ASL 2014 – Milestone 1

Guidelines for writing the report for milestone 1

The report does not need to be extensive but it must be concise, complete, and correct. Conciseness is important in terms of content and explanations, focusing on what has been done and explanations of the results. A long report is not necessarily a better report, especially if there are aspects of the design or the experiments that remain unexplained. Completeness implies that the report should give a comprehensive idea of what has been done by mentioning all key aspects of the design, experiments, and analysis. Aspects of the system, be it of its design or of its behavior, that remain unexplained detract from the credibility of the report. Correctness is expected in terms of the explanations being logical and correlate with the numbers in the experiments and the design.

Remember that this is a report about the system you have designed and built, about the experiments you have performed, and about how you interpret the results of the experiments and map them to your design and implementation. There is no unique way to do the report and you may choose to focus on different aspects of the system as long as you deliver a complete overview of its behavior. Please do not contact us seeking confirmation and assurances about, e.g., whether the report is sufficient, your interpretation of the data, validation of concrete aspects of your design, or whether you have done enough experiments. Making those decisions is your job and part of what the course will evaluate.

A passing grade for the milestone requires at the very minimum:

- A working system
- Consistent experimental results
- Measurements of the entire system
- Measurements of each component (database and middleware)
- In depth analysis of one component (either database or middleware)
- Solid and credible explanations of the design, results, experiments and behavior of the system

The milestone is worth 300 points. The second milestone will also be 300 points, with a total passing grade for the project (and hence the course) of 300 points out of a maximum of 600.

The report should be organized in sections as indicated in the next page and each section should address at least the questions mentioned for each point. The report will be graded together with the code and data submitted. You might be called for a meeting in person to clarify aspects of the report or the system and to make a short presentation of the work done. By submitting the report, the code, and the data, you confirm that you have done the work on your own, the code has been developed by yourself, the data submitted comes from experiments you have done, you have written the report on your own, and you have not copied neither code nor text nor data from other sources.
1. **Database**
   - Schema
   - Indexes
   - Interface (queries, stored procedures)
   - Explanation for the design (what you wanted to achieve, design decisions, expected behavior)
   - Performance characteristics of the database (throughput, response time, scalability)

2. **Middleware**
   - Overall design
   - Connection pool to the database
   - Connections to the clients
   - Queuing mechanism
   - Explanation for the design (what you wanted to achieve, design decisions, expected behavior)
   - Performance characteristics of the middleware (throughput, latency, scalability)

3. **Clients**
   - Design
   - Workloads
   - Instrumentation, scalability, deployment
   - Sanity checks on workload generation and correctness of responses

4. **Overall design**
   - Describe the overall design as complete system (number of middleware nodes, number of clients, configuration)
   - Describe how the system is deployed for experiments
   - Describe the scripts and mechanisms using for configuring and deploying the system

5. **System stability**
   - 30 minute trace of the system under load (or longer). Plot throughput and response time.
     Describe the exact configuration used to run the trace.

6. **Systems performance**
   - Maximum throughput (describe the exact configuration of the system)
   - Average response time for maximum throughput experiment
   - Scalability of the whole system (explain configurations used to explore the scalability)
   - Response time for messages of different sizes
   - Response time for different number of clients
   - Response time for different numbers of middleware nodes

7. **Analysis of the performance numbers**
   - For each one of the experiments, an explanation of the behavior observed in terms of your design and configuration used in the experiment
   - Summary of the behavior of the system in terms of the overall design
   - What would you do differently if you would have to design the system anew?