RAMAIAH INSTITUTE OF TECHNOLOGY

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A Report on

LEET CODE PROGRAMS

Submitted in partial fulfilment of the OTHER COMPONENT requirements as a part of the Data Structures Lab subject with code ISL36 for the III Semester of degree of ***Bachelor of Engineering in Information Science and Engineering***

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1	STACK EASY
2	FiIND THE MINIMUM NUMBER OF FIBONACCI NUMBERS WHOSE SUM IS K MEDIUM
3	CIRCULAR QUEUE MEDIUM
4	IMPLEMENT QUEUE USING STACK EASY
5	LINKED LIST EASY
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1 STACK EASY

1381. Design a Stack With Increment Operation

Medium | Topics | Companies | Hint

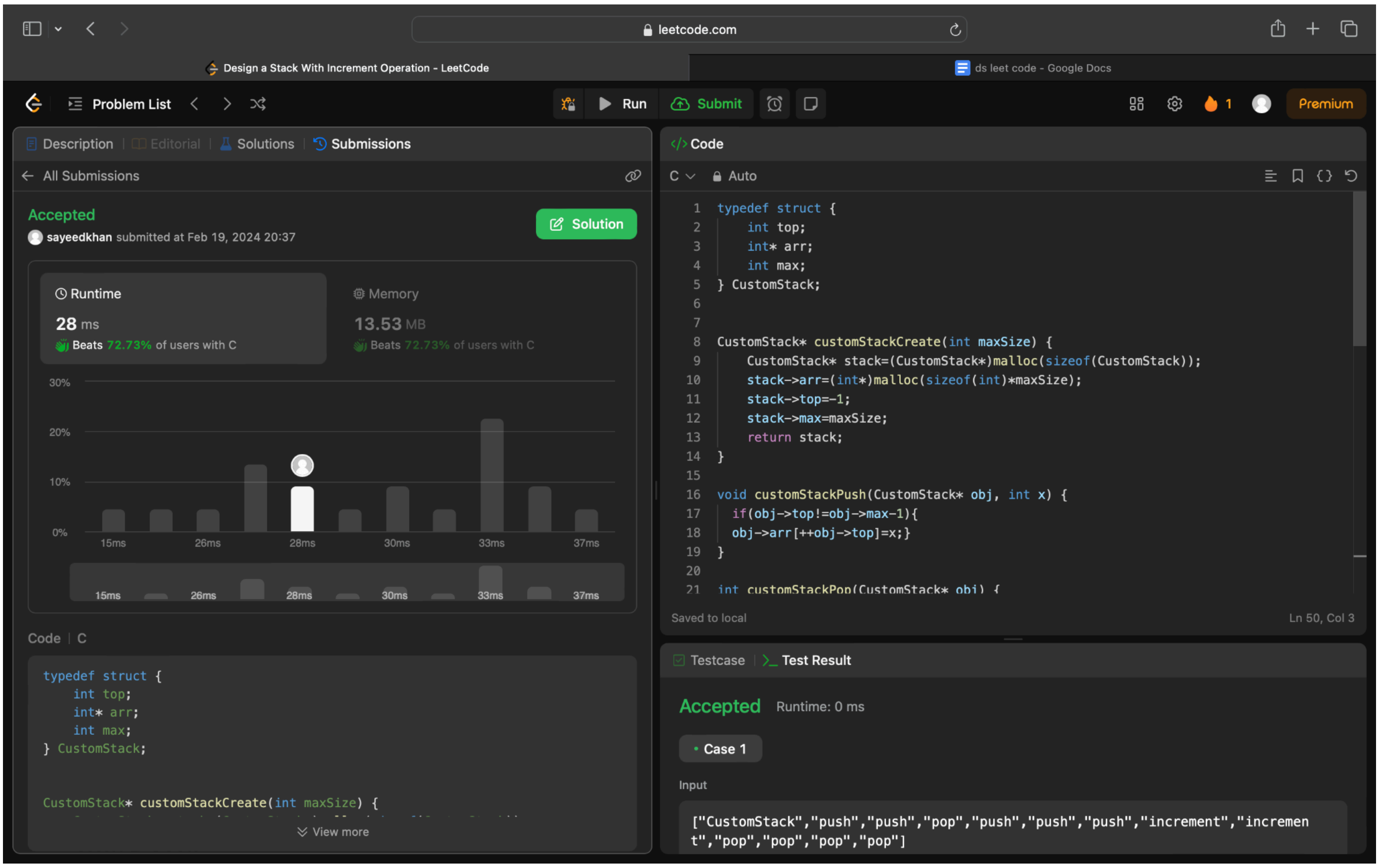
Design a stack that supports increment operations on its elements.

Implement the `CustomStack` class:

- `CustomStack(int maxSize)` Initializes the object with `maxSize` which is the maximum number of elements in the stack.
- `void push(int x)` Adds `x` to the top of the stack if the stack has not reached the `maxSize`.
- `int pop()` Pops and returns the top of the stack or `-1` if the stack is empty.
- `void inc(int k, int val)` Increments the bottom `k` elements of the stack by `val`. If there are less than `k` elements in the stack, increment all the elements in the stack.

Example 1:

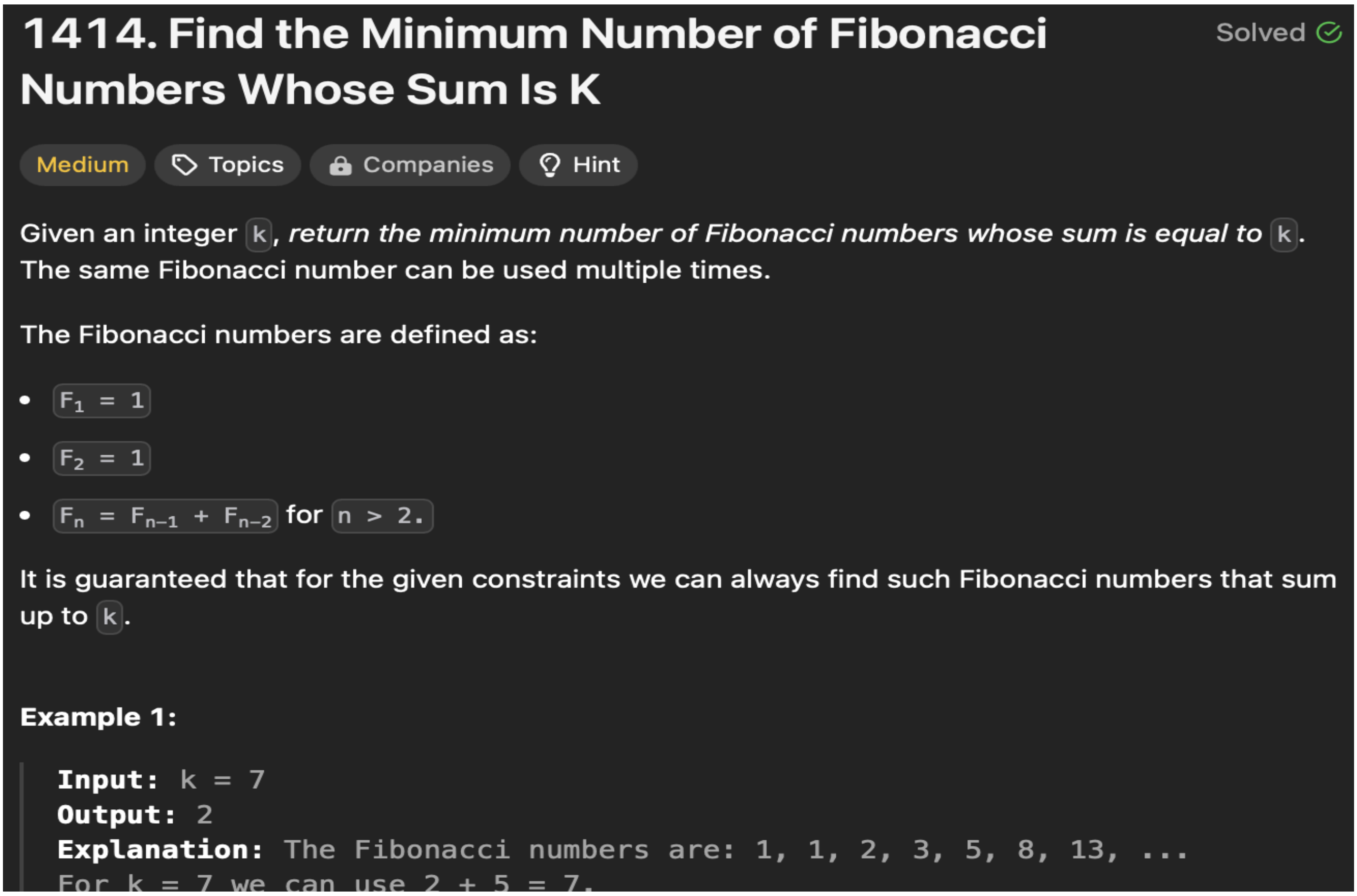
```
Input
["CustomStack","push","push","pop","push","push","push","increment","increment","pop","pop","pop","pop"]
[[3],[1],[2],[],[2],[3],[4],[5,100],[2,100],[],[],[],[]]
Output
[null,null,null,2,null,null,null,null,null,103,202,201,-1]
```



