Training evaluation report

Training session: Embedded Linux Training

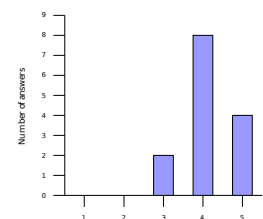**Training dates**: Feb. 4-8, 2008 (5 days)

Number of participants: 15

Returned feedback forms: 14/15

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	2	
4	8	
5	4	Fully met

3 - I thought that more hardware labs would be held. It is: programming with a real ARM (e.g.) board.

4 - Fine for having a global view of the embedded world.

4 - Very good to get a general idea.

4 - Too much information in too short time.

2. How was the duration of the course?

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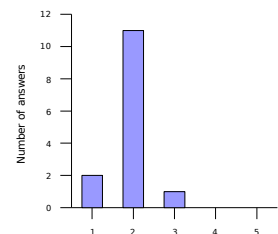
2 - There was not enough time to get deep in all concepts.

2 - Too many concepts in too short time. Difficult to digest everything.

2 - I think more time should be left to make sure that everyone in the course has enough time to fully complete the labs.
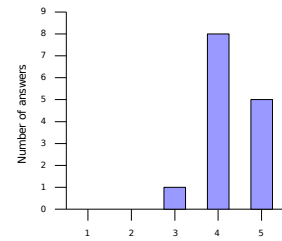
2 - Maybe the same time on a more extended period, so that more lab time can be dedicated "at home".

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	1	
4	8	
5	5	Really made things easier to understand and learn.

4 - I missed some structured contents, not just slides. Though the slides are very interesting and useful, they didn't provide quick access to the main topics. The summary is very useful too.
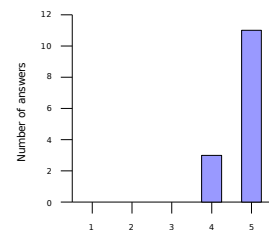
4 - Very clear materials, good job. But issues discussed are really difficult.

5 - Some lectures, too fast.

4 - Try not to just back and forth in the documentation.

4. Will you recommend these materials to others?

Rating	Answers	Description
1	0	No. Not helpful without following the sessions.
2	0	
3	0	
4	3	
5	11	Definitely

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	4	
5	10	Definitely
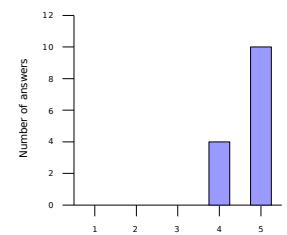
Instructor added value

6. How knowledgeable was the instructor?

Rating	Answers	Description
1	0	Not enough for my own technical experience.
2	0	
3	0	
4	2	
5	12	More than enough for my own experience.
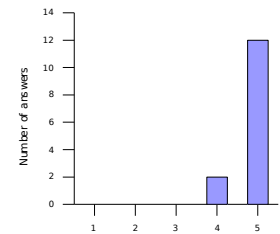
7. Did instructor oral explanations add value to the lecture materials?

Rating	Answers	Description
1	0	No added value to reading the materials.
2	0	
3	0	
4	5	
5	9	Yes. The instructor really made very useful oral explanations.
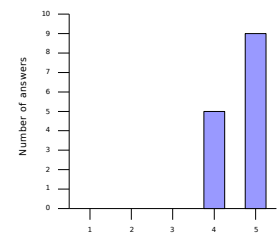
8. How well did the instructor answer questions from the audience?

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	4	
5	10	Answered very well to questions from the audience
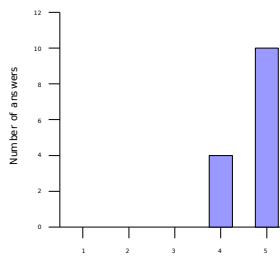
9. Was the instructor helpful with practical labs?

