

# 19AIE203 - DATA STRUCTURES AND ALGORITHM

## SEGMENT TREE

### Screen Shots of the program execution and the output

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SEGMENT TREE
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```

Enter the number of Leaf Nodes: 10

Enter the Leaf Nodes: 1 3 5 7 9 11 14 16 25 30

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RANGE QUERY
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- 1.Minimum Range Query
- 2.Maximum Range Query
- 3.Persistant Segment Tree
- 4.Get sum of the given range
- 5.Update the tree and get sum

#### 1. Range Minimum Query

Enter choice : 1

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Minimum Range Query
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```

Enter starting index of query : 3 7

Enter ending index of query :

Smallest Element in the range 3(7) - 7(16) is: 7

Do you wish to continue? (Y/N) : Y

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## 2. Range Maximum Query

Enter choice : 2

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Maximum Range Query  
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Enter starting index of query : 2 8

Enter ending index of query :

Largest Element in the range 2(5) - 8(25) is: 25

Do you wish to continue? (Y/N) : Y

## 3. Persistent Segment Tree

Enter choice : 3

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Persistent Segment Tree  
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Enter node index : 1

Enter value : 22

Enter starting index of query : 3

Enter ending index of query : 4

In version 1 , query (3 - 4) sum is : 16

Do you wish to continue the persistent Segment tree ? (Y/N) : Y

Enter node index : 2

Enter value : 33

Enter starting index of query : 5

Enter ending index of query : 6

In version 2 , query (5 - 6) sum is : 25

Do you wish to continue the persistent Segment tree ? (Y/N) : N

Do you wish to continue? (Y/N) : Y

## 4. Lazy Propagation

### a. Sum in a range given

Enter choice : 4

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Get sum of the given range  
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Enter the range to compute the sum: 1 3

Sum of values in given range = 15

Do you wish to continue? (Y/N) : Y

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b. Update the tree and get the sum in a range given

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Enter choice : 5
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-----  
Update the tree and get sum  
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```

```
Enter the range to update the tree: 1 5
```

```
Enter the number to be updated: 6
```

```
Enter the range to compute the sum: 1 3  
Updated sum of values in given range = 33
```

```
Do you wish to continue? (Y/N) : N
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