# CodeRefinery Newsletter November 2019

Dear reader,

Welcome to the third CodeRefinery newsletter! It’s been an interesting autumn for the project. Regular workshops were taught in Trondheim, Stockholm and Espoo, but we also organized two new types of events in Stockholm in early November: an instructor training workshop [<https://coderefinery.org/events/2019-11-04-stockholm/>] followed by a hackathon [<https://coderefinery.org/events/2019-11-06-stockholm/>]. Around 30 participants joined us in the instructor training workshop - a promising sign for the future of the project which will rely on volunteer instructors organizing and teaching workshops at their home institutions. You will find summaries of these events further down in this newsletter.

A question we hear from time to time, and which was discussed at the instructor training is: “how do I become a CodeRefinery instructor?” We have been thinking about this question within the project, and although we don’t have any formalized process to certify instructors we do have some ideas about what the recommended steps are to start teaching CodeRefinery material. We summarize these ideas, along with practical tips on running workshops, in the article “Organizing workshops and teaching lessons”.

Have you heard about the Nordic-RSE network? The idea originates from a brainstorming session at the NeIC all-hands meeting in Norway and the initiative was formally kicked off at a CodeRefinery meeting outside Stockholm. Modeled after initiatives in other countries (including the UK [<https://rse.ac.uk/>], Germany [<https://de-rse.org/de/index.html>] and the Netherlands [<https://nl-rse.org/>]), its purpose is to establish a community for research software engineers (RSEs) working in the Nordics to share knowledge, organize meetings, and raise awareness for the scientific recognition of research software. CodeRefinery contributes to the Nordic-RSE network, and we now have the pleasure to announce the first Nordic-RSE conference to be held during the week October 19-23, 2020! You can read more about this network and the planned conference in the article “Announcing the Nordic-RSE conference”.

Several CodeRefinery members contribute to the NordicHPC initiative, which aims to establish a community of HPC system administrators, application experts and power users across the Nordics. The first get-together meeting of NordicHPC, which was held at Aalto University in November, brought together experts from all the Nordic countries as well as Estonia. You can read a retrospective of this event along with future plans in an article below.

CodeRefinery also made its first major excursion outside the Nordics when Radovan was invited to teach a 2-week “low-intensity” workshop (with only morning sessions) in Lille, France. We hope to be able to strengthen our international network further and export both regular workshops and instructor training events to colleagues around the world - read further in “Expanding outside the Nordics”.

### Hackathon retrospective

The bread and butter of CodeRefinery are the 3-day workshops on sustainable scientific software development. However, there’s also room for other types of events aimed at networking and sharing of expertise, and in that spirit we organized the first CodeRefinery hackathon on November 6-7 in Stockholm. Thanks to local support from friends at the KTH library, the hackathon took place in two nice seminar rooms located in the library. The event brought together around 20 people with lots of interesting project ideas. One group worked on adapting an existing lesson to CodeRefinery format (with lots of hands-on exercises) while another wrote code to capture commands typed in a terminal and automatically add them to an online Google Drive document - a useful trick to help workshop participants follow type-along sessions! We also had one group working on a ReproHack project where the idea was to attempt to reproduce results reported in a high-profile paper published a few years ago, based on the paper’s methods section, supplementary material and the published data and code. Despite best efforts by the authors to make their results reproducible, this turned out to be quite a challenge due to updated paths in the dataset and evolution of software versions. A valuable lesson learned on the importance of tagging versions of both code and data!

Our experiences from the hackathon are positive and it would be fun to do it again, but currently it’s not on our agenda for the next semester. But if you’re lamenting over missing this hackathon, and would be willing to help us set up a second hackathon in the new year, we’re all ears!

### Instructor training workshop

In this second phase of the CodeRefinery project we are thinking hard about ways to reach sustainability by the end of the project period in 2021. Sustainability means that the CodeRefinery material will be maintained and the workshops continued even after funding stops. Reaching this goal will require that universities are willing to host workshops and fund instructor travel, but more importantly it will require more people to get involved in teaching workshops and contributing to the material.

To this end, we organized the first CodeRefinery instructor training workshop on November 4-5 at KTH in Stockholm. The interest in this workshop was unexpectedly large - not only were all 30 seats filled well ahead of the workshop, but practically everyone who had registered showed up on the day as well!

Brand new lesson material was developed from scratch, which you can find at <https://coderefinery.github.io/instructor-training/>

On day 1 (half day), we focused on the CodeRefinery teaching philosophy and the teaching approach used in workshops. We also covered some practical advice on giving workshops and tips on developing teaching material following “backwards lesson design”. On day 2 (full day) we split into groups and worked on the CodeRefinery lessons. Each group was led by an experienced instructor and the material of each lesson was discussed in depth. The feedback from participants and their ideas raised during discussions were extremely valuable and we have started implementing changes to the lessons, although much remains to be done due to the busy workshop schedule.

