Ali Kamal (19I-1865)
Shehroz Khan (19I-1751)
Razi Haider Bhatti (19I-1762)
Section: BS(DS)-N

DATA STRUCTURES PROJECT
B and B+ Trees

- Class dataNode:
  First we have a dataNode class. This has attributes: path contains the path for the csv file, while 'txtpath' contains path for the text files. We also store the line number in the integer 'line'. Then we have 2 dataNode pointers for pointing to the next and previous one. We also have parametrized and copy constructors, as well as an operator overloading function.

- Class my_data:
  Then we have a my_data class. It has 2 pointer objects of head and tail of the same class, as well as count to store the number of objects in this list. Since this is treated like a linked list, we have Insert and remove functions, as well as a display function to display all the columns of that linked list.

- Class Node:
  Then we have a class Node, this has a bool leaf to indicate whether the node is a Leaf Node or not. It has an int size to show how many my_data objects it has, and then a my_data pointer object for storing the data in a linked list manner. Then we have an attribute named 'T' of Template <T>, since the key can be anything. Finally we have a double pointer for child of type Node<T>, since there can be multiple children Nodes. And a Next and Previous pointer to point to the next and previous Nodes.

- Class DSDB:
  Finally we have our main database class 'DSDB'. This only has one attribute of type Node *root. The 'check_for_same' function will check if a key that is passed in is already in the passed in array, if so that means it's the same/a duplicate so it will return the index. The 'point_search' method will search and display a single element if a key is unique, otherwise it displays all elements with that key. 'Range_search' is like point search, but here you can specify a range of values to search. The 'update' method will search similar to point_search, and will then update the values at the node with the values in the parameter. The 'deletion' method will just delete a specified column (based on the 'choice' parameter). The 'insert' method inserts a Node, using the normal Insertion in B trees algorithm.