****3. Suppose that the wire between switch 2A and switch 3A in the omega network of**
Fig. 8-5 breaks. Who is cut off from whom?

From the image 8.5 (omega switching network) the CPU's category(left side) the CPU 000 and CPU 001 are both trying to access memory 000 and memory 001 they would be cut off for those memory addresses. This is due to their paths within the switching network as they require the connection between switch 2A and switch 3A without this connection they cannot reach their target memory modules

23. Consider the processor allocation of Fig. 8-24. Suppose that process H is moved from node 2 to node 3. What is the total weight of the external traffic now?

If process H is moved from node 2 to node 3.
Process: if we collect the original external edges and their weights we get:
A - B = 3
E - B = 2
G - H = 4
F - C = 8
H - I = 2

Original total external = 3 +2 + 4 + 8 + 2 = 19

- Now move node H to node 3 → this already ha C, D, I. and we can resum their weights after rechecking the edges become external or internal

…

Result:
G - H = remains 4
F - H = becomes external 1
H - I = is removed from external traffic(was 2)

No other edges change nodes so we can now resum the external weights
A - B (3)
E - B (2)
G - H (4)
F - C (8)
F - H (1) new

New result = 3+ 2 +4 + 8 + 1 = 18 → so after moving H to node 2 to node 3 the total weight of external traffic is 18 and the difference is 1 less now

28. **DNS names have a hierarchical structure, such as sales.general-widget.com or cs.uni.edu One way to maintain the DNS database would be as one centralized database, but that is not done because it would get too many requests/sec. Propose a way that the DNS database could be maintained in practice.**

An alternative approach would be to have DNS databases maintained in a distributed way due to scalability and fault tolerance. This distribution prevents a single point of failure and performance bottlenecks some options for maintaining them are:

1) Root servers → manage top level domains (.com, .org, .edu)
2) Caching servers → reduce load on authoritative servers by caching DNS query results

****30. Can the URLs used in the Web exhibit location transparency? Explain your answer:**

URLS are addresses of a specific resource on the internet similar to a webpage or file that lets your browser find it. There are some mechanics such as DNS that allow URLS to retain location transparency by abstracting the actual IP addresses of resources. Which can show different locations with the use of DNS and content delivery networks. Although even with this abstraction and misdirection(location changing) the path and resource name in the URL must be consistent to make sure resources can be accessed no matter the location of the actual end user.