STACK EASY CODE

```
typedef struct {
int top;
int* arr;
int max;
} CustomStack;


CustomStack* customStackCreate(int maxSize) {
CustomStack* stack=(CustomStack*)malloc(sizeof(CustomStack));
stack->arr=(int*)malloc(sizeof(int)*maxSize);
stack->top=-1;
stack->max=maxSize;
return stack;
}

void customStackPush(CustomStack* obj, int x) {
if(obj->top!=obj->max-1){
obj->arr[++obj->top]=x;}
}

int customStackPop(CustomStack* obj) {
if(obj->top==-1){
return -1;
}
return obj->arr[obj->top--];
}

void customStackIncrement(CustomStack* obj, int k, int val) {
for(int i =0;i<k;i++){
if(i<obj->max){
obj->arr[i]=obj->arr[i]+val;
}
}
}

void customStackFree(CustomStack* obj) {
free(obj);
}
```

2 Find the Minimum Number of Fibonacci Numbers Whose Sum Is K Medium



1414. Find the Minimum Number of Fibonacci Numbers Whose Sum Is K

Solved

Medium | Topics | Companies | Hint

Given an integer `k`, *return the minimum number of Fibonacci numbers whose sum is equal to* `k`. The same Fibonacci number can be used multiple times.

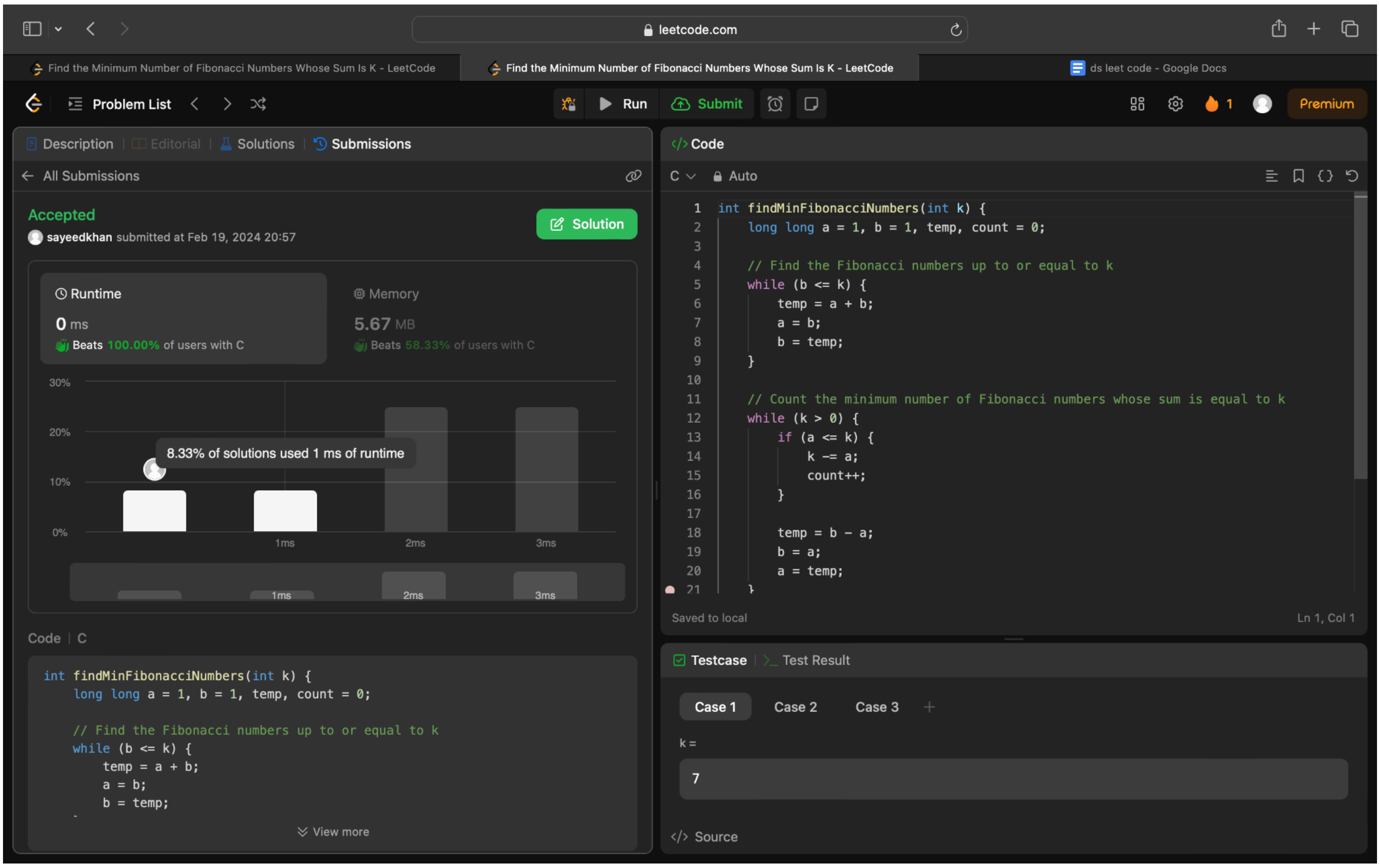
The Fibonacci numbers are defined as:

- $F_1 = 1$
- $F_2 = 1$
- $F_n = F_{n-1} + F_{n-2}$ for $n > 2$.

It is guaranteed that for the given constraints we can always find such Fibonacci numbers that sum up to `k`.

Example 1:

Input: k = 7
Output: 2
Explanation: The Fibonacci numbers are: 1, 1, 2, 3, 5, 8, 13, ...
For k = 7 we can use 2 + 5 = 7.




```c
int findMinFibonacciNumbers(int k) {
    long long a = 1, b = 1, temp, count = 0;

    // Find the Fibonacci numbers up to or equal to k
    while (b <= k) {
        temp = a + b;
        a = b;
        b = temp;
    }

    // Count the minimum number of Fibonacci numbers whose sum is equal to k
    while (k > 0) {
        if (a <= k) {
            k -= a;
            count++;
        }

        temp = b - a;
        b = a;
        a = temp;
    }
```

Fibonacci Numbers Whose Sum Is K CODE

```
int findMinFibonacciNumbers(int k) {
long long a = 1, b = 1, temp, count = 0;

// Find the Fibonacci numbers up to or equal to k
while (b <= k) {
temp = a + b;
a = b;
b = temp;
}

// Count the minimum number of Fibonacci numbers whose sum is equal to k
while (k > 0) {
if (a <= k) {
k -= a;
count++;
}

temp = b - a;
b = a;
a = temp;
}

return count;
}
```

3 CIRCULAR QUEUE MEDIUM

622. Design Circular Queue

Medium | Topics | Companies

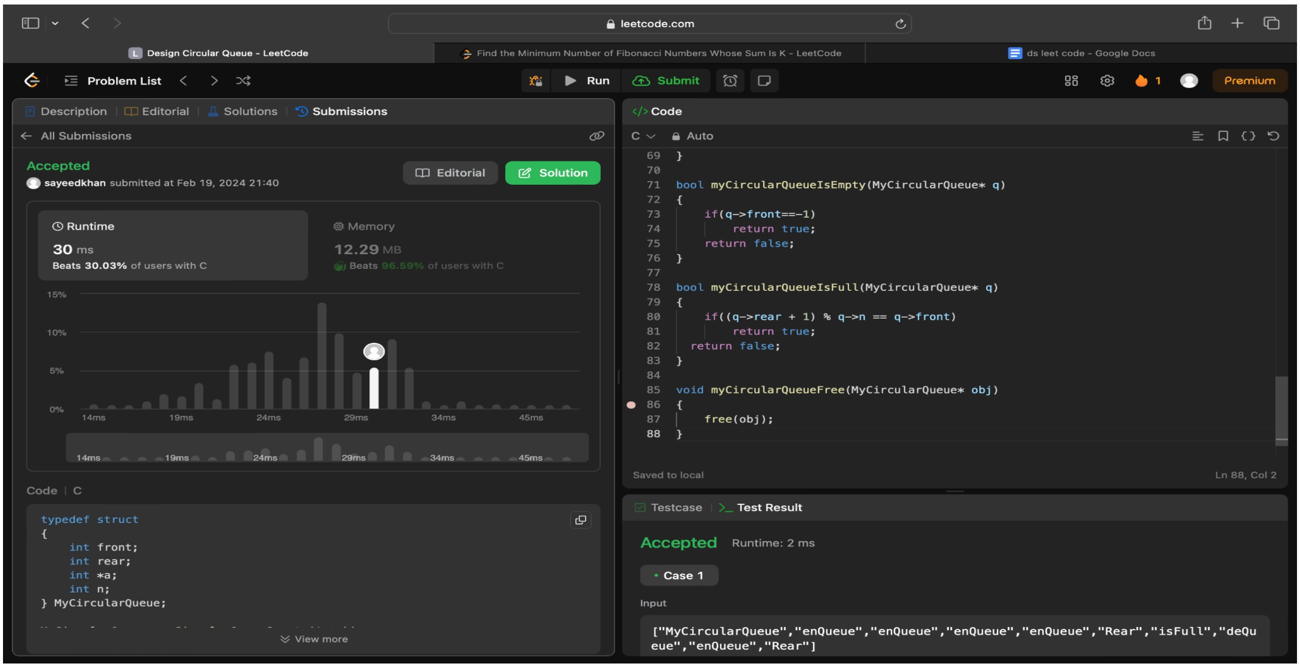
Design your implementation of the circular queue. The circular queue is a linear data structure in which the operations are performed based on FIFO (First In First Out) principle, and the last position is connected back to the first position to make a circle. It is also called "Ring Buffer".

