1. Explain why you cannot effectively rely on operating system’s virtual memory mechanism to handle large scale visualization problems.

2. In the paper “visibility culling using hierarchical occlusion maps” by Zhang et al, the visibility test is being decomposed into depth test and overlap test. What was the motivation of the decomposition?

3. What is the main purpose of hierarchical z-buffer? How do you compare the hierarchical z-buffer and hierarchical occlusion map algorithms?

4. If you are to implementing the algorithm proposed by Funkhouser et al in the paper “Adaptive Display Algorithm for Interactive Frame Rates …”, what might be the most challenging task to make the algorithm work.

5. Which of the three parallel rendering algorithms (sort-first, sort-middle, sort-last) is more difficult to achieve load-balancing and why? When the output image has an extremely high resolution, which of the three algorithms might have a better performance and why? Explain why sort-middle algorithm might be more difficult to implement using commercial graphics hardware?

6. What kind of volume dimensions will produce the worst case of Branch-on-Need octree in terms of the node to data ratio? explain why it is the worst case.