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skip list

Pseudocode

pseudocode level

→ level = 1
   while rand() < p && level < n
       level += 1
   return level

Insertion

```
x = list → header
for (i = list → level ; i >= 0; i--)
    while (x → forward[i] → key )
        forward[i]
        update[i] = x
        x = x → forward[0]
        level = decide level ()
        if ( level > list → level)
            for ( j = list → level + 1 ; j >= level
                update[i] = list → header
            list → level = level

x = node ( level, searchkey, value)
for (i = 0 ; i < level ; i++)
    x → forward[i] = update[i] → forward[i]
    update[i] → forward[i] = x
```

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Deletion:

```
x = list → header
for (i = list → level ; i >= 0 ; i--)
    while (x → forward[i] → key ).
        forward (i)
    update [i] = x


x = x → forward [0]
if x → key = search then
    for (i = 0 ; i <= list → level )
        if ( update [i] → forward [i] != x)
            break;
        update [i] → forward [i] = x → forward
        free (x)
    while ( list → level > 0 && list → header
            → forward [list → level] = NULL)
        list → level = list → level - 1
```

Searching:

```
x = list → header
while (x → forward [i] → key) forward (i)
    x = x → forward [0]
if (x → key == searchkey)
    return x → value
else
    return false
```
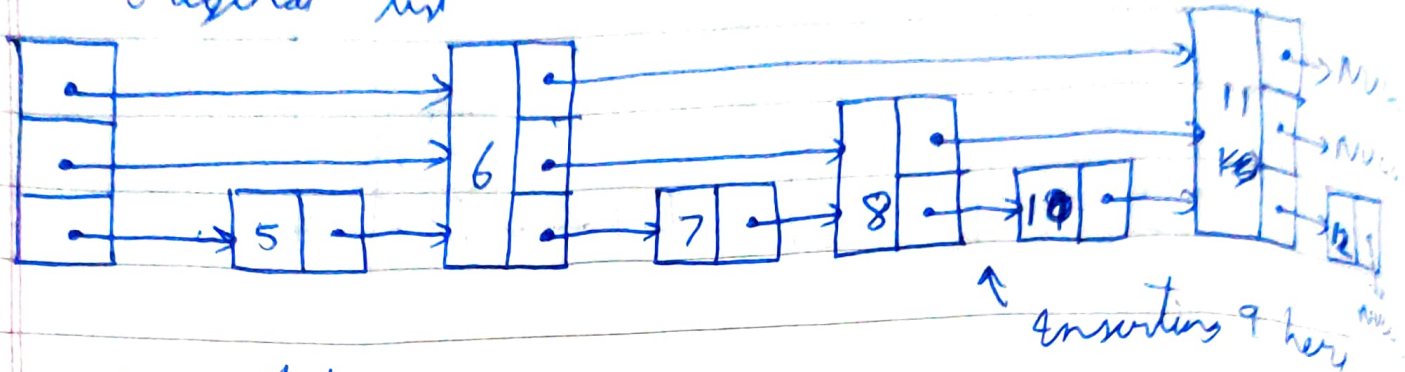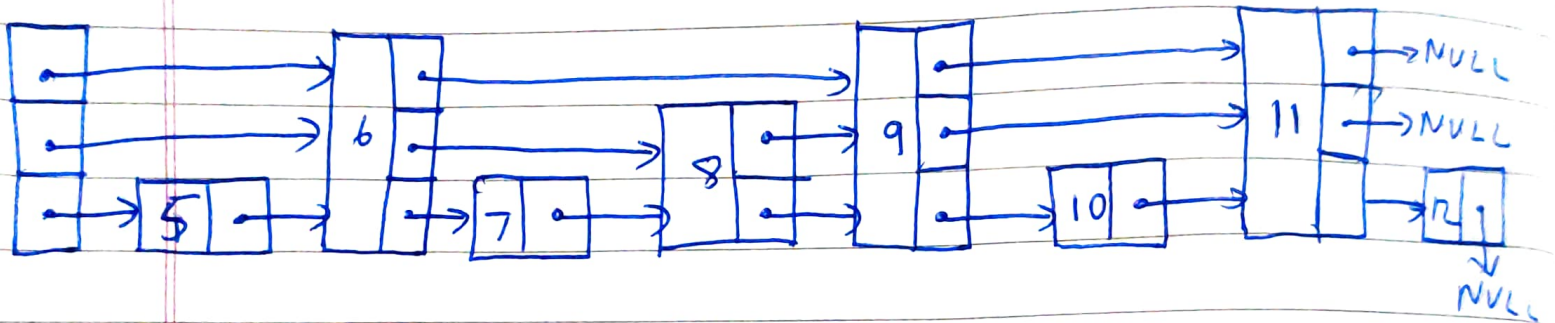
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original list

inserting 9 here

Inserted 9

Deletion   deleting 9