Training evaluation report

Training session: Embedded Linux Training
Training dates: Mar. 4-5, Apr. 9-10, 2008 (2x2 days)

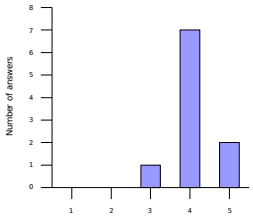
Number of participants: 12
Returned feedback forms: 10/12

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	0	
3	1	
4	7	
5	2	Fully met



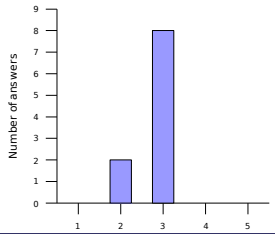
4 - Not enough time for actual device driver coding, e.g. interrupt handlers, too much on toolchains, too much downloading + compiling kernel etc. (this stuff was still interesting).

4 - Overall a balanced course.

4 - Maybe cover interrupts better + performance.

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	2	A little too short
3	8	Just fine
4	0	A little too long
5	0	Definitely too long. The concepts could be learned in much less time.



3 - Another day would have helped more.

3- Split into 2 2-day sessions was good.

3 - Gap between sessions meant these was an element of ramping up again to remember first 2 days, perhaps a quick refresher at the start of the 2nd 2 days would be good.

2 - A lot to cover.

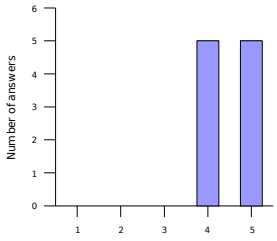
3 - 2 weeks between segments may have been better than 4; but overall it was better than 4 straight days.

2 - Another 2 days would be fine, as the practical labs were too much time consuming.

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	0	
4	5	
5	5	Really made things easier to understand and learn.



5 - A separate handout pointing to examples in the kernel code would be very useful to understand some of the topics. It can be provided at the end of the course.

4 - Good material.

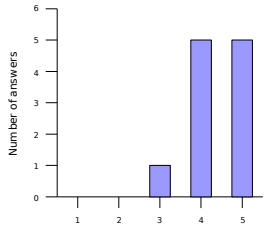
4 - Almost too much; good that notes (with embedded web references) are available online.

4 - Notes very comprehensive.

5 - Some aspects were not covered as much as I wish they would be (sys. architecturing, UML for embedded), but it seems wasn't the purpose of this training.

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	5	
5	5	Definitely



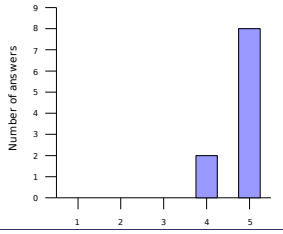
5 - Good content and level of detail.

4 - Useful guidance to main kernel config options.

4 - More helpful as an overview. For users with particular tasks this training needs to be more narrowly targeted.

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	0	
4	2	
5	8	Definitely



5 - Will surely consult course notes again.

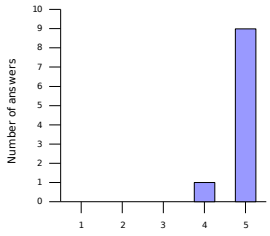
4 - Yes.

4 - Notes will be a very useful reference.

Instructor added value

6. How knowledgeable was the instructor?

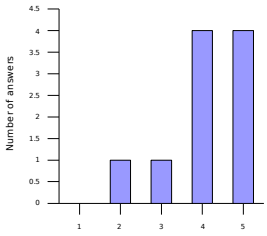
Rating	Answers	Description
1	0	Not enough for my own technical experience.
2	0	
3	0	
4	1	
5	9	More than enough for my own experience.



5 - Excellent!
5 - Excellent, very helpful. Very broad knowledge of Linux.
4 - Seemed to have a good understanding.

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

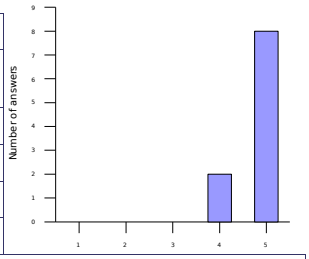
Rating	Answers	Description
1	0	No added value to reading the materials.
2	1	
3	1	
4	4	
5	4	Yes. The instructor really made very useful oral explanations.