One of the benefits of the circular queue is that we can make use of the spaces in front of the queue. In a normal queue, once the queue becomes full, we cannot insert the next element even if there is a space in front of the queue. But using the circular queue, we can use the space to store new values.

Implement the `MyCircularQueue` class:

- `MyCircularQueue(k)` Initializes the object with the size of the queue to be `k`.
- `int Front()` Gets the front item from the queue. If the queue is empty, return `-1`.
- `int Rear()` Gets the last item from the queue. If the queue is empty, return `-1`.
- `boolean enQueue(int value)` Inserts an element into the circular queue. Return `true` if the operation is successful.
- `boolean deQueue()` Deletes an element from the circular queue. Return `true` if the operation is successful.
- `boolean isEmpty()` Checks whether the circular queue is empty or not.
- `boolean isFull()` Checks whether the circular queue is full or not.

You must solve the problem without using the built-in queue data structure in your programming language.



CIRCULAR QUEUE MEDIUM CODE

```
typedef struct
{
int front;
int rear;
int *a;
int n;
} MyCircularQueue;

MyCircularQueue* myCircularQueueCreate(int k)
{
MyCircularQueue* q = malloc(sizeof *q);
q->a =(int*) malloc(sizeof(int) * k);
q->front =-1;
q->rear = -1;
q->n = k;
return q;
}

bool myCircularQueueEnQueue(MyCircularQueue* q, int value)
{
if((q->rear + 1) % q->n == q->front)
return false;
else
{
if (q->front == -1)
q->front = 0;
q->rear=(q->rear+1)%q->n;
q->a[q->rear]=value;
return true;
}
}

bool myCircularQueueDeQueue(MyCircularQueue* q)
{
if(q->front==-1)
return false;
else
{

if (q->front == q->rear)
{
q->front = -1;
```

```
q->rear = -1;
}
else
q->front = (q->front + 1) % q->n;
return true;
}
}

int myCircularQueueFront(MyCircularQueue* q)
{
if(q->front==-1)
return -1;
return q->a[q->front];
}

int myCircularQueueRear(MyCircularQueue* q)
{
if(q->front==-1)
return -1;
return (q->a[q->rear]);
}

bool myCircularQueueIsEmpty(MyCircularQueue* q)
{
if(q->front==-1)
return true;
return false;
}

bool myCircularQueueIsFull(MyCircularQueue* q)
{
if((q->rear + 1) % q->n == q->front)
return true;
return false;
}

void myCircularQueueFree(MyCircularQueue* obj)
{
free(obj);
}
```

4 Implement Queue using Stacks EASY

232. Implement Queue using Stacks

Easy Topics Companies

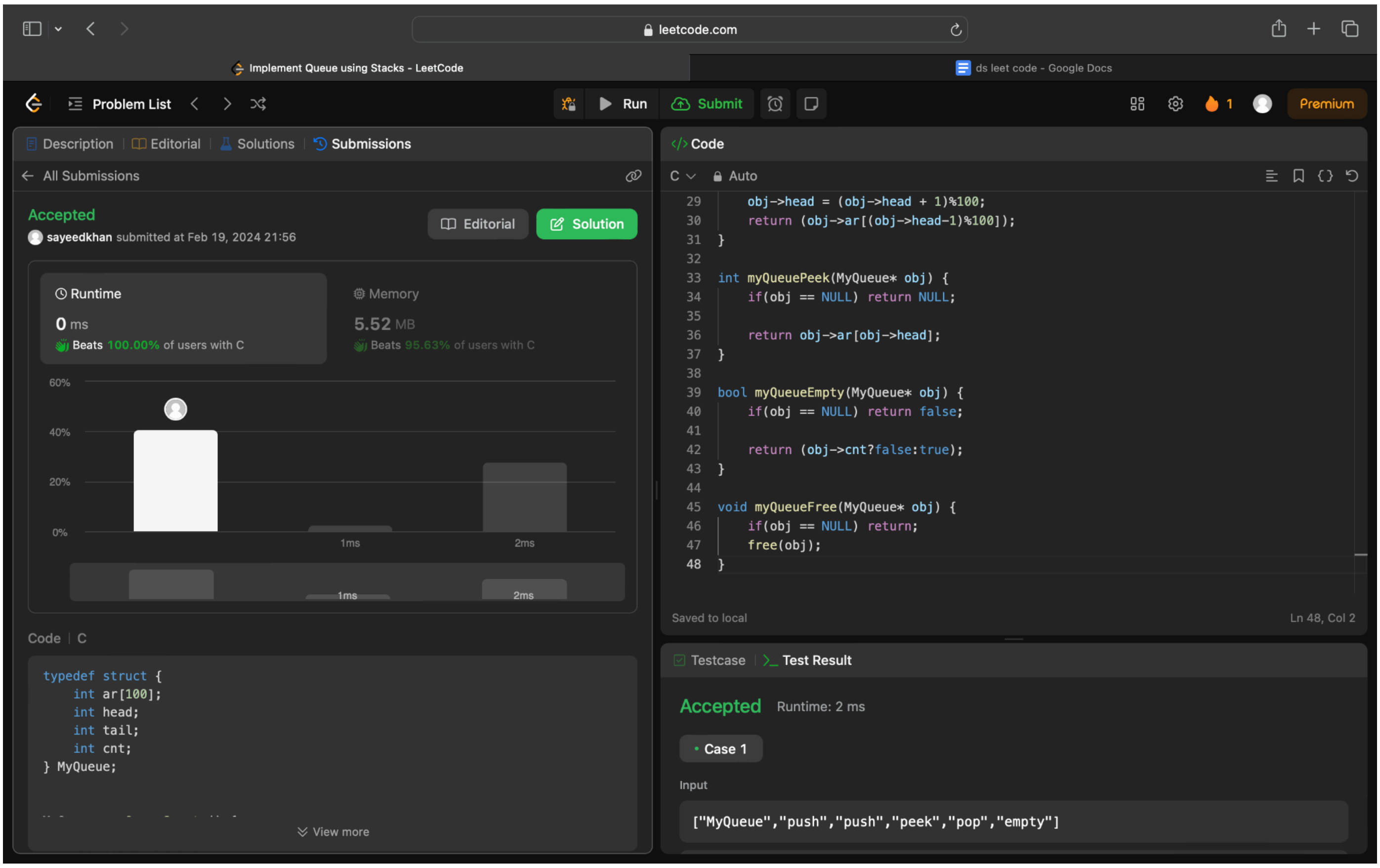
Implement a first in first out (FIFO) queue using only two stacks. The implemented queue should support all the functions of a normal queue (`push`, `peek`, `pop`, and `empty`).

Implement the `MyQueue` class:

- `void push(int x)` Pushes element x to the back of the queue.
- `int pop()` Removes the element from the front of the queue and returns it.
- `int peek()` Returns the element at the front of the queue.
- `boolean empty()` Returns `true` if the queue is empty, `false` otherwise.

Notes:

- You must use **only** standard operations of a stack, which means only `push to top`, `peek/pop from top`, `size`, and `is empty` operations are valid.
- Depending on your language, the stack may not be supported natively. You may simulate a stack using a list or deque (double-ended queue) as long as you use only a stack's standard operations.



