

Javascript数据结构

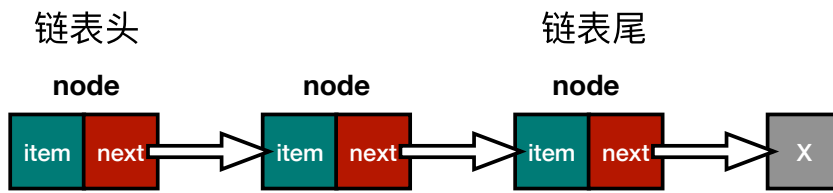
链表

Skipper

红点工场
redpoint.live

什么是链表？

每个元素都带有下一个元素的位置

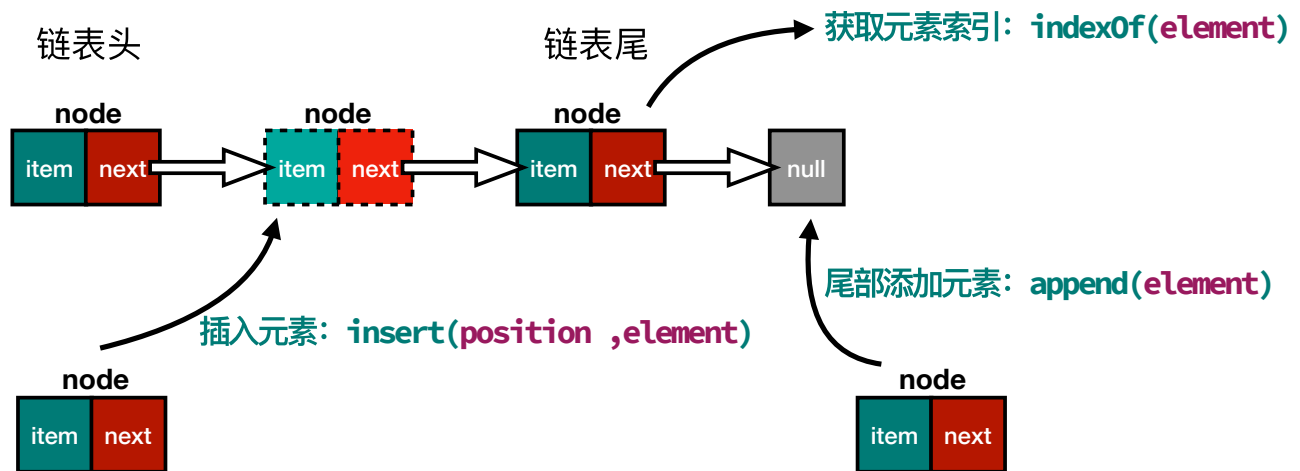


链表就像一列火车
每一列不仅携带自己的乘客（item）
还要与下一节火车相连（next）

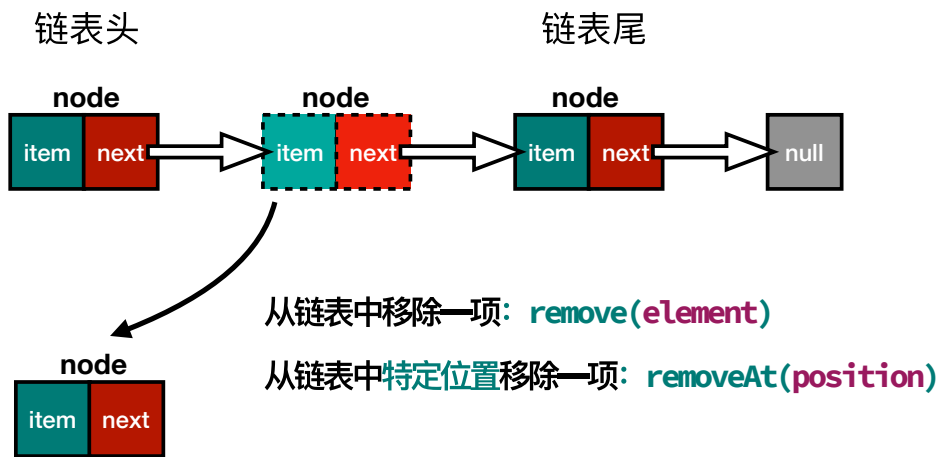
实现链表框架

```
var LinkedList = function(){  
    //构建节点私有辅助类  
    var Node = function(element){  
        this.element = element;  
        this.next = null;  
    }  
    var length = 0; //记录链表长度  
    var head = null; //记录链表头  
}
```