5 - Excellent!
2 - Lecturing needs split up more to give time to take in information and practice what has been learnt.
3 - Sometimes found it difficult to follow his accent.

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

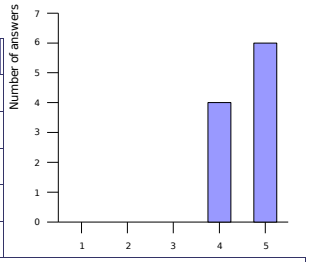
Rating	Answers	Description
1	0	Poorly. Didn't try to understand the questions well or rarely managed to find useful answers.
2	0	
3	0	
4	2	
5	8	Answered very well to questions from the audience



5 - Excellent!
5 - Gave enough help to allow progress. Allowed audience to move on in lab issues and still lean yourself, i.e. not just gave complete solutions in labs.
4 - Always seemed to have an answer.

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	4	
5	6	Yes. The instructor definitely helped to make labs a learning opportunity.

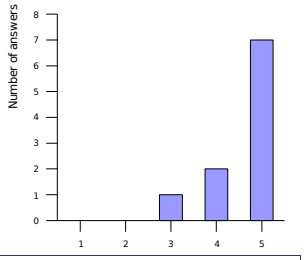


5 - Excellent!
4 - Yes, very patient :-)
4 - It took me a while to realize that “errors” were part of the tutorials - maybe they should be highlighted?
4 - Very helpful during labs.

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	1	
4	2	
5	7	Very useful. Helped to highlight things not understood and build useful experience.



5 - The course could have been longer with more practical hands on labs.

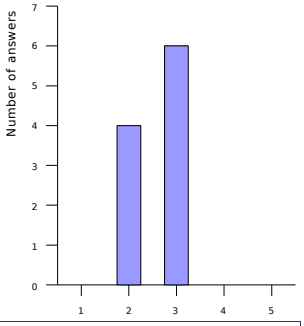
5 - Having to actually do the lab exercises definitely helped and highlighted small issues regarding kernel config / build / install. Not doing the labs would greatly reduce the experience.

3 - Some labs too complicated for time available; too many steps- e.g. character driver.

4 - The labs were useful. Helped break up the lecturing and put it into practice.

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	4	A bit too difficult. Would be better if the lab instructions gave a bit more details about explanations.
3	6	Just fine. Prompted me to look for answers, get my own experience and find my own solutions.
4	0	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.



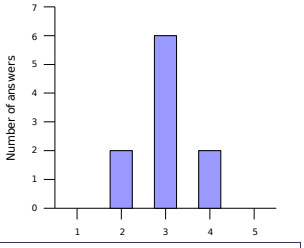
3 - The answers were “somewhere”. Sometimes the xconfig menus were very difficult to navigate and find the correct config item.

2 - Some too easy, some too long for time available.

2 - Need better steps. Need solutions to all labs at the end.

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	6	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



3 - A little more time would have helped in the first session. Overall the time available was just fine.

4 - Labs could have been done a little quicker, allowing more time for theory / additional labs

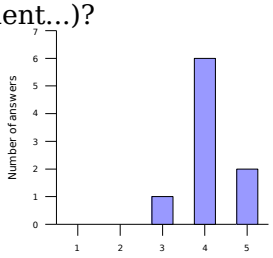
4 - Shorter practical labs would help.

3 - The time was fine, but more detailed steps would help. A lot of lab time wasted hunting through the notes.

Training conditions

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

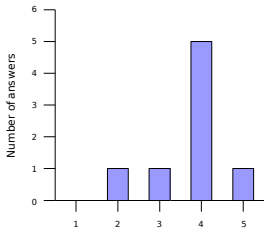
Rating	Answers	Description
1	0	Poor.
2	0	
3	1	
4	6	
5	2	Very good.



N/A
3 - Too warm as usual (even with heat off and window open!)
4 - On own premises.
4 - The projector is not quite in focus or too bright environment - anyway images were too hard to see on the screen.

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

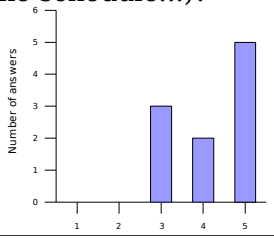
Rating	Answers	Description
1	0	Poor. Not powerful enough to execute practical labs.
2	1	
3	1	
4	5	
5	1	Very good. Very little time waiting, more time learning.