Implement Queue using Stacks EASY CODE

```
typedef struct {
int ar[100];
int head;
int tail;
int cnt;
} MyQueue;


MyQueue* myQueueCreate() {
MyQueue* obj = malloc(sizeof(MyQueue));
obj->head = 0;
obj->tail = 0;
obj->cnt = 0;
return obj;
}

void myQueuePush(MyQueue* obj, int x) {
if(obj == NULL) return;
obj->cnt++;
obj->ar[obj->tail] = x;
obj->tail = (obj->tail + 1)%100;
}

int myQueuePop(MyQueue* obj) {
if(obj == NULL) return NULL;
obj->cnt--;
obj->head = (obj->head + 1)%100;
return (obj->ar[(obj->head-1)%100]);
}
int myQueuePeek(MyQueue* obj) {
if(obj == NULL) return NULL;
return obj->ar[obj->head];
}

bool myQueueEmpty(MyQueue* obj) {
if(obj == NULL) return false;
return (obj->cnt?false:true);
}
void myQueueFree(MyQueue* obj) {
if(obj == NULL) return;
free(obj);
}
```

5 Linked list easy

141. Linked List Cycle

Solved

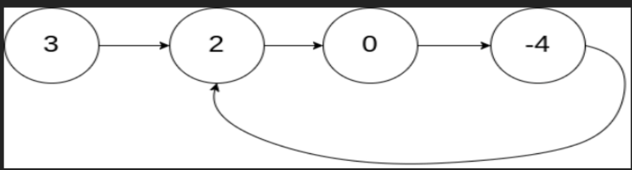
Easy Topics Companies

Given `head`, the head of a linked list, determine if the linked list has a cycle in it.

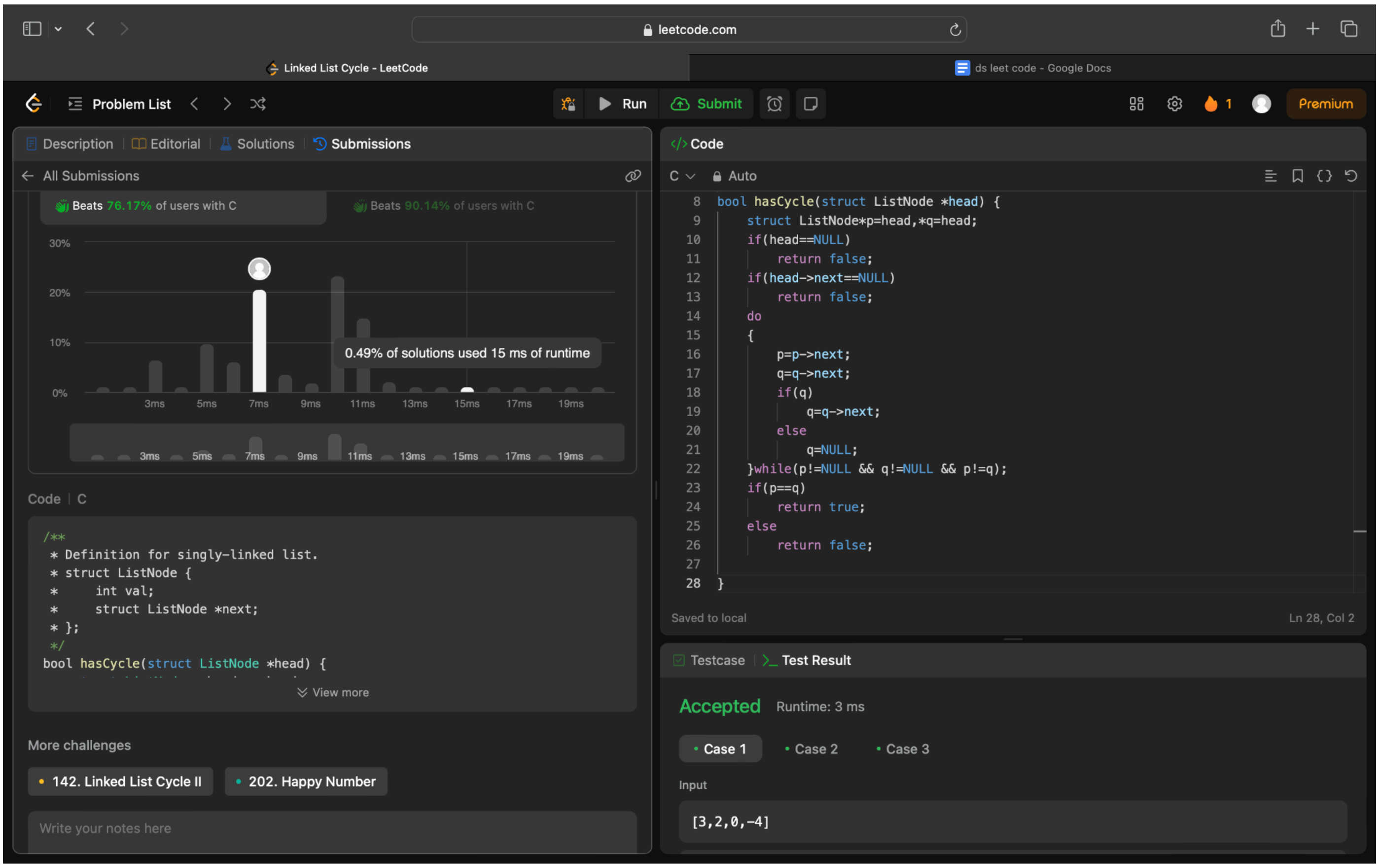
There is a cycle in a linked list if there is some node in the list that can be reached again by continuously following the `next` pointer. Internally, `pos` is used to denote the index of the node that tail's `next` pointer is connected to. **Note that `pos` is not passed as a parameter.**

Return `true` *if there is a cycle in the linked list*. Otherwise, return `false`.

Example 1:




```
Input: head = [3,2,0,-4], pos = 1
Output: true
Explanation: There is a cycle in the linked list, where the tail connects to the 1st node (0-indexed).
```



Linked list easy code

```
bool hasCycle(struct ListNode *head) {
struct ListNode*p=head,*q=head;
if(head==NULL)
return false;
if(head->next==NULL)
return false;
do
{
p=p->next;
q=q->next;
if(q)
q=q->next;
else
q=NULL;
}while(p!=NULL && q!=NULL && p!=q);
if(p==q)
return true;
else
return false;
}
```

6 Linked list medium

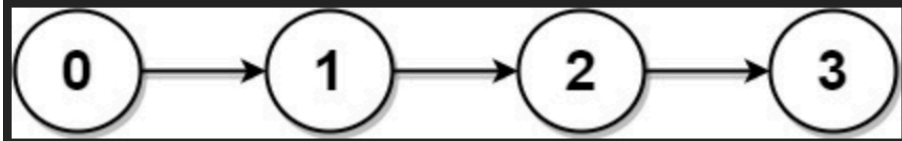
817. Linked List Components

Medium | Topics | Companies

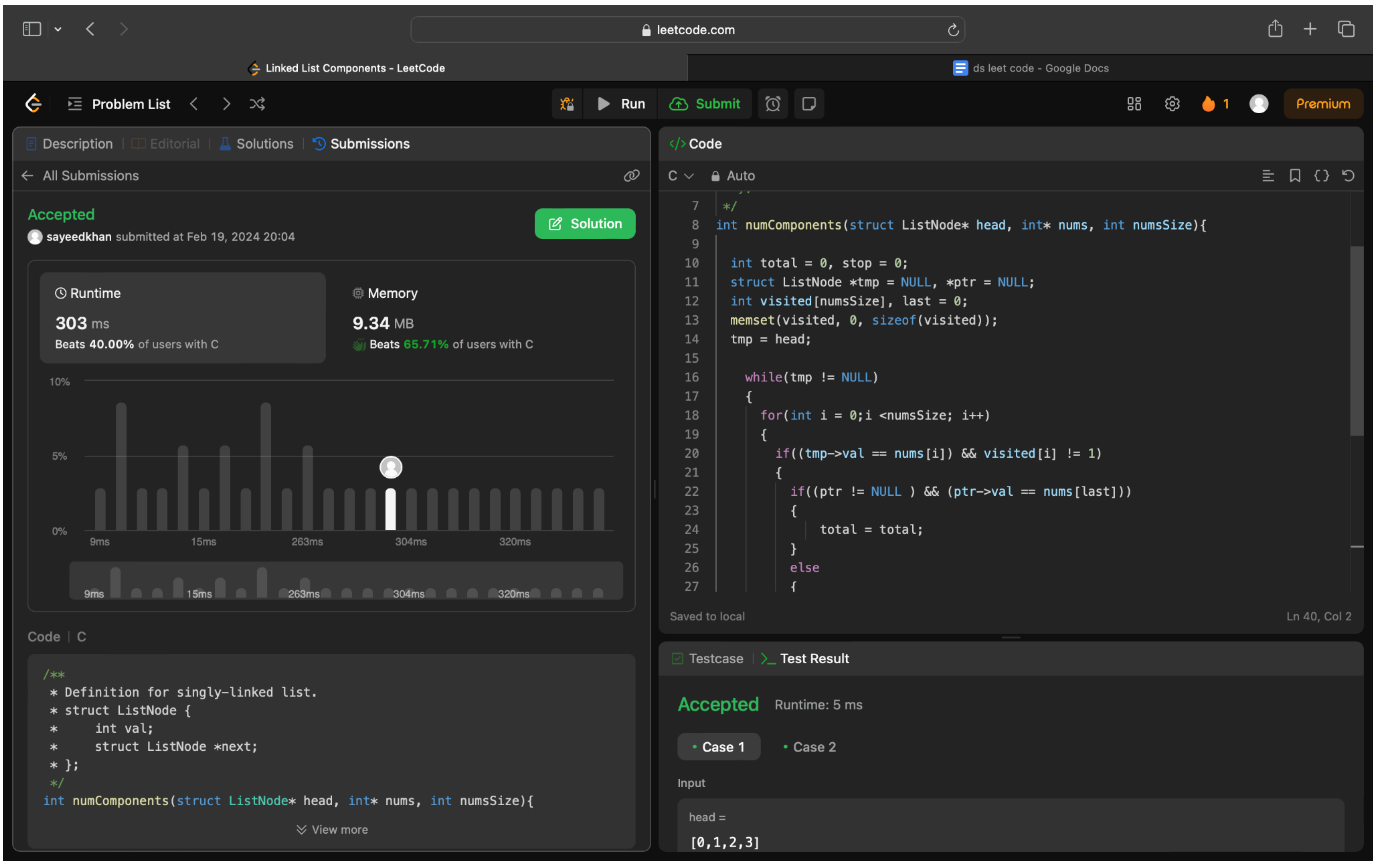
You are given the `head` of a linked list containing unique integer values and an integer array `nums` that is a subset of the linked list values.

