Term Project Requirements

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The Group Term Project

The purpose of term project is to guide students going through the research process. As a graduate student (or senior undergraduates), this exercise can prepare her-/him-self for paper/patent publishing, thesis/dissertation writing, etc.

- Master thesis vs Ph.D. dissertation:
  - common requirement: originality (how to proof originality?)
  - difference: contribution (how to assert contribution?)

The Project

The term project needs to be typed and should include the following 7 steps:

1. Problem presentation: Each student sends an email of your own idea for term project topic, and present "what" and "why" (but not "how" yet) in a few minutes in class to attract your teammates. If your topic is chosen as the group project, you will get a few more credits.
2. Team forming (each team has 2 or 3 people): Find your team members, negotiate/decide the title of the group project and the team lead. Each team lead sends an email (to me and cc to all teammates) containing topic and names of teammates, and soft copies of 2 different papers (related to the team topic, if soft copy is not available, you can hand in hard copies before presentation) assigned to each member before due date.
3. Paper presentation: Each team lead sends email containing members' paper presentation slides before class begins, and each person presents one of the two papers read. Different members in the same team need to present different papers. Each presentation takes about 5-10 minutes. The papers can be any journal/conference paper (prefer very recent papers instead of old/obsolete ones.)
4. Proposal presentation: Each team writes a formal proposal of "how" your group is going to do, the proposal contains parts 1, 2, 3, 4, 5 and part 9 in the project format below. Each team lead sends an email containing the proposal in PDF format and presentation slides before class begins. Each presentation takes 10-15 minutes, and is shared by all teammates in the team.
5. Project defense: Each team implements the project and makes discussion, conclusion and suggestions for future study, this contains parts 6, 7, 8 and 10 in the project format below. Each team lead sends an email containing the whole project document in PDF format and presentation slides before class begins. Each presentation takes 10-15 minutes (including 5 minutes of demo to show your program runs and give correct results), and is shared by all teammates in the team. To save time, do not present whatever presented in the proposal presentation.
6. Optional publish-ready version paper: the project document based on normal margin (1" on each border), single column, double spacing, 12-point fonts. But the publish-ready version should be narrow margin (0.5" on each border), double-column, single spacing, 10-point (or 9-point) fonts.
7. Each team lead submits your project as PN (N = last program assignment number + 1) using the "Submit" script (but Autotest is not needed) before project defense. The submission should include:
   - your source files (if you use free download source files, put the information and procedure of how to download in the README file, but don't submit the original downloaded source files; only your own code and modified downloaded files need to be submitted),
   - a README file for how to build and how to run,
   - Makefiles for Unix/Linux, <proj>.sln and <proj>.vcproj file for Visual Studio on Window, and/or Eclipse working directory
   - sample input files

   Note: Please no executable, no binary files, no compressed files (e.g., zip, gzip, etc.) and no output files in the submission. If you need binary tools to run your project, please put how you download the tool in the README file instead of submit them (I can download it myself).

   Note: Starting 2024, IT department requires no scripting file in submission. If you have Python, Perl, etc. files, please paste the code in the README file.

Project Format

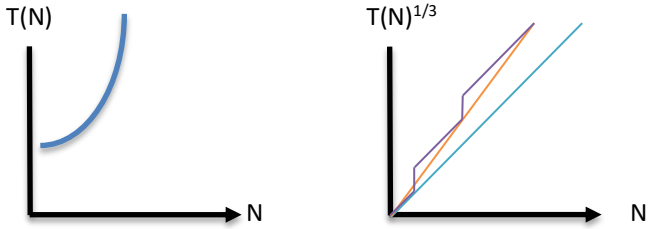
1. title page, preface (for book only), acknowledgements, table of content, list of tables/figures, abstract (at most a page)
2. introduction
   - objective
   - what is the problem
   - examples to show what is the problem and what are possible use cases
   - why this is a project related to this class
   - why other approach is no good
   - why *you* think *your* approach is better (you need to replace your to our)
   - statement of the problem (optional)
   - area or scope of investigation
3. theoretical bases and literature review
   - definition of the problem (if you have mathematic formulation)
   - theoretical background of the problem (if needed)

- related research to solve the problem (important: use your own words or a few quoted copy sentences with credits to the original owners)
- advantage/disadvantage of those research
- *your* solution to solve this problem
- where *your* solution different from others
- why *your* solution is better

4. hypothesis (means goals, but don't use goals, use hypothesis)
   - single/multiple hypothesis (either one, but not both) each one is either positive or negative (optional: only for proof correctness) hypothesis
5. methodology
   - how to generate/collect input data
   - how to solve the problem
     - algorithm design
     - language used
     - tools used
     - web/UI design (if needed)
     - deployment design (if needed)
     - a prototype (optional if time permit)
   - how to generate output
   - how to test against hypotheses
   - how to proof correctness (required by dissertation only)
6. implementation
   - code (refer programming requirements)
   - design document and flowchart
7. data analysis and discussion
   - output generation
   - output analysis
   - compare output against hypothesis
   - abnormal case explanation (the most important task if you have it)
   - statistic regression (if you have complex curve to fit)
   - discussion
8. conclusions and recommendations
   - summary and conclusions
   - recommendations for future studies
9. bibliography
10. appendices
    - program source code with documentation
    - input/output listing
    - other related material

More Details

- allow to change topic before proposal and to change scope before defense
- honest: Dr. Huang
- abnormal case explanation: huge matrix multiplication



Discussion, Presentation, and Questioning

You need to actively participate the discussion, the presentation and questioning. Discussion is the best way to fully understand a problem, presentation is the best way to express your idea to others, and questioning is the best way to find problems.

The Group Term Project

- problem presentation (2%)
- team forming (3%)
- questioning and discussion (5%)
- paper presentation (10%)
- proposal presentation (10%)
- project defense (10%)
- quality of work (60%)

Policy and Information

- The open project policy: any student can freely get copies of previous student's projects (but not the implementation code) by sending request email to me, and agrees to share her/his own project for future quarter's students.
- Please read /home/m1wang/tips/<class_name>/projects for previous projects.
- Please read /home/m1wang/tips/<class_name>/www for related research.
- Please read /home/m1wang/tips/common/paper for where to find all research papers