CS286 Computer Organization & Architecture
Topic List
For October 10th, 2022

#1: What are “data hazards”? Show an example of the data hazard (using assembly instructions).

#2: What are “control hazards”? Show an example of the control hazard (using assembly instructions).

#3: What are the four different types of data dependency?

#4: Show an example of RAR data dependency.

#5: Show an example of RAW data dependency.

#6: Show an example of WAR data dependency.

#7: Show an example of WAW data dependency.

#8: Assume that all the inputs for each instruction must be available by the beginning of the ID phase and the output from each instruction becomes available at the end of the WB phase, find which of the following four datapath architectures can data hazards for each of RAR, RAW, WAR, and WAW?

<table>
<thead>
<tr>
<th>2nd instruction</th>
<th>1st instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>READ</td>
<td>READ</td>
</tr>
<tr>
<td>WRITE</td>
<td>WRITE</td>
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</tbody>
</table>

- RAR
- RAW
- WAR
- WAW

#9: What are “static code optimizations”?

#10: What are “dynamic code optimizations”?

#11: Which pipeline hazards is “delayed branches” effective for?

#12: What are the major advantages in “dynamic code optimizations”?

#13: What are the major disadvantages in “dynamic code optimizations”?

#14: What are the major advantages in “static code optimizations”? 
#15: What are the major disadvantages in “static code optimizations”?

#16: What is the advantage in delayed branch?

#17: What are the disadvantages in delayed branch?