Return *the number of connected components in* `nums` *where two values are connected if they appear* ***consecutively*** *in the linked list*.

Example 1:



Input: head = [0,1,2,3], nums = [0,1,3]
Output: 2
Explanation: 0 and 1 are connected, so [0, 1] and [3] are the two connected components.



Linked list medium Code

```
/**
* Definition for singly-linked list.
* struct ListNode {
* int val;
* struct ListNode *next;
* };
*/
int numComponents(struct ListNode* head, int* nums, int numsSize){

int total = 0, stop = 0;
struct ListNode *tmp = NULL, *ptr = NULL;
int visited[numsSize], last = 0;
memset(visited, 0, sizeof(visited));
tmp = head;

while(tmp != NULL)
{
for(int i = 0;i <numsSize; i++)
{
if((tmp->val == nums[i]) && visited[i] != 1)
{
if((ptr != NULL ) && (ptr->val == nums[last]))
{
total = total;
}
else
{
total += 1;
}
visited[i] = 1;
last = i;
break;
}
}
ptr = tmp;
tmp = tmp->next;
}

return total;
}
```

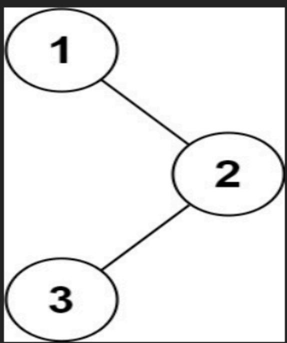
7 BINARY TREE EASY

94. Binary Tree Inorder Traversal

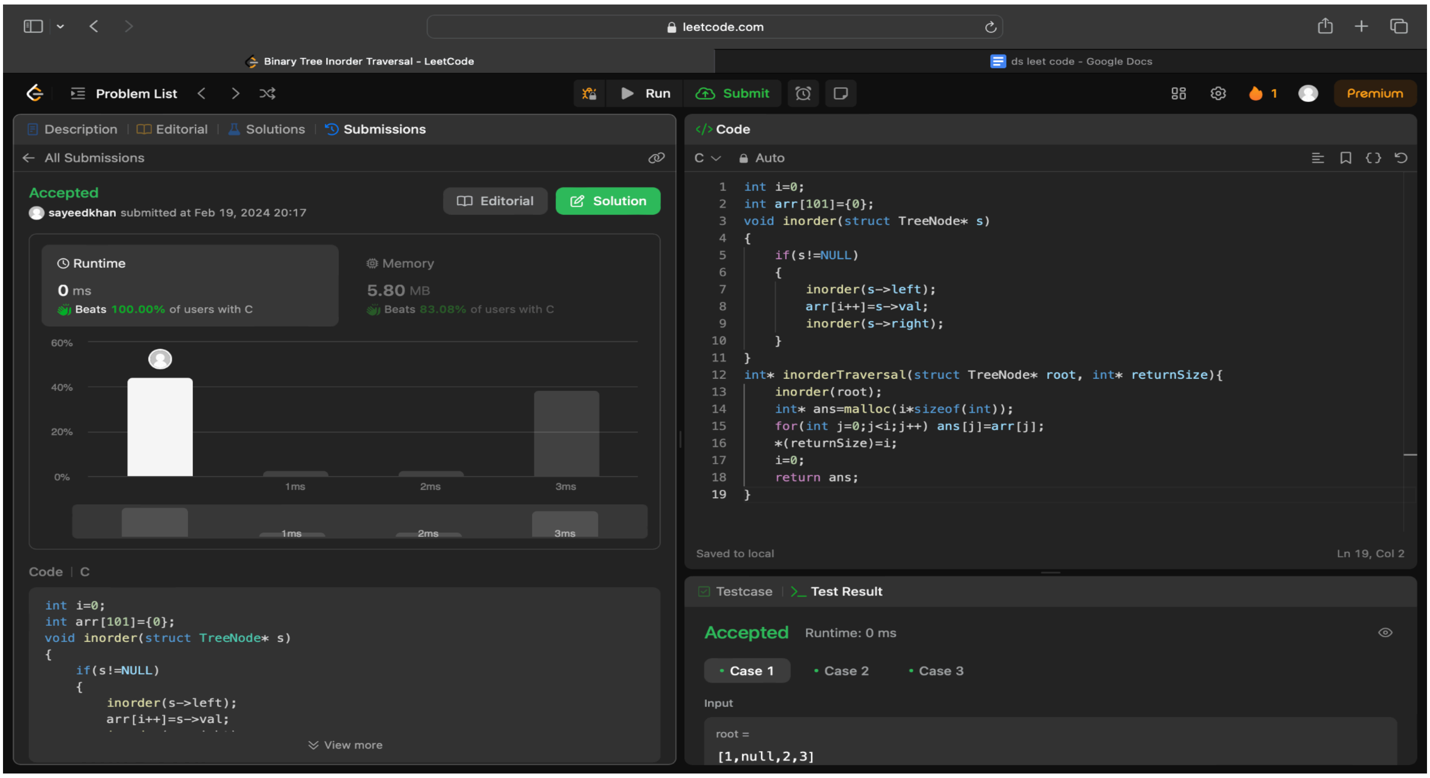
Easy Topics Companies

Given the `root` of a binary tree, return *the inorder traversal of its nodes' values*.

Example 1:




```
Input: root = [1,null,2,3]
Output: [1,3,2]
```



BINARY TREE EASY CODE

```
int i=0;
int arr[101]={0};
void inorder(struct TreeNode* s)
{
if(s!=NULL)
{
inorder(s->left);
arr[i++]=s->val;
inorder(s->right);
}
}
int* inorderTraversal(struct TreeNode* root, int* returnSize){
inorder(root);
int* ans=malloc(i*sizeof(int));
for(int j=0;j<i;j++) ans[j]=arr[j];
*(returnSize)=i;
i=0;
return ans;
}
```

8 GRAPH MEDIUM

133. Clone Graph

Solved

Medium | Topics | Companies

Given a reference of a node in a **connected** undirected graph.

Return a **deep copy** (clone) of the graph.

Each node in the graph contains a value (`int`) and a list (`List[Node]`) of its neighbors.

