Segment Tree

Segment Tree is a basically a binary tree used for storing the intervals or segments. Each node in the Segment Tree represents an interval. Consider an array A of size N and a corresponding Segment Tree T:

1. The root of T will represent the whole array $A[0:N-1]$.
2. Each leaf in the Segment Tree T will represent a single element A[i] such that $0 \leq i < N$.
3. The internal nodes in the Segment Tree T represents the union of elementary intervals A[i:j] where $0 \leq i < j < N$.

Once the Segment Tree is built, its structure cannot be changed. We can update the values of nodes but we cannot change its structure. Segment tree provides two operations:

1. **Update:** To update the element of the array A and reflect the corresponding change in the Segment tree.
2. **Query:** In this operation we can query on an interval or segment and return the answer to the problem (say minimum/maximum/summation in the particular segment).

Q1: Implement the segment tree for the following array A[] and then return the solution for following queries:

Input A[] = {1, 4, 6, 8, 10, 12, 15]

Query-1: [2-4]

Query-2:[1-5]

Q2: For the above given input, modify A[2] =7 and display the updated segment tree.