The instructor training material itself was also discussed and there’s a lot of room for improvement. After all, the material was being piloted. In the next instructor training workshop we will focus less on improving the lessons and more on “teaching how to teach” as well as teaching and discussing how to prepare and organize workshops and events. The accumulated workshop teaching experience within the team is by now quite extensive and this experience needs to be shared!

### Organizing workshops and teaching lessons

If you have been following the CodeRefinery project with interest and seen a need in your own professional environment for training in scientific software development, you might be wondering how you can start teaching and organizing CodeRefinery workshops yourself (instead of waiting for us to visit your institution at some time in the future). The short answer is that there are no strict requirements - anyone can use the CodeRefinery lessons in any way they like. But if you’re more interested in the long answer, please read ahead!

Teaching CodeRefinery lessons is not exactly the same thing as teaching any other university course. CodeRefinery workshops are three day marathons covering a lot of ground. This places demands on both the quality of the teaching and the workshop administration. We believe that in order to teach a CodeRefinery lesson or organize a workshop, you should have attended a workshop in the past either as a learner or helper to see how they’re conducted. It’s also very valuable to have solid experience in using the tools that you wish to teach, but keep in mind that no expertise is needed! As long as you’re comfortable teaching a lesson after carefully studying it, you’re ready to go. Finally, there are the pedagogical aspects and the presentation techniques. These include concrete aspects, like teaching through live coding and type-along sessions, as well as various soft skills, like creating a positive learning environment for everyone. To learn these things we recommend that people attend either a CodeRefinery instructor training workshop, a Carpentry instructor training workshop, or both. Get in touch if you’re interested in attending such workshops!

Organizing a successful workshop also requires careful planning and preparation. Since the last year and a half we have been trying to document the processes behind organizing and teaching workshops, which has resulted in a series of manuals. While they grew out of our own need to onboard new instructors, standardise workshop operations and ensure that nothing is forgotten, we realized that they might be useful to a wider community, especially people who want to self-organize CodeRefinery workshops without formal involvement of CodeRefinery staff. The manuals are thus licensed permissively to allow reuse and we have also tried to keep the instructions general and understandable to new instructors. Our manuals repository

(<https://github.com/coderefinery/manuals/>) includes the following:

* In “Workshop administration” (<https://github.com/coderefinery/manuals/blob/master/workshop-administration.md>) you will find a step-by-step guide for all the practicals, including instructions for setting up a workshop webpage (<https://github.com/coderefinery/template-workshop-webpage>) and templates for advertising the workshop and communicating with participants.
* In the “Helper’s guide” (<https://github.com/coderefinery/manuals/blob/master/helping-and-teaching.md>) you will find tips to workshop helpers (and instructors) on how to create a positive learning environment during workshops.
* The “In-class checklist” (<https://github.com/coderefinery/manuals/blob/master/presenting.md>) goes through both non-technical presentation hints (e.g. what to say or not say) and technical aspects (e.g. how to set up screencasting)
* The “Lesson design checklist and guide” (<https://github.com/coderefinery/manuals/blob/master/lesson-design.md>) reviews the backwards lesson design process and other valuable tips for developing new lessons.
* Finally, there is the “Summary of the book Teaching Teach Together” (by Greg Wilson) (<https://github.com/coderefinery/manuals/blob/master/teaching-tech-together.md>), which is the ultimate handbook for teaching technical topics!

Feel free to use and adapt these manuals when organizing and teaching your own workshops! Please also reach out if you would like to organize a local event or workshop and would need support from us in the form of feedback, mentoring, or sending an instructor.

### NordicHPC get-together retrospective

CodeRefinery is about teaching, but it also raises the question: maybe we should also make the things we teach more usable. NordicHPC grew out of CodeRefinery as a result of this idea. The very first NordicHPC get-together meeting was held on Aalto University campus on the outskirts of Helsinki, and it brought together HPC specialists from Denmark, Estonia, Finland, Iceland, Norway and Sweden, around 27 people in total. The meeting was split into short presentations and unconference-style sessions where topics proposed by participants were discussed in detail.

The program included four pre-planned talks, 10 lightning talks, seven unconference sessions, eleven sites presenting their cool stuff, three meals, and countless discussions. One highlight was the "cool things and problems" talk, where we heard of *many* novel ideas which should be shared, and how similar our problems were. Second was the "hallway discussions" during breaks, which was one of the first meetings of many of the attendees.

NordicHPC has decided to adopt a new name indicating a broader role, use the [CodeRefinery Zulipchat](https://coderefinery.zulipchat.com) for communication, and to try to continue meetings in the future. A [final report will be available at the meeting page](https://nordichpc.github.io/2019-11-14-helsinki/) later.