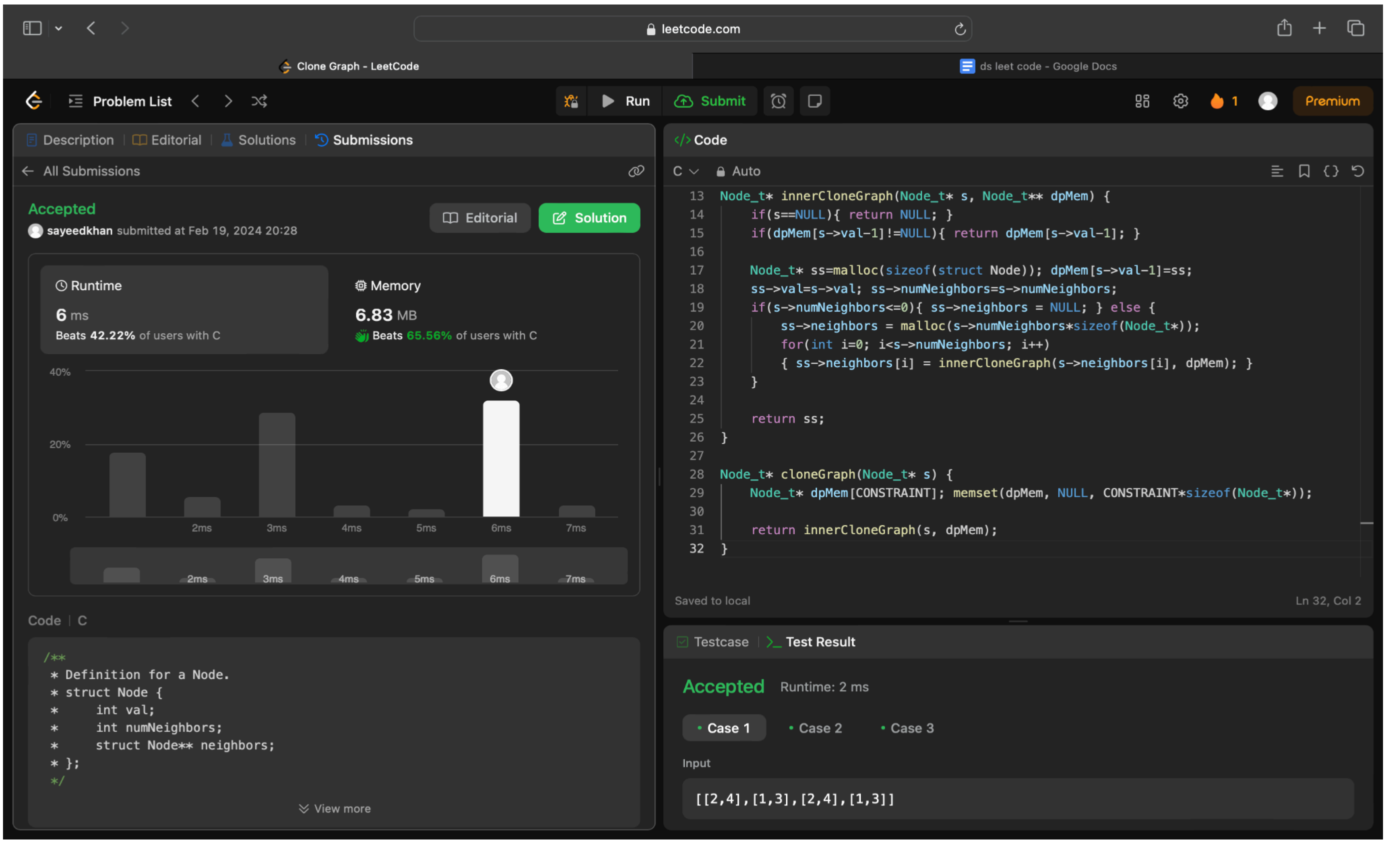
```
class Node {
    public int val;
    public List<Node> neighbors;
}
```

Test case format:

For simplicity, each node's value is the same as the node's index (1-indexed). For example, the first node with `val == 1`, the second node with `val == 2`, and so on. The graph is represented in the test case using an adjacency list.

An adjacency list is a collection of unordered **lists** used to represent a finite graph. Each list describes the set of neighbors of a node in the graph.

The given node will always be the first node with `val = 1`. You must return the **copy of the given node** as a reference to the cloned graph.



GRAPH MEDIUM CODE

```
#define CONSTRAINT 100
typedef struct Node Node_t;

Node_t* innerCloneGraph(Node_t* s, Node_t** dpMem) {
if(s==NULL){ return NULL; }
if(dpMem[s->val-1]!=NULL){ return dpMem[s->val-1]; }

Node_t* ss=malloc(sizeof(struct Node)); dpMem[s->val-1]=ss;
ss->val=s->val; ss->numNeighbors=s->numNeighbors;
if(s->numNeighbors<=0){ ss->neighbors = NULL; } else {
ss->neighbors = malloc(s->numNeighbors*sizeof(Node_t*));
for(int i=0; i<s->numNeighbors; i++)
{ ss->neighbors[i] = innerCloneGraph(s->neighbors[i], dpMem); }
}

return ss;
}

Node_t* cloneGraph(Node_t* s) {
Node_t* dpMem[CONSTRAINT]; memset(dpMem, NULL, CONSTRAINT*sizeof(Node_t*));

return innerCloneGraph(s, dpMem);
}
```

9 ADD BINARY TREE EASY

67. Add Binary

Easy | Topics | Companies

Given two binary strings `a` and `b`, return *their sum as a binary string*.

Example 1:

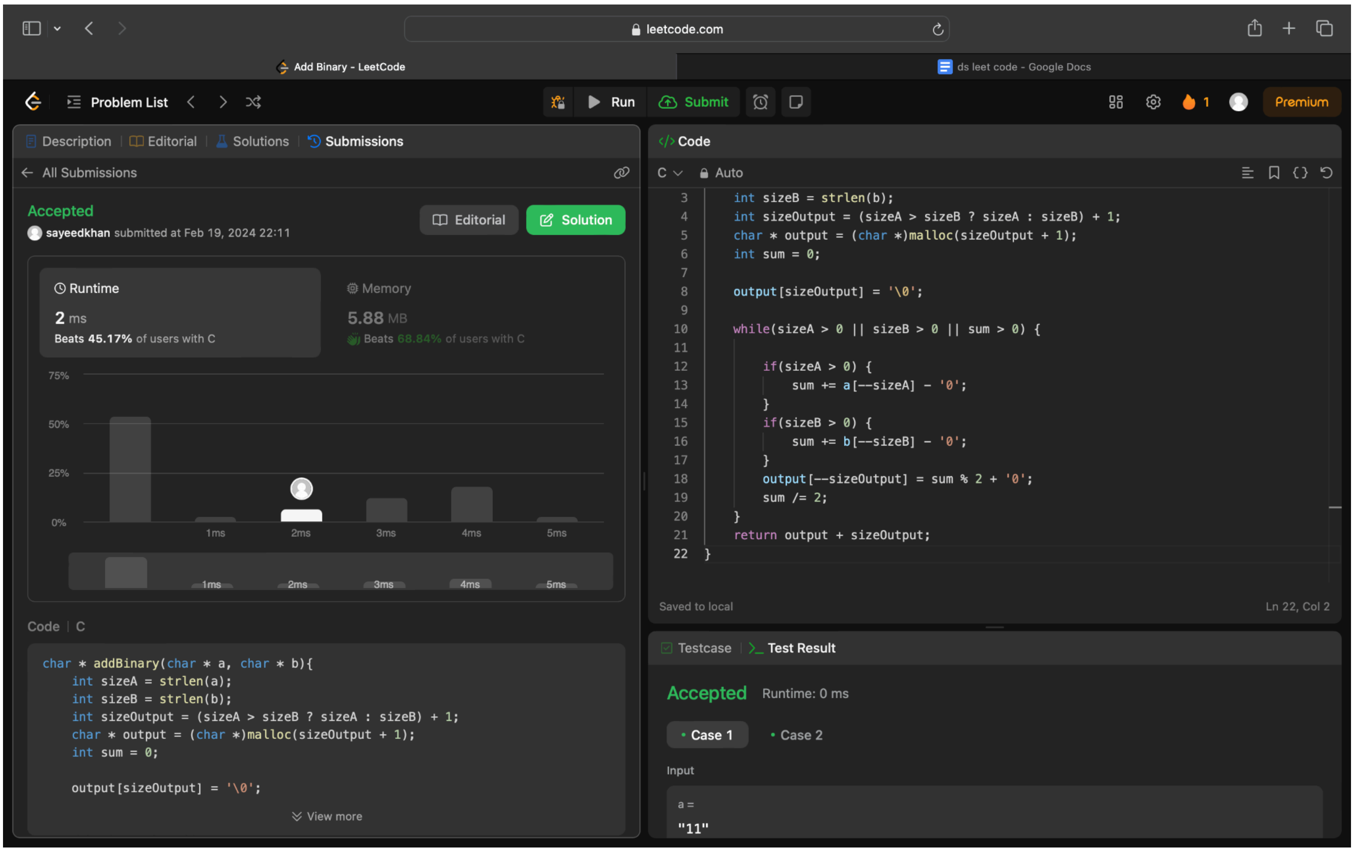
```
Input: a = "11", b = "1"
Output: "100"
```

Example 2:

```
Input: a = "1010", b = "1011"
Output: "10101"
```

Constraints:

- `1 <= a.length, b.length <= 10^4`
- `a` and `b` consist only of `'0'` or `'1'` characters.
- Each string does not contain leading zeros except for the zero itself.



