Course CSC 541 Advanced Data Structures
Spring Semester 2019
Homework Project 2

Due: Mar. 17, 23:55, 2019

Implement the measure tree, as described in the book chapter 4.3.

The measure tree is a dynamic structure that maintains a system of intervals under insertion and deletion, and can answer the query: give the total length of the union of the current intervals.

So the structure should support the following operations:
- **m_tree_t * create_m_tree()** creates an empty measure tree.
- **void insert_interval(m_tree_t * tree, int a, int b)** inserts the interval [a,b[.
- **void delete_interval(m_tree_t * tree, int a, int b)** deletes the interval [a,b[, if it exists.
- **int query_length(m_tree_t * tree)** returns the length of the union of all intervals in the current set.

Submission instructions:
You are allowed to work in groups, maximum size is 2.
You need to submit a single .c file through Moodle and rename it as Your_Unity_ID1_UnityID2.c. The "intervaltest.c" file contains all test cases and is available for download through Moodle. Grading will be done using the code in intervaltest.c, so you should integrate that into your main function to ensure you have tested your code thoroughly.

Note:
Sharing your code with others will be treated as academic dishonesty and be dealt with very severely.
Late submissions will not be accepted.