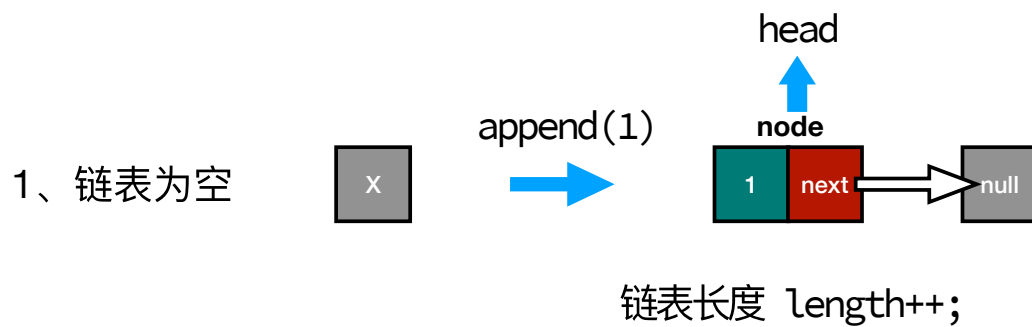
链表操作 (1)



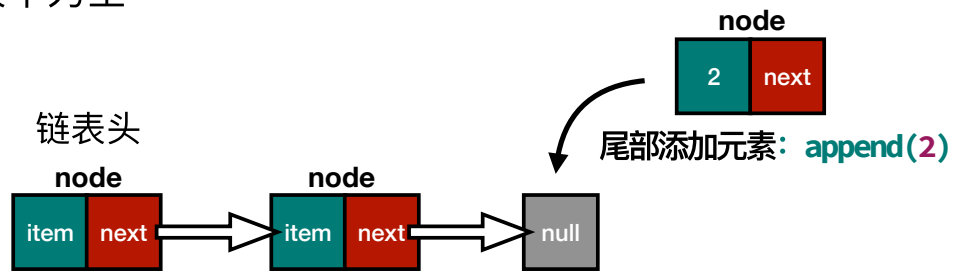
链表操作 (2)



链表尾添加元素：append(element)



2、链表不为空

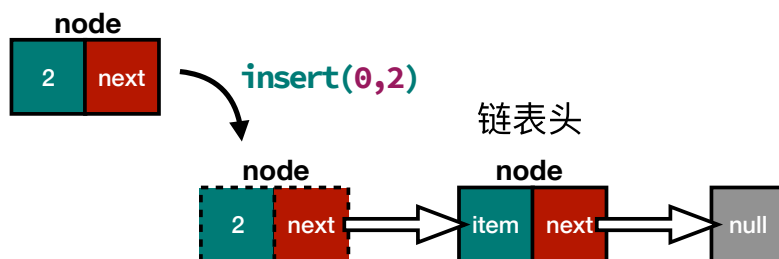


链表尾的标志是 `node.next == null`

```
var current = head;
while(current.next){
    current = current.next;
}
current.next = new Node(2);
length ++;
```

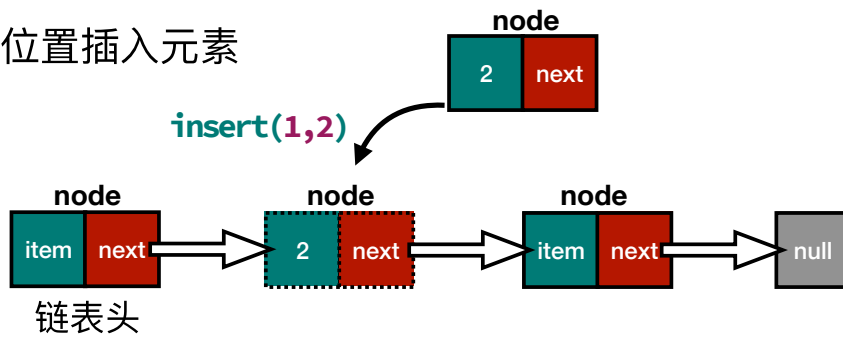

链表中插入元素：insert(position, element)

1、向位置0插入元素



```
var current = head;  
head = node;  
head.next = head;
```

2、向其他位置插入元素

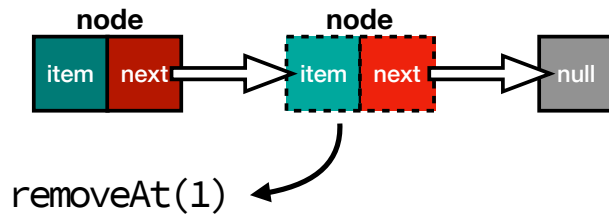


```
var index = 0;
var current = head;
var previous = null;
while(index < position){
    previous = current;
    current = current.next;
    index ++;
}
```



```
previous.next = node;
node.next = current;
```

