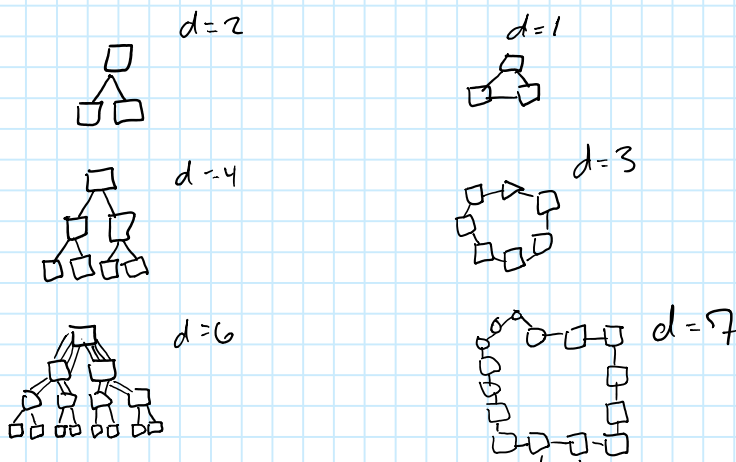


Homework # 4

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Friday, August 12, 2016 1:19 AM

1. Find the number of processors for which the tree topology has a lower diameter than the ring topology. The diameter is the maximum distance between two processors in the computer system. This is the maximum number of processors a message must pass through to reach its final destination (including the destination processor).



Diameter lower than ring @ ≥ 15 processors

2. Draw a table that itemizes fundamental differences among direct mapped, fully associative and set-associative caches. Demonstrate these differences on an example.

Associative	Direct-Mapped	Set-Associative
<ul style="list-style-type: none"> allows any memory location to map into more than one cache line searching cache is complex hardware is larger lower miss ratio parallel search expensive complex high performance 	<ul style="list-style-type: none"> one choice of line per address → interference / line contention higher miss ratio linear search less complex slow performance 	<ul style="list-style-type: none"> combines previous two caches address used to find single cache set → each set has small # of lines → each set is fully associative performance close to fully-associative complexity close to Direct-Mapped not too expensive