You are only responsible for the materials discussed in class as they are summarized in the handouts and discussed in the PowerPoint presentations. I expect you to understand these summaries and to be able to comment around them. Always ask yourself why a specific technique was used and which problem it addressed.

Virtual Memory
- Focus on the authors’ choices for their reservation, fragment control, promotion, demotion and expulsion policies and skip the sections of the paper we did not discuss in class. Do not go into the details outside of Section 4.

Caching
- You can skip the theoretical developments that account for most of the paper but need to understand the algorithm as it is explained in:
  and the limitations of the other caching algorithms (including the tuning issue).

Kernel Issues
- Focus on the advantages and the limitations of the approach. Understand the motivations for address ranges, kernel cores, and shares.
- Focus on the advantages and the limitations of the approach. Do not go into the details.
- You should understand the problem the authors want to solve and the way they implement their lightweight protection domains. Do not rely on the summary.
Review questions

1. When do Navarro et al. suggest performing superpage speculative demotion? What is the purpose of this operation?

2. Explain why ARC is (a) scan-resistant and (b) self-tuning.

3. What distinguishes Corey processes from both regular kernel-supported threads and conventional UNIX processes?

4. Which of the following properties apply to these two approaches to kernel security?

<table>
<thead>
<tr>
<th>Property</th>
<th>PCC</th>
<th>Nooks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allows extensions to be written in any programming language</td>
<td></td>
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<tr>
<td>Has no runtime overhead</td>
<td></td>
<td></td>
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<tr>
<td>Indirectly causes additional TLB misses</td>
<td></td>
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<tr>
<td>Restarts extensions that crashed</td>
<td></td>
<td></td>
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<tr>
<td>Works with existing extensions</td>
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</tbody>
</table>

Solutions: 1. The authors suggest speculatively demoting a superpage each time its page referenced bit is reset. The purpose of this operation is identifying which base pages of the superpage are still active. II. ARC is scan-resistant because data blocks coming from the files that are scanned will remain in list L-1 and the space T1 occupied by the top of this list will not increase during the scan because the scanned blocks in B1 will not be accessed a second time. ARC is self-tuning because it has no user-settable parameter. III A Corey process can specify which parts of its address space are shared among sibling processes and which parts are not. IV. TT, TF, FT, FT, ?T.