Mini-Projects

CS 433

Fall 2019

Mini-Project Assignment

You are to prepare a presentation on the following features of **one** current commercial processor (including GPUs and any programmable special-purpose processors)

1. Processor core microarchitecture
2. Memory hierarchy
3. Multicore and/or thread-level parallelism support, including network
4. If your processor has some other particularly distinguishing feature; e.g., additional domain-specific accelerators, novel security features, etc., then you must mention and briefly discuss those features (email Prof. Adve if you are not sure what and how much to discuss)

Mini-Project Procedures and Schedule (1 of 3)

Step 1 (5% of grade): Due 10/22/19 5pm, but I encourage you to submit early

- Form a group of 3 students
- Send email to the **TA and Prof. Adve** with a list of full names of all your group members and their netids. Use the following format:

  Full-name1, netid1

  Full-name2, netid2

  Full-name3, netid3
- Include in your email your group's conflicts for 8:00am to 6:00pm on 12/5, 12/6, and 12/9 (see later slides). State exactly which parts of these windows you **cannot** make. No need to say class on 12/5.
- **Cc the above email to all your group members**
- **For full points, please conform to all stated instructions. This applies to all the steps for the project.**

- **Undergraduates: Please send the TA and Prof. Adve an email with your conflicts in the above windows and by the above due date.**

Mini-Project Procedures and Schedule (2 of 3)

Step 2 (5% of grade): Due 10/29/19 5pm, but I encourage you to submit early

- Send an email to the **TA and Prof. Adve** with the following:
  - Include the email you sent for step 1
  - Any changes in partners (this should be rare and only with prior approval from Prof. Adve, the approval email should be included)
  - Prioritized list of processors you want to present (most preferred first, up to 3)
    - You are strongly encouraged to check with Prof. Adve well before this deadline to determine if your processor is appropriate (send email to her and the TA)
  - At least one reference (can be a url) that indicates that enough information is available for each choice
  - **Cc all group members**
- Assignments will be first come first served, so email ASAP and include multiple choices (in case your first choice is already taken)

Mini-Project Procedures and Schedule (3 of 3)

Step 3 (90% of grade): Presentations

- The presentations will likely be between 12/5 and 12/9, depending on conflicts received (see slide 3).
- Each presentation should be 25 minutes total
  - Plan for at least 5 minutes of discussion (within the allocated 25 minutes)
- All members of the group must be present and all will get the same grade
- Assume everyone has attended lectures; e.g., do not spend time explaining how n bit predictors work
- Email final presentation to the **TA and Prof. Adve by 5pm the day before the first day of (any) presentations, cc all group members**
- Come early on the day of the presentations to load files on the class computer and make sure everything works (use the exact same file you emailed Prof. Adve above)
- The order of presentations will be randomly chosen at the time of the presentations

Notes on Presentation

- Time limit will be strictly enforced
- Practice your talk with your group several times – time it
- If you don’t finish on time during practice, you won’t in class
- Practice your talk with your group several times
- Ensure you know everything on your slides
- If you don’t understand something, say so or don’t include on slides
- Practice your talk with your group several times
- Don’t just get pretty pictures from web sites and read from the slides
- Remember to include citations on your slides
- Teach the class
- Use this to practice speaking skills before a friendly audience
- Experiment – ask questions, be interactive, have fun!

Sources of Information

There is a lot of unreviewed material on the web, not all of it is good

Here are some reliable sources:

Architecture manuals, reports from processor vendors

IEEE Micro magazine

Microprocessor report (hard copies available from the library)

Some technical papers in architecture conferences describe specific systems:

- ACM/IEEE Intl. Symp. on Computer Architecture (ISCA)
- ACM/IEEE Intl. Symp. on Microarchitecture (Micro)
- ACM Conf. on Architectural Support for Programming Languages and Operating Systems (ASPLOS)
- IEEE Conf. on High Performance Computer Architecture (HPCA)

IEEE Intl Solid –States Circuits Conference (ISSC)

ACM and IEEE papers are available from their digital libraries (free if you connect from your Illinois account); Grainger web site has a direct link

Please indicate your sources on your slides (e.g., per topic)