### Expanding beyond the Nordics

We typically organize workshops in the Nordics, not because we are solving an intrinsically Nordic problem, but because currently the funding comes from the Nordics. We are convinced that our lesson material is highly relevant also beyond the Nordic borders and we would love to make the material more visible and workshops accessible beyond Iceland, Norway, Sweden, Denmark, Finland, and Estonia. Indeed we have organized two workshops outside of Nordics: a short workshops as part of the RSE 2017 conference in Manchester, and very recently a two-week course “Best practices for research software development” in Lille, France, with 30 participants, funded by the University of Lille as part of an “invited professor” scholarship (<https://coderefinery.org/events/2019-11-25-lille/>). This workshop was well received and it is encouraging for us to see how much interest and demand there is for similar workshops in future. Together with TU Delft and the Netherlands eScience Center we are preparing a combined instructor training and workshop event to take place April or May 2020 where we hope to increase the visibility of our material and inspire lesson uptake and lesson contributions and grow the CodeRefinery community. We have invitations to other institutions in Europe and we are working on a model to be able to support communities outside of Nordics.

### Announcing the Nordic-RSE conference

What is a research software engineer (RSE)? Unbeknownst to you, you might already be one! Regardless of your formal job title, if you answer yes to many of the following questions, you are doing the work of a Research Software Engineer:

* Are you employed to develop software for research?
* Are you spending more time developing software than conducting research?
* Are you employed as a postdoctoral researcher, even though you predominantly work on software development?
* Are you the “person who does computers” in your research group?
* Are you sometimes not named on research papers despite playing a fundamental part in developing the software used to create them?
* Do you lack the metrics needed to progress your academic career, like papers and conference presentations, despite having made a significant contribution through software?

RSE networks in the UK (where it all started), Germany, the Netherlands, and the United States are already thriving. Annual conferences are held, smaller meetings and workshops are organized, and communication channels exist for discussing topics related to scientific software development independent of academic disciplines. Moreover, in the UK, “RSE” is now a recognized job title, most of the major universities now have RSE groups that work horizontally to assist research groups develop software or technical infrastructure, and there are prestigious RSE fellowships awarded every year.

The Nordic-RSE initiative wants to bring this model to the Nordics. Last year we sent out a survey to collect information on how RSE-type work is conducted in the Nordics. From just over 100 answers, the results were similar to what has been found elsewhere: 4 out of 5 conduct own research, 9/10 develop software used by others, 4/5 develop mostly open source projects, 7/10 train other researchers, 4/5 are between 25 and 44 years old, etc. But how can we bring all these people together and build a thriving community? By organizing the first Nordic-RSE conference of course! We are extremely excited to announce that the first Nordic-RSE conference will be held during the week October 19-23, 2020. We haven’t decided on the location yet and if you would like to bring the first Nordic-RSE conference to your city, register your interest through the [Venue bid](https://forms.gle/cvUvV2KwgWda61Zy8).

If you want to follow updates about the conference, please sign up for a conference mailing list at <https://neic.no/mailman/listinfo/nordic-rse-announcements>. This will be a read-only mailing list for announcements. If you would like to take part in discussions around the conference or anything else relating to Nordic-RSE, please sign up for the CodeRefinery Zulipchat (<https://coderefinery.zulipchat.com/>) and join the “nordic-rse” stream. We are currently looking for people to join the organization committee and the program committee - please get in touch via Zulipchat if you want to participate! As this will be the first conference of its kind in the Nordics, we will also need help to spread the word, so bring this up with your colleagues who you think might be interested!

### From the web

Here are some links to fun, interesting and/or useful resources online which have been discussed in the CodeRefinery Zulipchat:

- [Visualizing Git](<https://git-school.github.io/visualizing-git/>): Would you like to get a better mental model of branching, merging, rebasing etc. in Git without the effort of editing files in terminal? Check out this fun game which visualizes Git branches as you type! Just type out “git commit”, “git branch mybranch”, “git merge”, “git rebase” etc. and observe how the tree grows.

- Ever wondered what the perfect Git commit message might look like? Have a look at [this interesting example](<https://fatbusinessman.com/2019/my-favourite-git-commit>)!

- Are you using GitHub for some of your code? Have a look at this new feature: [GitHub Actions](<https://github.com/features/actions>). It automates software workflows like building and testing.

- Are you using CMake in your projects? Have a look at the [CMake cookbook](<https://www.packtpub.com/application-development/cmake-cookbook>) by Radovan Bast and Roberto Di Remigio. All the recipes and code examples used in the book are on GitHub (<https://github.com/dev-cafe/cmake-cookbook/>).