

Question: Implement own bind

```
Function.prototype.bind = function(context){  
  
    const fn = this;  
    const mainArguments = [].slice.call(arguments, 1);  
    return function() {  
        const currentArgs = [].slice.call(arguments);  
        return fn.apply(context, [...mainArguments, ...currentArgs]);  
    }  
}
```

Question: Debounce

```
function debounce(func, interval, callfirst){  
  
    let timeout;  
    return function () {  
        const context = this, args = arguments;  
  
        let delay = function() {  
            timeout = null;  
            if(!callfirst){  
                func.apply(context, args);  
            }  
        }  
  
        const isCallFirst = callfirst && !timeout;  
  
        clearTimeout(timeout);  
  
        timeout = setTimeout(delay, interval|| 500);  
    }  
}
```

```

    if(isCallFirst) {

        func.apply(context, args);
    }
}

```

Question : currying

```

function curry(func){

return function (){
    const arguments1 = arguments;
    if(arguments1.length >= func.length){
        return func.apply(this, arguments1);
    }else{
        return function(){
            return curry.apply(this,
func.bind(argument1.concat(arguments)))
        }
    }
}
}

```

```

curriedSum(10, 20, 30) => 60
curriedSum(10, 20)(30) => 60
curriedSum(10)(20)(30) => 60

```

```

let curriedSum = curry(sum);

```

Question: implement loadsh get

```
__get(object, keys, defaultVal = null): any {
    keys = Array.isArray(keys) ? keys :
keys.replace(/(\[(\d)\])/g, '.$2').split('.'); //
split by dot of array
    object = object[keys[0]];
    if (object && keys.length > 1) {
        return this.__get(object, keys.slice(1),
defaultVal);
    }
    return object === undefined ? defaultVal :
object;
}
```

Question Link list

// adds an element at the end

// of list

add(element)

{

// creates a new node

var node = new Node(element);

```
// to store current node
var current;

// if list is Empty add the
// element and make it head
if (this.head == null)
    this.head = node;
else {
    current = this.head;

    // iterate to the end of the
    // list
    while (current.next) {
        current = current.next;
    }

    // add node
    current.next = node;
}
this.size++;
}
```

```
// insert element at the position index
// of the list
insertAt(element, index)
{
    if (index > 0 && index > this.size)
        return false;
    else {
        // creates a new node
        var node = new Node(element);
        var curr, prev;

        curr = this.head;

        // add the element to the
        // first index
        if (index == 0) {
            node.next = head;
            this.head = node;
        } else {
            curr = this.head;
            var it = 0;
```

```

        // iterate over the list to find
        // the position to insert
        while (it < index) {
            it++;
            prev = curr;
            curr = curr.next;
        }

        // adding an element
        node.next = curr;
        prev.next = node;
    }
    this.size++;
}

```

```

// removes an element from the
// specified location
removeFrom(index)
{
    if (index > 0 && index > this.size)

```

```

        return -1;
    else {
        var curr, prev, it = 0;
        curr = this.head;
        prev = curr;

        // deleting first element
        if (index == 0) {
            this.head = curr.next;
        } else {
            // iterate over the list to the
            // position to remove an element
            while (it < index) {
                it++;
                prev = curr;
                curr = curr.next;
            }

            // remove the element
            prev.next = curr.next;
        }
        this.size--;
    }

```

```
        // return the remove element
        return curr.element;
    }
}
```

```
// removes a given element from the
// list
```

```
removeElement(element)
```

```
{
    var current = this.head;
    var prev = null;

    // iterate over the list
    while (current != null) {
        // comparing element with current
        // element if found then remove the
        // and return true
        if (current.element == element) {
            if (prev == null) {
                this.head = current.next;
            } else {
```



```

        prev.next = current.next;
    }
    this.size--;
    return current.element;
}
prev = current;
current = current.next;
}
return -1;
}

```

// finds the index of element

indexOf(element)

```

{
    var count = 0;
    var current = this.head;

    // iterate over the list
    while (current != null) {
        // compare each element of the list
        // with given element
        if (current.element == element)

```

```
        return count;

        count++;

        current = current.next;
    }

    // not found
    return -1;
}
```

```
// gives the size of the list
size_of_list()
{
    console.log(this.size);
}
```

```
class Node{
    constructor(data, next = null){
        this.data = data,
        this.next = next
    }
}
```