Rating	Answers	Description
1	0	No, not enough available and helpful during the labs.
2	0	
3	1	
4	4	
5	9	Yes. The instructor definitely helped to make labs a learning opportunity.
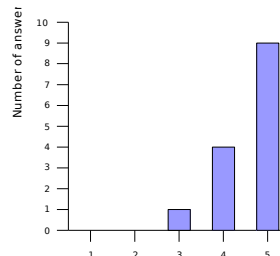
5- He helped with explanations or solutions when I was totally lost. He gave more information to understand the solution.

5 - In general, Thomas is a very good instructor. Excellent.

3 - I could manage by myself most of the time without problems.

4 - There was a bug in lab2 "cross-compiling BusyBox" that couldn't be resolved in real time.

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	7	
5	5	Very useful. Helped to highlight things not understood and build useful experience.
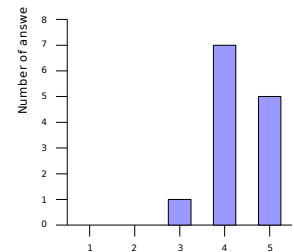
4 - Labs are very instructive. I suggest you to prepare labs to be done after the course is finished. Additional job.

5 - Not always could complete them. A "solution" of how to finish them would have been appreciated.

4 - I think that more stress should be put on the labs. After all, the slides are available in electronic format, but the practical sessions with a skilled instructor, are <u>only</u> available <u>during</u> the course.

4 - More time would allow to finish labs.

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	11	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.
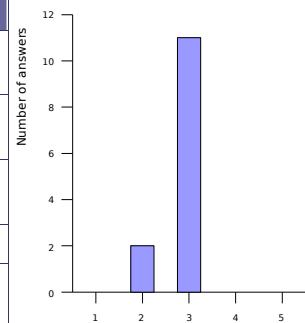
2 - Just fine, though a little stressing.

3 - But the time for doing them is a bit short. Obviously, I understand why.

3 - Note that on the cross-compiling lab, there was a bug in the Makefile, that even the instructor was not able to solve in situ.

3 - At the first labs I had the feeling of not knowing what to do. Maybe explain the objective of the lab. Give more context.

3 - In some cases, there is not enough time to find the solution, so might be a good idea to give a step by step solution <u>after</u> the lab time.

3 - We could focus on the issues just explained because there were scripts and configuration files already done. I think it will not be so easy in the real work.

12. Was enough time dedicated to the practical labs?

Rating	Answers	Description
1	2	No. More practice is needed
2	4	A little bit more time would help.
3	7	Just fine
4	0	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
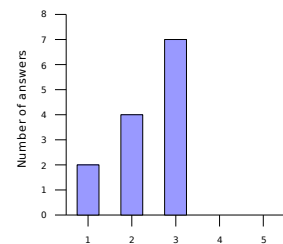
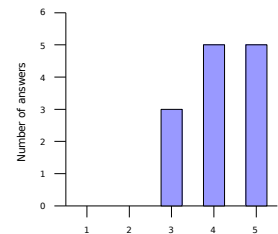3 - Problem was not time but the amount of concepts in a short period.

2 - There is enough time for the main points, but there should be some more time to solve some "hidden" points.

Training conditions

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

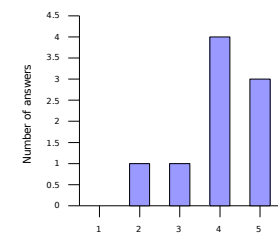| Rating	Answers	Description
1	0	Poor.
2	0	
3	3	
4	5	
5	5	Very good.

3 - Some material require network availability. Could be better to copy from USB. Maybe a hardware implementation could be good.

4 - Maybe more available computers would be better.

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	4	
5	3	Very good. Very little time waiting, more time learning.

N/A - Mmm... own computer. That's nice.
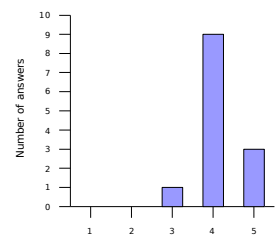
N/A

4 - Own computer.

