CS 353 Fall 2023
Homework 6
Due: December 4, Monday till midnight
You will use the Moodle course page for submission of this assignment

Q.1 [15 pts] Construct a B+ tree by inserting the following key values in the given order, using the insertion algorithm discussed in the class:

92, 38, 45, 66, 82, 99, 12, 71, 53, 29

The order of the tree should be 5, i.e., each node can hold 4 search key values.

Q.2 [15 pts] Construct a B+ tree of order 3 for the sequence of key values given in **Q.1**.

Q.3 [15 pts] Given the following B+ tree of order 4. Draw the resulting tree after deleting the entries with key values 44, 45, and then inserting entries with key values 15, 50, 35, successively.
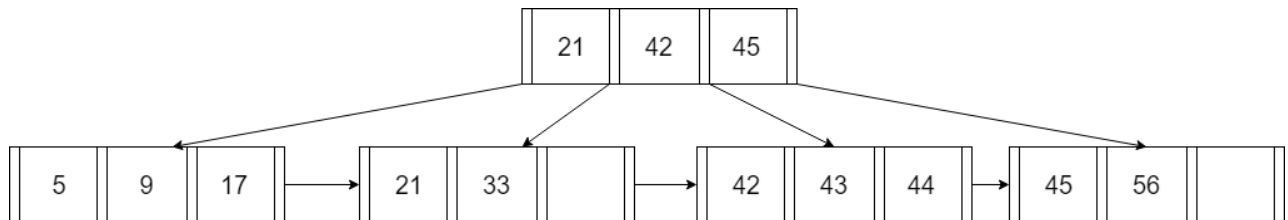
Q.4 [15 pts] Given the original B+ tree in **Q.3**. Draw the resulting tree after inserting an entry with key value 10, and then deleting the entry with key value 56.

Q.5 [40 pts] Given an extendible hash structure with the hash function: h(x) = x mod 32. The hash value of a search key is a 5-bit binary value, and the search-key values inserted using the most significant bits of their hash values are:

40, 26, 2, 61, 67, 109, 17, 24, 33, 127, 25, 87, 14

Each bucket in the index can hold 3 search keys. Show the final contents of the hash table and the bucket address table after all the search-key values are inserted.