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Program 2 : Skip List

```
void skiplist::insert(int key){
    Node *curr = head;
    Node *update[MaxLvl+1];
    memset(update, 0, sizeof(Node*)*(MaxLvl+1));
    for(int i=level; i>=0; i--)
    {
        while(curr->forward[i]!=NULL &&
              curr->forward[i]->key<key)
        {
            curr = curr->forward[i];
        }
        update[i] = curr;
    }
    curr = curr->forward[0];
    if(curr==NULL||curr->key!=key)
    {
        int rlvl = randomlevel();
        if(rlvl>level)
        {
            for(int i=level+1; i<rlvl+1; i++)
                update[i]=head;
            level=rlvl;
        }
        Node *newn=createNode(key, rlvl);
        for(int i=0; i<=rlvl; i++)
        {
            newn->forward[i]=update[i]->forward[i];
            update[i]->forward[i]=n;
        }
    }
};
```

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```
void SkipList :: delete (int key)
{
    Node * curr = head;
    Node * update [MaxLvl + 1];
    memset (update, 0, sizeof (Node *) * (MaxLvl + 1));
    for (int i = level ; i >= 0; i--)
    {
        while (curr -> forward [i] != NULL &&
               curr -> forward [i] -> key < key)
        {
            curr = curr -> forward [i];
        }
        update [i] = curr;
    }
    curr = curr -> forward [0];
    if (curr != NULL && curr -> key == key)
    {
        for (int i = 0; i <= level ; i++)
        {
            if (update [i] -> forward [i] != curr)
                break;
            update [i] -> forward [i] = curr -> forward [i];
        }
        while (level > 0 && head -> forward [level] == 0)
            level --;
    }
};
```


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```
void Skiplist::search(int key){
    Node *cur = head;
    for(int i = level; i>=0; i--)
    {
        while(cur->forward[i] != NULL &&
              cur->forward[i]->key < key)
            cur = cur->forward[i];
    }
    cur = cur->forward[0];
    if(cur != NULL && cur->key == key)
        cout << "Found :" << key << endl;
};
```


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