

Insertion in B-Tree

```
void insert_btrec(int k)
```

```
{
```

```
    if (root == NULL)
```

```
    {
```

```
        root = new BNode(t, true),
```

```
        root->keys[0] = k,
```

```
        root->n = 1,
```

```
    }
```

```
    else {
```

```
        if (root->n ==  $2 * t - 1$ )
```

```
        {
```

```
            BNode *s = new BNode(t, 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--;
```

```
        }
```

```
        keys[i+1] = k,
```

```
        n = 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);
```

```
    }
```

```
}
```