

**Course CSC 541 Advanced Data Structure Fall Semester 2012**  
**Homework Project 2**

Given Sept. 27, 2012, **Due: Oct. 19, 23:55, 2012**

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 need to submit a single .c file through Moodle and rename it as Your\_Unity\_ID.c.

“intervaltest.c” 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.**