Exercises:

Extendible Hashing Indexes

1. What is wrong with the Extendible Hashing Index given below? Fix the problem before answering the remaining questions.

   ![Extendible Hashing Index Diagram]

   Data Pages

   2. Insert 18* into the corrected index.

   3. Insert 30*

   4. Insert 62*

   5. Insert 63*

Linear Hashing Index

   ![Linear Hashing Index Diagram]

   6. For the above Linear Hashing Index, Insert 18*

   7. Insert 30*
8. Insert 62*

9. Insert 21*

10. Given that the directory page resides in memory, compute the number of I/Os required for insertions 2 to 5.

11. Compute the number of I/Os required for insertions 6 to 9

12. Consider the Linear Hashing Index in the figure above
   - What is the maximum number of data entries that can be inserted (given the best possible distribution of keys) before you have to split a bucket? Explain very briefly.
   - What is the minimum number of record insertions that will cause a split of all four buckets? Explain very briefly?