Advanced Topics in Databases

Exercise 3

1. Compare disk-based DBMSs and main-memory DBMSs! What advantages and disadvantages emerge using main memory as primary storage?

2. What is the reason for the main-memory access bottleneck? Why is the main-memory access bottleneck a problem in main-memory DBMSs, but not that important in traditional disk-based DBMSs? How can the main-memory access bottleneck be addressed?

3. What is the memory hierarchy? How is it used during memory access? Describe the basic principle behind caches?

4. Name and explain three approaches for block placement within caches. What are their advantages and disadvantages?

5. Explain the vectorized execution model. Compare it briefly with the Tuple-at-a-Time and the Operator-at-a-Time processing model. Describe the impact of the vector size.

Good Luck!