ADD BINARY TREE EASY CODE

```
char * addBinary(char * a, char * b){
int sizeA = strlen(a);
int sizeB = strlen(b);
int sizeOutput = (sizeA > sizeB ? sizeA : sizeB) + 1;
char * output = (char *)malloc(sizeOutput + 1);
int sum = 0;
output[sizeOutput] = '\0';
while(sizeA > 0 || sizeB > 0 || sum > 0) {
if(sizeA > 0) {
sum += a[--sizeA] - '0';
}
if(sizeB > 0) {
sum += b[--sizeB] - '0';
}
output[--sizeOutput] = sum % 2 + '0';
sum /= 2;
}
return output + sizeOutput;
}
```

10 DESIGN HASHMAP EASY

706. Design HashMap

Easy | Topics | Companies

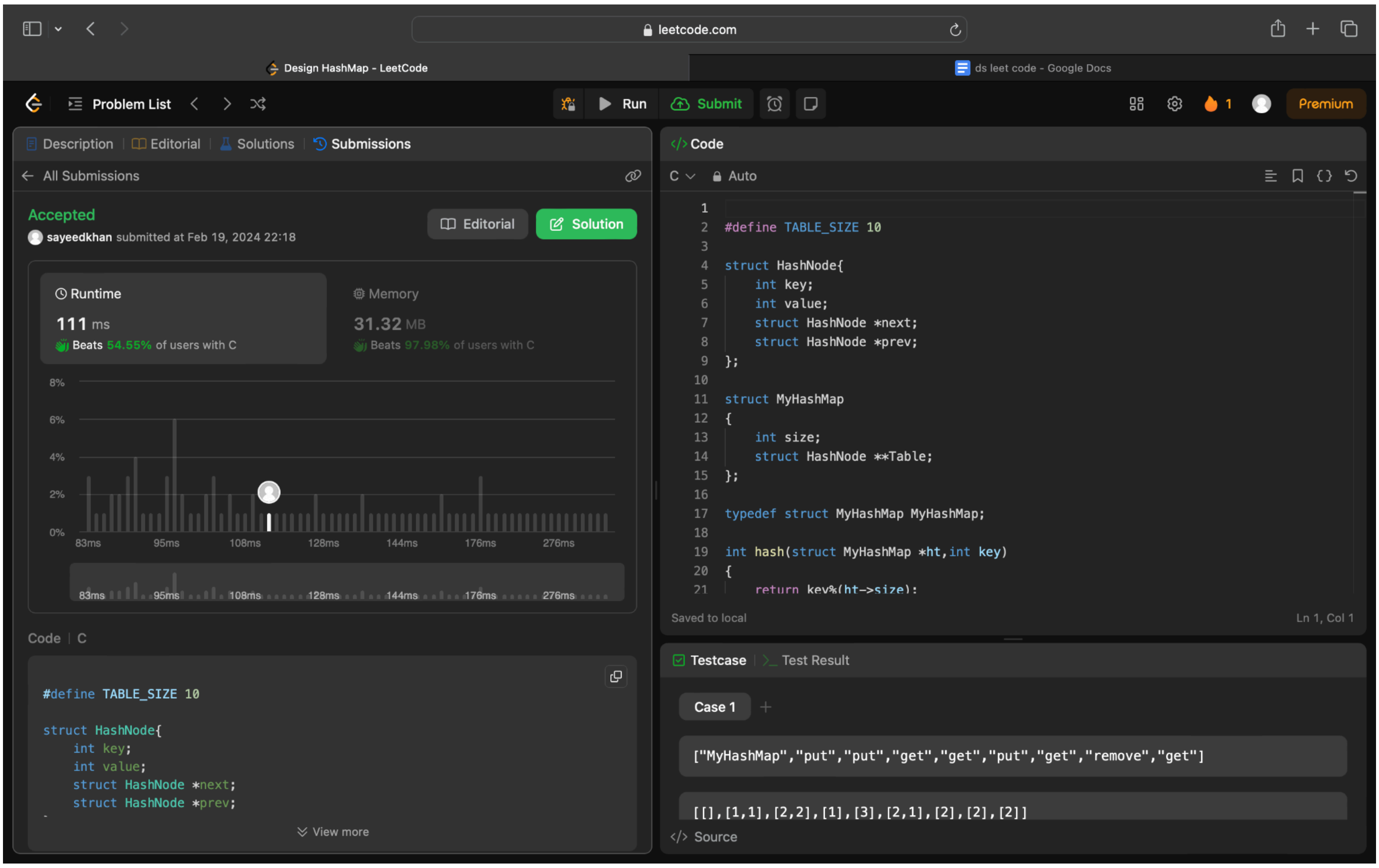
Design a HashMap without using any built-in hash table libraries.

Implement the `MyHashMap` class:

- `MyHashMap()` initializes the object with an empty map.
- `void put(int key, int value)` inserts a `(key, value)` pair into the HashMap. If the `key` already exists in the map, update the corresponding `value`.
- `int get(int key)` returns the `value` to which the specified `key` is mapped, or `-1` if this map contains no mapping for the `key`.
- `void remove(key)` removes the `key` and its corresponding `value` if the map contains the mapping for the `key`.

Example 1:

Input
```
["MyHashMap", "put", "put", "get", "get", "put", "get", "remove", "get"]
[[], [1, 1], [2, 2], [1], [3], [2, 1], [2], [2], [2]]
```
Output
```
[null, null, null, 1, -1, null, 1, null, -1]
```



DESIGN HASHMAP EASY CODE

```
#define TABLE_SIZE 10

struct HashNode{
int key;
int value;
struct HashNode *next;
struct HashNode *prev;
};

struct MyHashMap
{
int size;
struct HashNode **Table;
};

typedef struct MyHashMap MyHashMap;

int hash(struct MyHashMap *ht,int key)
{
return key%(ht->size);
}

MyHashMap* myHashMapCreate() {
struct MyHashMap *ht=NULL;
ht=(struct MyHashMap *)malloc(sizeof(MyHashMap));
(ht)->size=TABLE_SIZE;
(ht)->Table=(struct HashNode **)calloc(TABLE_SIZE,sizeof(struct HashNode *));
for(int iCnt=0;iCnt<(ht->size);iCnt++)
{
(ht)->Table[iCnt]=NULL;
}
return ht;
}

void myHashMapPut(struct MyHashMap *ht, int key, int value) {
int index=hash(ht,key);
struct HashNode *temp=ht->Table[index];
while(temp!=NULL)
{
if(temp->key==key)
{
temp->value=value;
return;
}
temp=temp->next;
}
struct HashNode *newn=(struct HashNode *)malloc(sizeof(struct HashNode));
newn->key=key;
newn->value=value;
newn->next=NULL;
struct HashNode *first=ht->Table[index];


if(ht->Table[index]==NULL)
{
ht->Table[index]=newn;
}
else //Insert_First
{
newn->next=first;
ht->Table[index]=newn;
}
```

```
}

int myHashMapGet(struct MyHashMap *ht, int key) {
int find=-1;
int index=hash(ht,key);


struct HashNode *temp=ht->Table[index];

while(temp!=NULL)
{
if(temp->key==key)
{
return temp->value;
}
temp=temp->next;
}

return -1;
}

void myHashMapRemove(struct MyHashMap *ht, int key) {
int index=hash(ht,key);

struct HashNode *first=ht->Table[index];
struct HashNode *temp=first;

struct HashNode *hold=NULL;

while(temp!=NULL)
{
if(temp->key==key)
{
if(hold==NULL)
{
ht->Table[index]=temp->next;
}
else
{
hold->next=temp->next;
}
free(temp);
Return;

}
hold=temp;
temp=temp->next;
}
}

void myHashMapFree( struct MyHashMap *ht) {
for(int i=0;i<TABLE_SIZE;i++)
{
free(ht->Table[i]);
}
free(ht);
}

/**
* Your MyHashMap struct will be instantiated and called as such:
* MyHashMap* obj = myHashMapCreate();
* myHashMapPut(obj, key, value);
* int param_2 = myHashMapGet(obj, key);
* myHashMapRemove(obj, key);
* myHashMapFree(obj);
*/
```

REAL WORLD PROBLEM

- **This program simulates a task management system with tasks having priorities. The priority queue will be used to efficiently manage tasks based on their priority, and a hash table will be used to quickly access and update the tasks.**

- **The program uses a priority queue (min-heap) to maintain tasks based on their priority and a hash table to quickly access and update tasks. The priority queue ensures that tasks are processed in order of priority, and the hash table provides quick access to tasks for updates based on their names.**

