CMPT 606 – Advanced Database
Fall 2019 – Homework 1

Due by midnight on Sunday 10th November 2019 – Submit your softcopy as a Word Document to blackboard.

Q1 [25 pts]. Insert values: 8, 11, 14, 15, 16, 17, 19, 20, 33, 43, 48 into an expandable hash file using extensible hashing. Assume a Bucket size of 2. Show the structure of the directory each time its structure changes; also show the global and local depths.

Q2 [25 pts]. Insert the records of Q1 into an expandable hash file using **linear hashing**. Assume a Bucket size of 2. Show how the file grows and how the hash functions change as the records are inserted. Assume that blocks are split whenever an overflow occurs.

Q3 [25 pts]. Insert values: 23, 65, 37, 60, 46, 92, 48, 71, 56, 59, 18, 21 in the given order in a B+ Tree. Suppose that the maximum entries per node is **n = 3**; show how the tree will expand and what the final tree will look like.

Q4 [25 pts]. Suppose that the following search field values are deleted, in the given order, from the B+ Tree of **Q3**. Show how the tree will shrink and show the final tree. The deleted values are 65, 18, 92, 59, 37.