3 - Downloading from Internet was slow at times.
N/A - Too much time downloading etc, but this was addressed later with predownloaded sources.
2 - External web links too slow to do some of the online web updates to Linux VM.
N/A
4 - Own computer.
4 - Some issues with network connection although it seems only in my case.

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

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

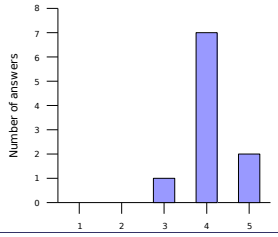


3 - Would have preferred if the VM image had been provided with all packages installed and kernel source downloaded.
3 - Too much time downloading. Labs - unclear steps - slowed things down.
3 - Some bottlenecks should have been noticed and brought to a public attention rather than explained personally, but that's my subjective opinion.

Overall rating

16. How much did you learn?

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



4 - The course content was better than expected, but it could have been tailored a little more. Attendees should have a say in the material covered.

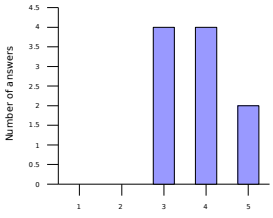
4 - Day 4 (toolchains etc.) especially useful.

4 - Lots

4 - Learnt a lot of stuff I hadn't tried before.

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

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



4 - Potentially very useful depending on work.

3 - Not using Linux right now on project, but will be useful for any useful project.

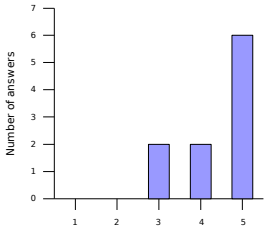
3 - Useful background in concepts and capabilities of kernel.

3 - Project dependent.

3 - More useful if starting a new project.

18. Would you recommend this course to others?

Rating	Answers	Description
1	0	No.
2	0	
3	2	
4	2	
5	6	Yes, definitely



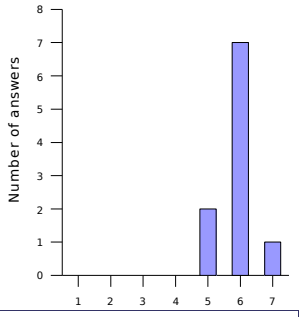
5 - Some basic Linux/Unix command knowledge is essential.

3 - If starting a project, yes.

3 - Yes - but need to address the issues mentioned.

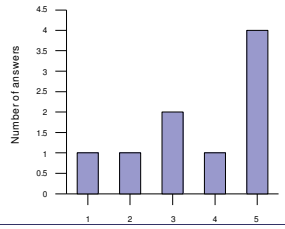
19. Overall rating

Rating	Answers	Description
1	0	Very disappointing
2	0	Disappointing
3	0	A little bit disappointing
4	0	OK
5	2	Pretty good
6	7	Very good
7	1	Excellent



20. An extra session?

Rating	Answers	Description
1	1	No
2	1	
3	2	Why not?
4	1	
5	4	Yes, definitely



5 - !!!
3 - Perhaps a course dedicated to device drives and possibly with a “real” target device.
2 - Not this time.
N/A
4 - Yes, but in a different direction - more about higher level system design.
5 - Device driver examples, DMA

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		USB device drivers		Processor specific code	3	Lightweight tools		Java	
Filesystem implementation		USB host drivers		Board specific code	3	Embedded system development tools	1	Real-time	4
Memory management	1	PCI drivers		Board specific interrupt support code	2	Cross-compiling toolchains		Audio	
Scheduling implementation	2	Network drivers	1	DMA support	2	Debugging solutions	1	Video	
Bootstrap code	1	Block drivers		Bootloader development	3	Software development tools		uClinux	
		Flash drivers	1			Programming with graphical libraries		Voice over IP	2
		I2S drivers				POSIX API	1		
		Input drivers				System optimization	3		
		Sound drivers				Root filesystem creation			
		Video drivers				3rd party protocol stacks (free & commercial)	1		

Free Electrons comments

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

- By giving solutions to all labs at the end. Note that we are not ready to give too many details in lab instructions, because people learn more when they look by themselves. However, having detailed solution steps at the end should satisfy this need, without reducing the challenge that each lab represents.
- By inserting more practice during lectures, through “lablets” - small practical exercises that can be tried in a few minutes, independently of the main labs.
- By setting up and running a caching proxy on the instructor's laptop, to reduce downloading time when the connection is slow.