N/A - We brought our own laptop.
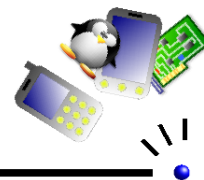
2 - Not enough.

N/A - I have used my own computer.

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

Rating	Answers	Description
1	0	Not well
2	0	
3	1	
4	9	
5	3	Very well

5 - I'm very happy about the course. Maybe the time should be more. Maybe 1 or 2 days more.
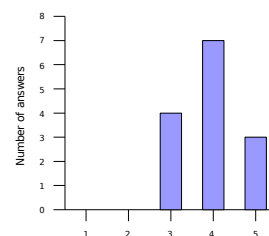
4 - But, as I said, too many subjects planned in a really short time.

Overall rating

16. How much did you learn?

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

5 - I did extra work at home. It helped me a little more.

4 - I came for an overview view of Linux in embedded systems so it just worked fine. Still have to figure it out.

3 - It's been also good for fixing knowledge, and also learning other possibilities of doing things.

3 - On my expectations. The subject of O.S. is very wide. Now, I have a first experience, thanks to the labs, and a very useful reference (the slides, the training material).

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

Rating	Answers	Description
1	0	Not useful.
2	0	
3	4	
4	8	
5	1	Very useful. Will make my job easier and more productive.
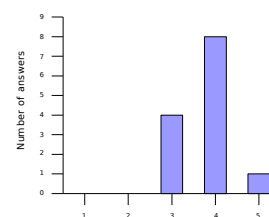
3 - It just gives a starting point. Not so many practical solutions.

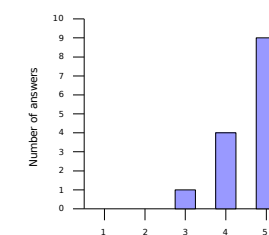3 - It opens new challenges to my company.

4 - Depends on whether we adopt Linux or not.

4 - Will add value, as I will be able to consider using Linux in embedded systems.

4 - To be used in future projects.

18. Would you recommend this course to others?

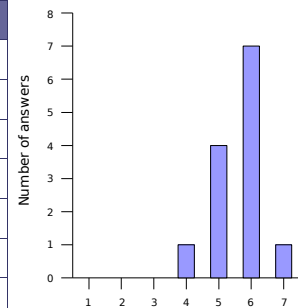| Rating	Answers	Description
1	0	No.
2	0	
3	1	
4	4	
5	9	Yes, definitely

3 - Only if their knowledge in this field is basic, or for having a global view of Linux embedded world, but still very good.

19. Overall rating

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

5 - I think that programming and debugging a real embedded board is compulsory in this kind of course. I really missed the hardware. Missed some hardware specific items such as microcontroller peripherals management and development of BSPs.
Extra comments: Though I'm the first not to fulfill the prerequisites of the course. Merci, a bientot.

20. An extra session?

Rating	Answers	Description
1	0	No
2	0	
3	6	Why not?
4	3	
5	4	Yes, definitely
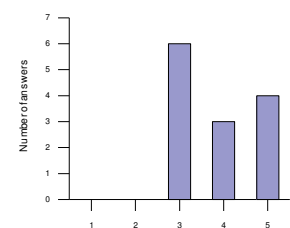
4 - Deep in IRQ. Deep in real-time lab.

N/A - BSP - Guidelines to develop a BSP.

4 - Practical training about constructing an embedded system from scratch.

5 - Audio, video, system optimization, programming with graphical libraries.

3 - Drivers for standalone systems.

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

Free Electrons comments

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

- By leaving more time for practical labs, and focusing on the most important slides. This would also reduce the impression that the course is too short.
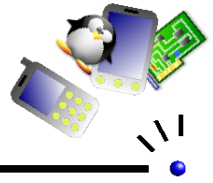
- By proposing more "going further" instructions for people going faster than the others, to keep them busy and leave time for the others to complete their practical labs.
- By giving example solutions for all the practical labs.
- By avoiding to make changes in the order of slides.