LC-1 LEETCODE:WAP to implement stack using queues.

CODE:

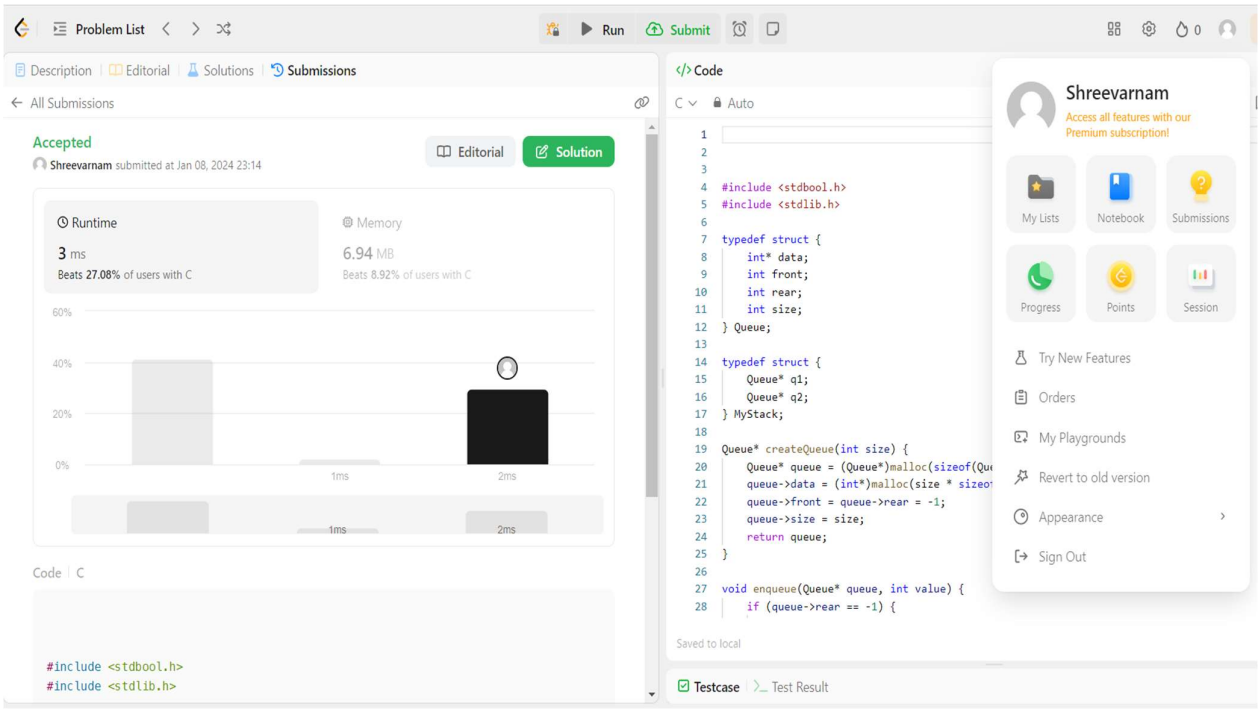
```
#include <stdbool.h>
#include <stdlib.h>
typedef struct {
int* data;
int front;
int rear;
int size;
} Queue;
typedef struct {
Queue* q1;
Queue* q2;
} MyStack;
Queue* createQueue(int size) {
Queue* queue = (Queue*)malloc(sizeof(Queue));
queue->data = (int*)malloc(size * sizeof(int));
queue->front = queue->rear = -1;
queue->size = size;
return queue;
}
void enqueue(Queue* queue, int value) {
if (queue->rear == -1) {
queue->front = queue->rear = 0;
} else {
queue->rear = (queue->rear + 1) % queue->size;
```

```
}
queue->data[queue->rear] = value;
}
int dequeue(Queue* queue) {
int value = queue->data[queue->front];
if (queue->front == queue->rear) {
queue->front = queue->rear = -1;
} else {
queue->front = (queue->front + 1) % queue->size;
}
return value;
}
bool isEmpty(Queue* queue) {
return queue->front == -1;
}
MyStack* myStackCreate() {
MyStack* stack = (MyStack*)malloc(sizeof(MyStack));
stack->q1 = createQueue(1000); // Adjust the size as needed
stack->q2 = createQueue(1000);
return stack;
}
void myStackPush(MyStack* obj, int x) {
enqueue(obj->q1, x);
}
int myStackPop(MyStack* obj) {
if (isEmpty(obj->q1)) {
```

```
return -1; // Stack is empty
}
while (obj->q1->front != obj->q1->rear) {
enqueue(obj->q2, dequeue(obj->q1));
}
int poppedValue = dequeue(obj->q1);
// Swap q1 and q2
Queue* temp = obj->q1;
obj->q1 = obj->q2;
obj->q2 = temp;
return poppedValue;
}
int myStackTop(MyStack* obj) {
if (isEmpty(obj->q1)) {
return -1; // Stack is empty
}
while (obj->q1->front != obj->q1->rear) {
enqueue(obj->q2, dequeue(obj->q1));
}
int topValue = dequeue(obj->q1);
enqueue(obj->q2, topValue);
// Swap q1 and q2
Queue* temp = obj->q1;
obj->q1 = obj->q2;
obj->q2 = temp;
return topValue;
```

```
}
bool myStackEmpty(MyStack* obj) {
return isEmpty(obj->q1);
}
void myStackFree(MyStack* obj) {
free(obj->q1->data);
free(obj->q1);
free(obj->q2->data);
free(obj->q2);
free(obj);
}
```

