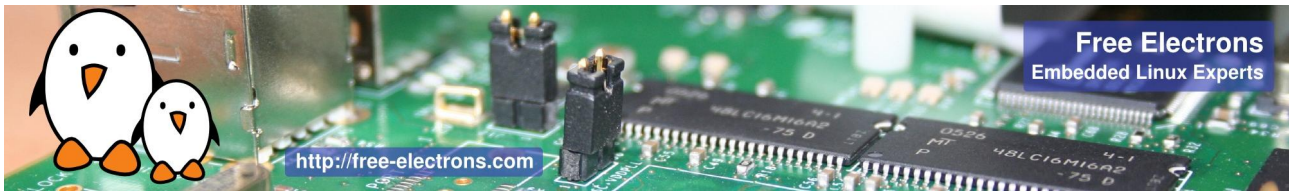
15. How well was the course organized (program, registration, meeting the schedule...)?

Rating	Answers	Description
1	0	Not well
2	0	
3	2	
4	2	
5	6	Very well



5 - Good program.

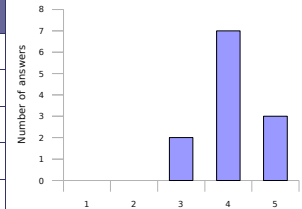
3 - Too much time lost to try to download the Linux kernel using git → git issue? Maybe downloading a smaller project (like uboot) should be better.



## Overall rating

16. How much did you learn?

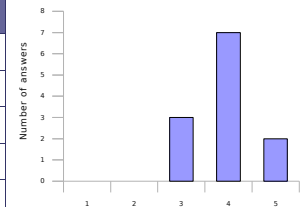
Rating	Answers	Description
1	0	Definitely not much
2	0	
3	2	
4	7	
5	3	Definitely more than I expected.



5 - I discovered that the kernel space is as accessible as the user space!  
 3 - Got new info but not what I hoped (e.g. scheduling, memory, processes)  
 4 - Learn a lot of things, but not clear yet for me how I can use them.

17. How useful will this course be in your daily job?

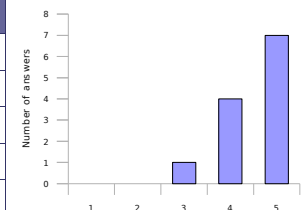
Rating	Answers	Description
1	0	Not useful.
2	0	
3	3	
4	7	
5	2	Very useful. Will make my job easier and more productive.



5 - I understood important features of the Linux kernel to be more efficient.  
 3 - Don't know, will not use all what I learned.

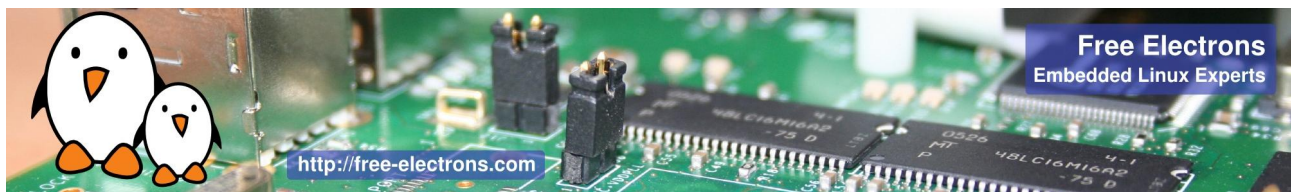
18. Would you recommend this course to others?

Rating	Answers	Description
1	0	No.
2	0	
3	1	
4	4	
5	7	Yes, definitely

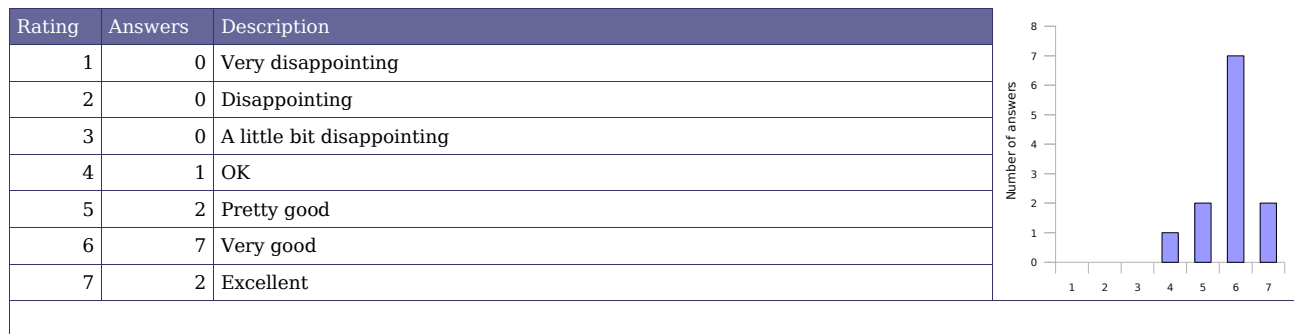


5 - Yes, definitely!  
 3 - See other comments. For my job, needs some adjustments.

