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ADS WRITE UP

B-Tree

Insertion functions:

```
void insert(int k) {
    if (!root) {
        root = new Node(t, leaf=true);
        root->keys[0] = k;
        root->n = 1;
    } else {
        if (root->n == 2*t-1) {
            Node *s = new Node(t, leaf=false);
            s->C[0] = root;
            s->splitChild(0, root);
            int i=0;
            if(s->keys[0] < k) i++;
            s->C[i]->insertNonFull(k);
            root = s;
        } else root->insertNonFull(k);
    }
}
void insertNonFull(int k) {
    int i= n-1;
    if (leaf== true) {
        while( i>=0 && keys[i] >k) {
            keys[i+1] = keys[i];
            i--;
        }
```

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```
        keys[i+1] = k;
        n += 1;
    } else {
        while(i>=0 && keys[i] > k) i--;
        if( (C[i+1]->n == 2*t -1) {
                splitChild(i+1, C[i+1]);
                if (keys[i+1] < k) i++;
            }
            C[i+1] -> insertNonFull(k);
        }
    }
```

splitchild Function Splits the Node and promotes 1 key to parent while making the other ones children.