**Assignment Day 8**

**Question 2**

Implement push, pop and find the minimum element in a stack in O(1) time complexity.

**Answer:**

|  |
| --- |
| Class Node { |
|  | constructor(val){ |
|  | this.val = val; |
|  | this.next = null; |
|  | } |
|  | } |
|  |  |
|  | class ItemStack { |
|  | constructor(){ |
|  | this.first = null; |
|  | this.last = null; |
|  | this.length = 0; |
|  | this.minStack = new MinStack(); |
|  | } |
|  |  |
|  | push(val){ |
|  | let newNode = new Node(val) |
|  | if (this.length === 0){ |
|  | this.first = newNode; |
|  | this.last = newNode; |
|  |  |
|  | }else{ |
|  | let temp = this.first; |
|  | this.first = newNode; |
|  | this.first.next= temp; |
|  | } |
|  | this.minStack.push(val) |
|  | this.length++; |
|  | return this.length; |
|  | } |
|  |  |
|  | pop(){ |
|  | if (this.length === 0) return null; |
|  |  |
|  | let temp = this.first; |
|  |  |
|  | if (this.length === 1){ |
|  | this.last = null; |
|  | } |
|  | this.first = this.first.next; |
|  | this.length--; |
|  |  |
|  | if(temp.val === this.minStack.first.val){ |
|  | this.minStack.pop() |
|  | } |
|  |  |
|  | return temp; |
|  | } |
|  |  |
|  | min(){ |
|  | if(this.length === 0) return undefined; |
|  | else return this.minStack.first.val; |
|  | } |
|  |  |
|  | } |
|  |  |
|  | class MinStack { |
|  |  |
|  | constructor(){ |
|  | this.first = null; |
|  | this.last = null; |
|  | this.length = 0; |
|  | } |
|  |  |
|  | push(val) { |
|  | let newNode = new Node(val); |
|  | if (this.length === 0) { |
|  | this.first = newNode; |
|  | this.last = newNode; |
|  | this.length++; |
|  | }else { |
|  | if (val < this.first.val) { |
|  | let temp = this.first; |
|  | this.first = newNode; |
|  | this.first.next= temp; |
|  | this.length++; |
|  | } |
|  | } |
|  |  |
|  | return this.length; |
|  | } |
|  |  |
|  | pop() { |
|  |  |
|  | let temp = this.first; |
|  |  |
|  | if (this.length === 1){ |
|  | this.last = null; |
|  | } |
|  | this.first = this.first.next; |
|  | this.length--; |
|  | return temp; |
|  | } |
|  |  |
|  | } |
|  |  |
|  | let itemStack = new ItemStack(); |
|  |  |
|  | itemStack.push(3); |
|  | itemStack.push(4); |
|  | itemStack.push(1); |
|  | console.log(itemStack.min()); |
|  | itemStack.pop(); |
|  | console.log(itemStack.min()); |
|  | itemStack.pop(); |
|  | console.log(itemStack.min()); |
|  | itemStack.pop(); |
|  | console.log(itemStack.min()); |