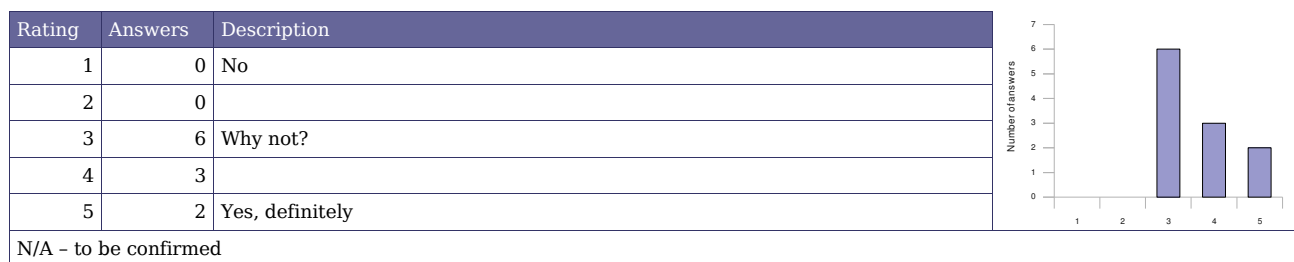




## 19. Overall rating



## 20. An extra session?



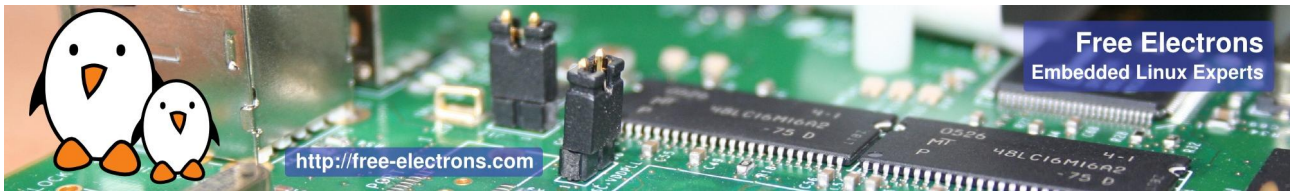
### Number of votes for topics in an extra session

Understanding the Linux kernel	Linux device driver development	Linux board support packages	Embedded system development	Miscellaneous needs
Process management	1 USB device drivers	1 Processor specific code	1 Lightweight tools	Java
Filesystem implementation	USB host drivers	1 Board specific code	1 Embedded system development tools	Real-time
Memory management	2 PCI drivers	Board specific interrupt support code	1 Cross-compiling toolchains	Audio
Scheduling implementation	1 Network drivers	1 DMA support	Debugging solutions	Video
Bootstrap code	1 Block drivers	Bootloader development	1 Software development tools	uClinux
	Flash drivers		Programming with graphical libraries	1 Voice over IP
	I2S drivers		POSIX API	1 Dslink
	Input drivers		System optimization	2 Dbus
	Sound drivers		Root filesystem creation	HAL
	Video drivers	1	Qt, Gtkt	1 UDEV
				1 Selinux
				1 Linux trends

## Free Electrons comments

Thanks to the (sometimes oral) suggestions from the audience, we will improve future training sessions...

- By adding more diagrams, to make concepts easier to learn
- Perhaps by replacing the serial lab by something more "exciting" if not too complicated, for example a framebuffer lab.



## Life after training

After this training session, do not hesitate to get back to us! Here are things we could do to support you in your embedded Linux projects:

- More training: you may be interested in the other training sessions that we propose, either embedded Linux system development or Linux kernel and driver development, depending on the course you have already taken. See <http://free-electrons.com/training> for details.
- If some people in your organization missed the session, and you don't have enough requests to organize another session, they can choose to go to our public training sessions. See <http://free-electrons.com/training/sessions> for details.
- Linux kernel porting. Adding Linux support to your boards, or supporting you in doing this.
- Having your board support code merged in mainstream sources (Linux, U-boot), so that your sources are maintained by the community. This also means for customers that your boards will be supported for a long time.
- System development and integration. Creating demos and prototypes.
- System optimization: improving system performance and features (power consumption, speed, size...)
- Investigating and fixing nasty bugs that you don't have time to cope with by yourselves.

See <http://free-electrons.com/services> for details.