链表中任意位置移除元素：removeAt(position)

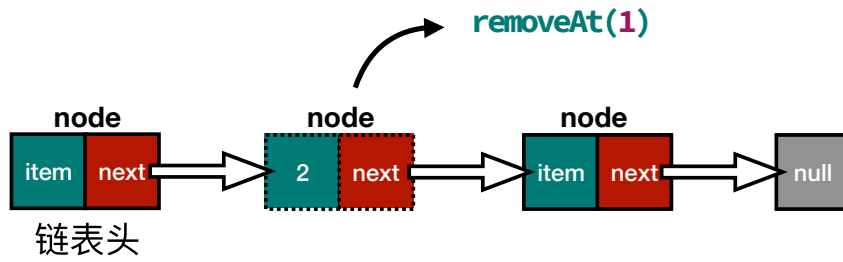


一、移除首位：removeAt(0)

```
var current = head;  
head = current.next;
```

```
length --;
```

二、移除某位: removeAt(position)

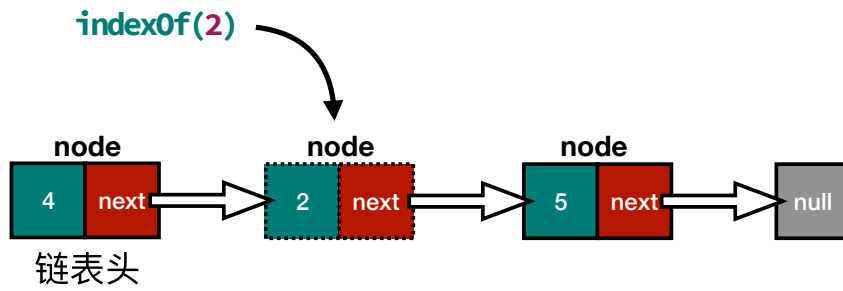


```
var index = 0;
var current = head;
var previous = null;
while(index < position){
    previous = current;
    current = current.next;
    index ++;
}
```



```
previous.next = current.next;
length --;
```

获取元素位置: indexOf(element)



```
var index = 0;
var current = head;
while(current){
  if(element === current.element){
    return index;
  }
  index ++;
  current = current.next;
}
return -1;
```

链表中移除元素：remove(element)

```
this.remove = function(element){  
    return this.removeAt(this.indexOf(element));  
}
```

其他操作

1、检查是否为空: isEmpty()

```
this.isEmpty = function(){  
    return length === 0;  
}
```

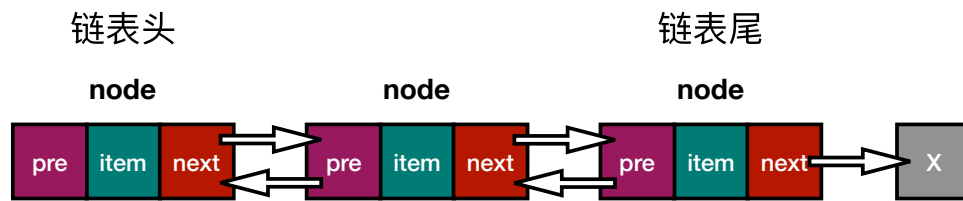
2、获取栈表长度: size()

```
this.size = function(){  
    return length;  
}
```

3、获取链表头部: getHead()

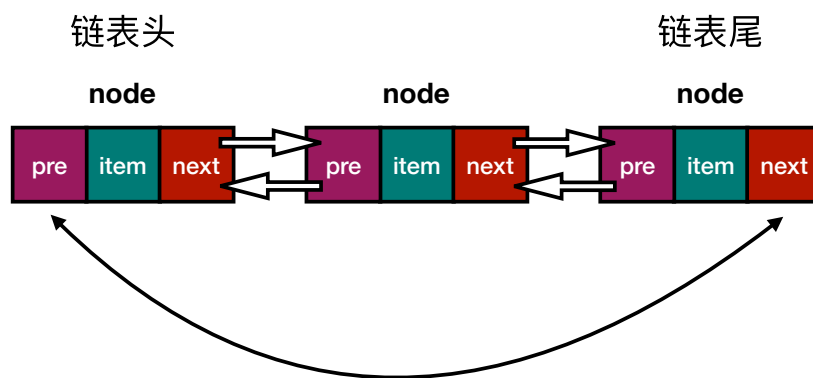
```
this.getHead = function(){  
    return head;  
}
```


加强链表——双向链表



链表和双向链表的区别：双向链表带有上一个元素的连接
previous

加强链表——循环链表



循环链表：链表尾部指向链表头