CS265 Spring 2016 project
Project Submission and Guidelines

This document presents the guidelines for final project submission, deliverables and the evaluation meeting. The guidelines are the same for both dev and research projects.

Deliverables and Grading
Your final deliverables include:
1) a report (20% of project grade)
2) a presentation (20% of project grade)
3) a demo (50% of project grade)
4) project code and scripts (part of the demo grade)
5) there is also another 10% from your midway report

Evaluation Meeting
At the end of the semester there will be a 45-minute meeting where students will present their project work. During the meeting you will deliver all components described above (except the midway report of course). The structure of the meeting will be that we will start with your project presentation that will describe your project and your results. We will then continue with the demonstration of the project (on your laptop). You do not have to bring your code: a link in your report is enough.

The format of the meeting will be very much like the interaction in class, i.e., we will discuss about design alternatives and performance tradeoffs based on your project design.

For remote extension school students or college students that will be away the meeting will happen through Zoom or Skype.

Depending on the nature of your project you might meet only Stratos, only the TFs or both, i.e., in some cases we might ask you to do 2 meetings.

When?
The evaluation meetings will take place right after classes (end of April, beginning of May). We will send information about possible timeslots in Piazza to be able to schedule the meetings.
Can I improve after the meeting and resubmit?
The best thing to do is come often to OH so you can get feedback on all deliverables before the evaluation meeting so you know exactly where you stand and what to improve on.

After the meeting we will do our best to accommodate updates within the time-frame allowed by Harvard. You can resubmit your report and you can submit a video of your updated demo. You will arrange this during the meeting for specific points you need to improve on.

What to bring in the meeting?
1) Bring a printed copy of your report and your presentation slides.
2) Bring your laptop where you can run your presentation and your demo.

How to structure the final report?
All students are expected to write a final report presenting their design, as well as the behavior and performance of their project. This report should be structured as a short research paper, having the following sections:

• A short abstract (1-2 paragraphs) giving the high-level motivation of this work (what is the problem, why is it important, what is the main idea in the project and what is the main result observed)
• An introduction. An introduction is essentially a lengthy abstract going into more detail on each one of the questions described above.
• A design section, which will contain more details about the design, will present all design decisions, all knobs, and all possible values for each knob. To get this right think that someone reading this should be able to replicate your design using the information in this section.
• An experimental analysis section, which will contain detailed experimentation. The section should include details about the experimental setup: implementation details, experimental platform details (CPU, memory, disks), data set details (sizes, distributions), workload details (what queries, distributions), followed by experimental results. It is very important that you justify the experiments you perform and the set-up, i.e., as we do in class when we discuss experiments, you should explain why the specific experiment, the specific graph and metric are important for the story you are trying to present. It is quite understandable that you might not have the time to perform all experiments you would like to eventually do. In the end of the section you can have a subsection explaining what other experiments you would do and why (you can also include discussion about the results you expect to see from some of these experiments). We expect to see at least 3 experiments that demonstrate interesting performance or tradeoffs implemented for the final report.
• A conclusion section, which will contain a short summary of the presented design, and a short discussion about the main performance result (3 paragraph max).

The overall paper is expected to be 4-6 pages using the Latex template that can be found at the ACM website: https://www.acm.org/publications/proceedings-template. Should a single
column template be used, the size should be 8-12 pages. The report should be submitted in PDF format.

Your final report grade will be 70% about the quality of the content and 30% about the presentation, clarity and organization of the material.

Presentation details
During the evaluation meeting you will first present your work for about 15 minutes. Regarding the content, your slides should describe the essence of your final report. Your slides should follow the guidelines we have discussed in class about presentations: one message per slide, just enough text, no bullets, use figures when possible, clear examples, etc. Your presentation grade is entirely about the quality of your presentation and the delivery.

Live Demo
The core part of each project is the final project demo. Here you will demonstrate your project and your findings. The exact details of what is best to demonstrate depend on each individual project. The guideline is that you should create demo scenarios where you can demonstrate
  1) the basic behavior
  2) design tradeoffs
  3) performance in varying scenarios

The tradeoffs to highlight and the scenarios depend on what metrics are important for the design proposed. For example, for students doing the development project and focusing on studying tradeoffs regarding the data structure used at each level of an LSM tree, then it is important to create scenarios with varying ratios of reads and writes. In addition, creating extreme scenarios where one design is much better than another design helps to highlight the differences. And of course you should be able to compile and execute the project and show how basic operations are carried out: initialize and build the tree, load data, execute workload (i.e., provide a file that represents the workload and consume it), execute individual operations (insert/search/delete/update), show performance after workload execution (throughput).

Typical tradeoffs and scenarios that will apply for numerous dev and research projects would be to vary the data size, skew in the data, read/write ratio, concurrent queries and number of cores.

Consult with the teaching staff prior to your meeting about what is a good demonstration scenario for your specific project. Bring a suggested plan and ask for feedback.

This demo is expected to have a 10/15-minute duration. As part of the demo there will also be some code review.