TDT4260 Computer Architecture
Mini-Project Guidelines

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1 Introduction

The Mini-Project accounts for 20% of the final grade in TDT4260 Computer Architecture. Your task is to develop and evaluate a prefetcher using the M5 simulator. M5 is currently one of the most popular simulators for computer architecture research and has a rich feature set. Consequently, it is a very complex piece of software. To make your task easier, we have created a simple interface to the memory system that you can use to develop your prefetcher.

The Mini-Project is carried out in groups of 2 students. You will be graded based on a written paper.

Make sure you clearly cite the source of information, data and figures. **Failure to do so is regarded as cheating and is handled according to NTNU guidelines.** If you have any questions, use the Discussion Forum on It's learning or send an e-mail to teaching assistant Johannes Jensen (johannes.jensen@idi.ntnu.no).

1.1 Mini-Project Goals

The Mini-Project has the following goals:

- Many computer architecture topics are best analyzed by experiments and/or detailed studies. The Mini-Project should provide training in such exercises.
- Writing about a topic often increases the understanding of it. Consequently, we require that the result of the Mini-Project is a scientific paper.

2 Practical Guidelines

2.1 Time Schedule and Deadlines

The Mini-Project schedule is shown in Table 1. All hand-ins (list of group members and reports) should be sent by e-mail to Johannes Jensen (johannes.jensen@idi.ntnu.no).

All deadlines are strict! If these deadlines collide with deadlines in other subjects, we suggest that you consider handing in the Mini-Project earlier than the deadline.

If you miss one of the deadlines, your final score will be reduced by:

- Missed deadline for the midterm report (15 of March)
  2% deduction + 1% for every late day (minimum 3% deduction)

Deadline	Mandatory	Description
Friday 20th of January	yes	Formed groups
Tuesday 24th of January	no	Exercise startup in EL3 (for help with setup)
Wednesday 15th of March	yes	Midterm report deadline
Tuesday 21st of March	yes	Midterm peer review
Wednesday 19th of April	yes	Final report deadline
Tuesday 25th of April	yes	Final peer review

Table 1: Mini-Project Deadlines

- Missed deadline for the final report (19 of April)
  5% deduction + 1% for every late day (minimum 6%)
- Peer evaluation is mandatory
  Individual, no attendance == 0% on the exercise

2.2 Paper Layout

The paper must be written in English and must follow the IEEE Transactions style guidelines available here:

`http://www.ieee.org/publications_standards/publications/authors/author_templates.html`

Both Latex and Word templates are available, but we recommend that you use Latex. **The paper must use a maximum of 5 pages including references.** Failure to comply with these requirements will reduce the maximum score you can be awarded.

In addition, we will deduct points if:

- The paper does not have a proper scientific structure. All reports must contain the following sections: Abstract, Introduction, Related Work or Background, Prefetcher Description, Methodology, Results, Discussion and Conclusion. You may rename the "Prefetcher Description" section to a more descriptive title. Acknowledgements and Author biographies are optional.
- Use citations correctly. If you use a figure that somebody else has made, a citation must appear in the figure text.
- NTNU has acquired an automated system that checks for plagiarism. We may run this system on your papers so make sure you write all text yourself.

2.3 Peer review

In addition to the report itself, there are two mandatory peer reviews where each of you will read and give feedback to papers from the other groups. See Table 1 for the dates of these peer reviews.

The purpose of the peer reviews is to:

- Learn to critically read technical texts
- Get exposed to other solutions
- Receive feedback from multiple people

2.4 Evaluation

The Mini-Project accounts for 20% of the total grade in TDT4260 Computer Architecture.

The grade will be based on the following criteria:

- Prefetcher implementation (50%)
  - Amount of effort (number/complexity of evaluated prefetching strategies)
  - Prefetcher efficiency
  - Prefetcher analysis (depth of understanding the investigated problem)
  - Prefetcher and cache configuration tradeoffs
- Report quality (50%)
  - Clarity of problem statement
  - Overall document structure
  - Language and use of figures/tables
- Peer review (Pass/Fail)
  - Mandatory - two occasions
  - Contributed to useful feedback