Question : memorization

```
const memoize = (callback, threshold = 1000) => {

  let memo = new LRU(threshold);

  return(args) => {

    // console.log("get value", memo.get(args))
    if(memo.get(args) !== undefined){
      console.log("from cache");
      console.log(memo.getSizeOfCache())
      return memo.get(args);
    }else{
      // const keys = Object.keys(memo);
      // if(keys.length === threshold){
      //   delete memo[keys[0]];
      // }
      console.log(memo.getSizeOfCache())
      memo.set(args, callback(args))
      // memo[args] = callback(args);
      // console.log("current size", keys.length);
      return memo.get(args);
    }

  }

}
```

Question : LRU

```
class LRU{

  constructor(threshold = 100){
    this.max = threshold;
    this.cache = new Map();
  }

  get(key){
    // console.log("iun get", key)
    let item = this.cache.get(key);
    console.log(key,item)
    if(item != undefined){
      this.cache.delete(key);
      this.cache.set(key, item);
    }
    return item;
  }

  set(key, val){
    if(this.cache.has(key)){
      this.cache.delete(key);
    }

    if(this.cache.size === this.max){
      this.cache.delete(this.getFirst())
    }
    this.cache.set(key, val);
  }
}
```

```

getFirst(){
    return this.cache.keys().next().value;
}

getSizOfCache(){
    return this.cache.keys()
}

}

```

Question : chocolate/wrapper

```

static int countMaxChoco(int money,
                        int price, int wrap)
{
    // Corner case
    if (money < price)
        return 0;

    // First find number of chocolates
    // that can be purchased with the
    // given amount
    int choc = money / price;

    // Now just add number of chocolates
    // with the chocolates gained by
    // wrapprices
    choc = choc + (choc - 1) / (wrap - 1);
    return choc;
}

```

// recursion

```
int countRec(int choc, int wrap)
{
    // If number of chocolates is less than
    // number of wrappers required.
    if (choc < wrap)
        return 0;

    // We can immediately get newChoc using
    // wrappers of choc.
    int newChoc = choc/wrap;

    // Now we have "newChoc + choc%wrap"
    wrappers.
    return newChoc + countRec(newChoc +
    choc%wrap,
                                wrap);
}
```

Question : maxDiff from an array

```
function getMaxiff (arr){
    const length = arr.length;
    let maxDiff = -100
    if(!length){
        return maxDiff;
    }
    let maximumRightValue = arr[length-1];
```

```

for(let i = length-2; i>=0 ; i--){
  if(arr[i] > maximumRightValue){
    maximumRightValue = arr[i];
  }else{
    const currentDiff = maximumRightValue - arr[i];
    // console.log(currentDiff, arr[i])
    if(currentDiff > maxDiff){
      maxDiff = currentDiff;
    }
  }
}
return maxDiff;
}
console.log(getMaxiff([2, 3, 10, 6, 4, 8, 1]))

```

Question: Implement map function

```

const hoMyMap = function(callback, arr) {
  let resultArray = [];
  for(let i = 0; i<arr.length; i++){
    resultArray.push(callback(arr[i], i, this))
  }
  return resultArray;
}

```

Memorization for async

```
function memo(func, isAsync){
  let memo = {};

  const x = function(args){
    memo[args] = memo[args] || func.apply(this, args);
    return memo[args];
  }
  x.store = memo;

  if(isAsync){
    return async function(){
      const args = JSON.stringify(arguments)
      x(args);
    }
  }else{
    return function(){
      const args = [].slice.call(arguments);
      x(args);
    }
  }
}
```

Memoization with cache return

```
function memo(func){
  let memo = {};
  let a = function(){
    const args = [].slice.call(arguments);
    if(memo[args]){
      return memo[args];
    }else{
      memo[args] = func.apply(this, args);
      return memo[args];
    }
  };
  a.store = memo;
  return a;
}
```


Stock profit maximize (Single trans)

```
var maxProfit = function(prices) {  
  let result = 0;  
  let min = prices[0];  
  for(let i = 1; i < prices.length; i++) {  
    min = Math.min(prices[i], min);  
    result = Math.max(result, prices[i] - min);  
  }  
  return result;  
};
```

Stock profit maximize multiple transaction

```
var maxProfit = function(prices) {  
  let profit = 0;  
  for (let i = 0; i < prices.length - 1; i++) {  
    const possibleProfit = prices[i + 1] - prices[i];  
    profit = Math.max(profit + possibleProfit, profit);  
  }  
  return profit;  
};
```

```
var maxProfit = function(prices) {  
  if(prices.length < 2) return 0;  
  let min = prices[0], sum = 0;  
  for(let i = 1 ; i < prices.length ; i++){  
    if(prices[i] >= prices[i - 1]){  
      sum += (prices[i] - prices[i-1]);  
    }  
  }  
  return sum;  
};
```