CODE

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

// Define structures for priority queue (min-heap) node and hash table entry
typedef struct PriorityQueueNode {
char task[50];
int priority;
} PriorityQueueNode;

typedef struct HashTableEntry {
char task[50];
int priority;
struct HashTableEntry* next;
} HashTableEntry;

// Define structure for priority queue
typedef struct {
PriorityQueueNode* heap;
int size;
int capacity;
} PriorityQueue;

// Define structure for hash table
typedef struct {
HashTableEntry* table[10]; // Using a simple hash table with 10 slots for demonstration
```

```
} HashTable;

// Function prototypes
PriorityQueue* initializePriorityQueue(int capacity);
void enqueue(PriorityQueue* priorityQueue, char task[], int priority);
void heapifyUp(PriorityQueue* priorityQueue, int index);
void dequeue(PriorityQueue* priorityQueue);
HashTable* initializeHashTable();
void addTaskToHashTable(HashTable* hashTable, char task[], int priority);
void updatePriorityInHashTable(HashTable* hashTable, char task[], int newPriority);
void displayTasksHashTable(HashTable* hashTable);

int main() {
PriorityQueue* taskPriorityQueue = initializePriorityQueue(10);
HashTable* taskHashTable = initializeHashTable();

int choice;
char task[50];
int priority, newPriority;

do {
printf("\nTask Management System Menu\n");
printf("1. Add a task\n");
printf("2. Update task priority\n");
printf("3. Display tasks (hash table)\n");
printf("0. Exit\n");
printf("Enter your choice: ");
scanf("%d", &choice);

switch (choice) {
case 1:
printf("Enter the task: ");
scanf(" %[^\n]", task);
printf("Enter the priority of the task: ");
scanf("%d", &priority);

enqueue(taskPriorityQueue, task, priority);
addTaskToHashTable(taskHashTable, task, priority);
break;

case 2:
printf("Enter the task to update priority: ");
scanf(" %[^\n]", task);
printf("Enter the new priority of the task: ");
```

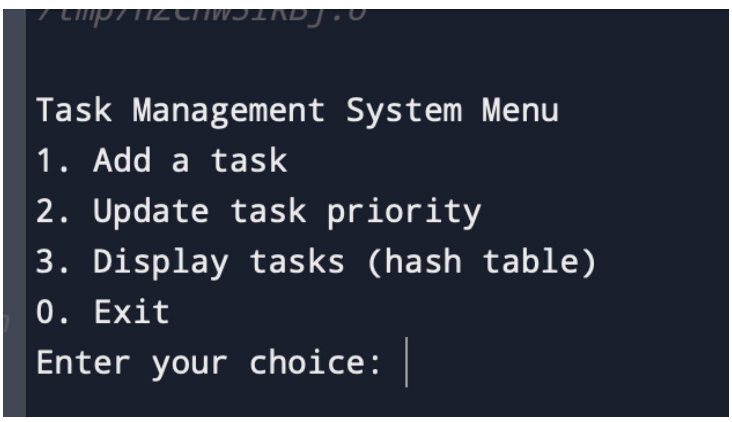
```
scanf("%d", &newPriority);

updatePriorityInHashTable(taskHashTable, task, newPriority);
break;

case 3:
printf("Tasks in hash table:\n");
displayTasksHashTable(taskHashTable);
break;

case 0:
printf("Exiting the program. Goodbye!\n");
break;

default:
printf("Invalid choice. Please try again.\n");
}

} while (choice != 0);

free(taskPriorityQueue->heap);
free(taskPriorityQueue);
return 0;
}

PriorityQueue* initializePriorityQueue(int capacity) {
PriorityQueue* priorityQueue = (PriorityQueue*)malloc(sizeof(PriorityQueue));
priorityQueue->heap = (PriorityQueueNode*)malloc(capacity * sizeof(PriorityQueueNode));
priorityQueue->size = 0;
priorityQueue->capacity = capacity;
return priorityQueue;
}

void enqueue(PriorityQueue* priorityQueue, char task[], int priority) {
if (priorityQueue->size < priorityQueue->capacity) {
priorityQueue->heap[priorityQueue->size].priority = priority;
strcpy(priorityQueue->heap[priorityQueue->size].task, task);
heapifyUp(priorityQueue, priorityQueue->size++);
printf("Task added to priority queue.\n");
} else {
printf("Priority queue is full. Cannot add more tasks.\n");
}
}
```

```c
void heapifyUp(PriorityQueue* priorityQueue, int index) {
int parent = (index - 1) / 2;

while (index > 0 && priorityQueue->heap[index].priority <
priorityQueue->heap[parent].priority) {
// Swap nodes if child has higher priority than the parent
PriorityQueueNode temp = priorityQueue->heap[index];
priorityQueue->heap[index] = priorityQueue->heap[parent];
priorityQueue->heap[parent] = temp;

index = parent;
parent = (index - 1) / 2;
}
}

void dequeue(PriorityQueue* priorityQueue) {
if (priorityQueue->size > 0) {
// Swap the root (highest priority) with the last element
PriorityQueueNode temp = priorityQueue->heap[0];
priorityQueue->heap[0] = priorityQueue->heap[--priorityQueue->size];
priorityQueue->heap[priorityQueue->size] = temp;

// Re-heapify to maintain the min-heap property
heapifyDown(priorityQueue, 0);
printf("Task with the highest priority removed from priority queue.\n");
} else {
printf("Priority queue is empty. Cannot dequeue.\n");
}
}

void heapifyDown(PriorityQueue* priorityQueue, int index) {
int leftChild = 2 * index + 1;
int rightChild = 2 * index + 2;
int smallest = index;

if (leftChild < priorityQueue->size && priorityQueue->heap[leftChild].priority <
priorityQueue->heap[smallest].priority) {
smallest = leftChild;
}

if (rightChild < priorityQueue->size && priorityQueue->heap[rightChild].priority <
priorityQueue->heap[smallest].priority) {
smallest = rightChild;
}
```

```c
if (smallest != index) {
// Swap nodes if a child has higher priority
PriorityQueueNode temp = priorityQueue->heap[index];
priorityQueue->heap[index] = priorityQueue->heap[smallest];
priorityQueue->heap[smallest] = temp;

// Recursively heapify the affected subtree
heapifyDown(priorityQueue, smallest);
}
}

HashTable* initializeHashTable() {
HashTable* hashTable = (HashTable*)malloc(sizeof(HashTable));

for (int i = 0; i < 10; i++) {
hashTable->table[i] = NULL;
}

return hashTable;
}

void addTaskToHashTable(HashTable* hashTable, char task[], int priority) {
unsigned int index = priority % 10; // Using priority as a hash index for demonstration
HashTableEntry* newEntry = (HashTableEntry*)malloc(sizeof(HashTableEntry));
strcpy(newEntry->task, task);
newEntry->priority = priority;
newEntry->next = hashTable->table[index];
hashTable->table[index] = newEntry;
}

void updatePriorityInHashTable(HashTable* hashTable, char task[], int newPriority) {
unsigned int index = newPriority % 10; // Using new priority as a hash index for
demonstration
HashTableEntry* entry = hashTable->table[index];

while (entry != NULL) {
if (strcmp(task, entry->task) == 0) {
entry->priority = newPriority;
printf("Task priority updated in hash table.\n");
return;
}

entry = entry->next;
```

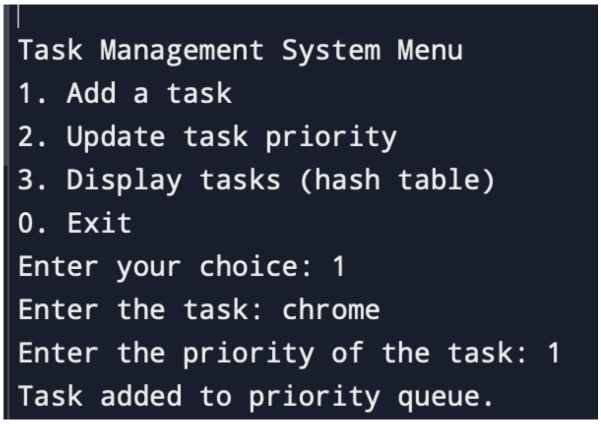
```c
}

printf("Task not found in hash table.\n");
}

void displayTasksHashTable(HashTable* hashTable) {
for (int i = 0; i < 10; i++) {
HashTableEntry* entry = hashTable->table[i];

while (entry != NULL) {
printf("Priority: %d, Task: %s\n", entry->priority, entry->task);
entry = entry->next;
}
}
}
```

OUTPUT :



```
Task Management System Menu
1. Add a task
2. Update task priority
3. Display tasks (hash table)
0. Exit
Enter your choice:
```

==>



```
Task Management System Menu
1. Add a task
2. Update task priority
3. Display tasks (hash table)
0. Exit
Enter your choice: 1
Enter the task: chrome
Enter the priority of the task: 1
Task added to priority queue.
```