

Course CSC 541 Advanced Data Structure
Spring Semester 2017
Homework Project 2

Due: Mar 22nd, 2017. 11:55pm

Instructions: Project can be done in teams of size 2. Your Readme file should briefly describe which parts of code each student implemented.

Description.

Implement the measure tree, as described in the book chapter 4.3. The paper by Gunno et al that discusses the data structure in more detail has been put in the current topic box for your reference.

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.
- **void destroy_m_tree(m_tree_t *tree)** destroys the tree and releases the memory.

Submission instructions:

You need to submit a single .cc file through Moodle and rename it as UnityID1_UnityID2.cc.

Also include a README file as earlier described.

The test cases have been posted and are available for download through Moodle. Grading will be done using these test cases, and you have to make sure that your code passes these tests without any issue on the eos server.

Notes :

- **Sharing your code with others will be treated as academic dishonesty and be dealt with very severely.**
- **Code should not be posted publicly either.**
- **The forum for project 2 can be used to clarify issues in requirements and similar things but not to share solutions.**
- **Late solutions will not be accepted.**