Stock profit(sell before buying)

```
var maxProfit = function(prices) {
```

```

let haveOne = -prices[0]
let haveTwo = -Infinity
let notHaveOne = -Infinity
let notHaveTwo = -Infinity
for (let i = 1; i < prices.length; i++) {
    haveOne = Math.max(haveOne, -prices[i])
    haveTwo = Math.max(haveTwo, notHaveOne-prices[i])
    notHaveOne = Math.max(notHaveOne, haveOne+prices[i])
    notHaveTwo = Math.max(notHaveTwo, haveTwo+prices[i])
}
return Math.max(0, notHaveOne, notHaveTwo)
};

```

Longest Word in Dictionary

```

var longestWord = function(words) {
    let set = new Set(words);
    let res = "";
    words.forEach(a => {
        if(a.length < res.length) return;
        if(a.length == res.length && a > res) return;
        for(let i = a.length - 1; i > 0 ; i--) {
            if( !set.has( a.substring(0, i))) return
        }
        res = a;
    })
    return res;
};

```

Jump Game

```

var jump = function(nums) {
    let currFarest = 0
    let currEnd = 0
    let jump = 0
    for (let i = 0; i < nums.length - 1; i++) {
        currFarest = Math.max(currFarest, i + nums[i])
        // Improvement
        if (currFarest >= nums.length -1) return jump+1
        if (currEnd === i) {
            jump++
            currEnd = currFarest
        }
    }
    return jump
};

```

```

    }
  }
  return jump
};

```

```

function jump(nums) {
  var max = 0;
  var nextMax = 0;
  var jumps = 0;

  nums.some((v, i) => {
    if (max >= nums.length - 1) {
      return true;
    }

    nextMax = Math.max(i + v, nextMax);

    if (i === max) {
      max = nextMax;
      jumps++;
    }
  });

  return jumps;
}

```

Rotten eggs problem :

```

var orangesRotting = function(grid) {
  const height = grid.length;
  const width = grid[0].length;
  let fresh = 0;
  const queue = [];
  for (let i = 0; i < height; i++) {
    for (let j = 0; j < width; j++) {
      if (grid[i][j] === 2) queue.push([i, j]);
      if (grid[i][j] === 1) fresh++;
    }
  }
  let minute = 0;
  while (queue.length) {
    const size = queue.length;

```

```

for (let i = 0; i < size; i++) {
  const [x, y] = queue.shift();
  if (x - 1 >= 0 && grid[x - 1][y] === 1) {
    grid[x - 1][y] = 2;
    fresh--;
    queue.push([x - 1, y]);
  }
  if (x + 1 < height && grid[x + 1][y] === 1) {
    grid[x + 1][y] = 2;
    fresh--;
    queue.push([x + 1, y]);
  }
  if (y - 1 >= 0 && grid[x][y - 1] === 1) {
    grid[x][y - 1] = 2;
    fresh--;
    queue.push([x, y - 1]);
  }
  if (y + 1 < width && grid[x][y + 1] === 1) {
    grid[x][y + 1] = 2;
    fresh--;
    queue.push([x, y + 1]);
  }
}
if (queue.length > 0) minute++;
}
return fresh === 0 ? minute : -1;
};

```

BFS

```

var orangesRotting = function(grid) {
  const height = grid.length;
  const width = grid[0].length;
  let fresh = 0;
  const queue = [];
  for (let i = 0; i < height; i++) {
    for (let j = 0; j < width; j++) {
      if (grid[i][j] === 2) queue.push([i, j]);
      if (grid[i][j] === 1) fresh++;
    }
  }
  let minute = 0;
  while (queue.length) {
    const size = queue.length;

```

```
for (let i = 0; i < size; i++) {
  const [x, y] = queue.shift();
  if (x - 1 >= 0 && grid[x - 1][y] === 1) {
    grid[x - 1][y] = 2;
    fresh--;
    queue.push([x - 1, y]);
  }
  if (x + 1 < height && grid[x + 1][y] === 1) {
    grid[x + 1][y] = 2;
    fresh--;
    queue.push([x + 1, y]);
  }
  if (y - 1 >= 0 && grid[x][y - 1] === 1) {
    grid[x][y - 1] = 2;
    fresh--;
    queue.push([x, y - 1]);
  }
  if (y + 1 < width && grid[x][y + 1] === 1) {
    grid[x][y + 1] = 2;
    fresh--;
    queue.push([x, y + 1]);
  }
}
if (queue.length > 0) minute++;
}
return fresh === 0 ? minute : -1;
};
```