OUTPUT:



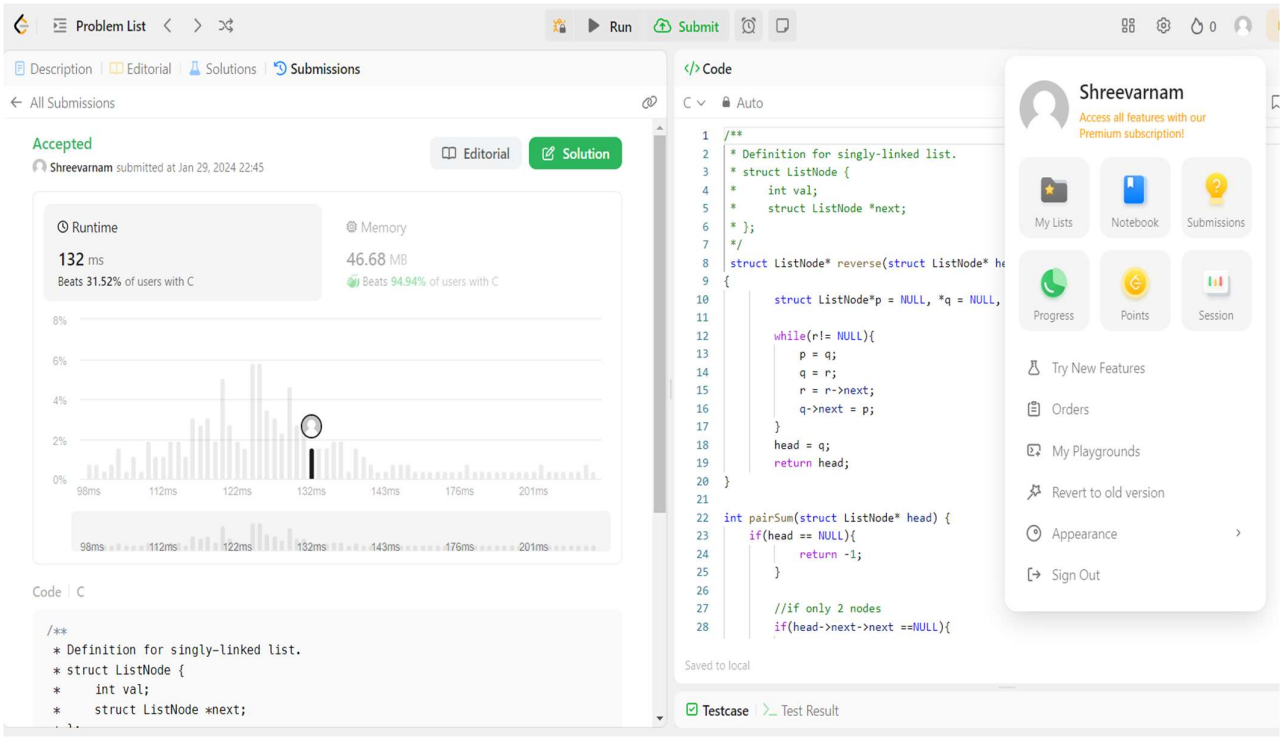
LC-2 LEETCODE:Maximum twin sum of a linked list. In a linkd list of size n,where n is even the ith code(0-indexed) of the linked list is known as twin if the (n-1-I)th node,if 0<=I<=(n/2)-1

CODE:

```
struct ListNode* reverse(struct ListNode* head)
{
struct ListNode*p = NULL, *q = NULL, *r = head;
while(r!= NULL){
p = q;
q = r;
r = r->next;
q->next = p;
}
head = q;
return head;
}
int pairSum(struct ListNode* head) {
if(head == NULL){
return -1;
}
//if only 2 nodes
if(head->next->next ==NULL){
int sum = head->val + head->next->val;
return sum;
}
struct ListNode *temp = head ,*s = head , *f = head->next;
```

```
// find middle
while(f!=NULL){
f = f->next;
if(f!=NULL){
f = f->next;
s = s->next;
}
}
struct ListNode* second = reverse(s->next);
s->next = second;
struct ListNode* first = head;
int ans = INT_MIN;
while(second != NULL){
int data = first->val + second->val;
ans = fmax(ans,data);
first = first->next;
second = second->next;
}
return ans;
}
```

OUTPUT:



LC-3 LEETCODE:Merged two binary trees.

CODE:

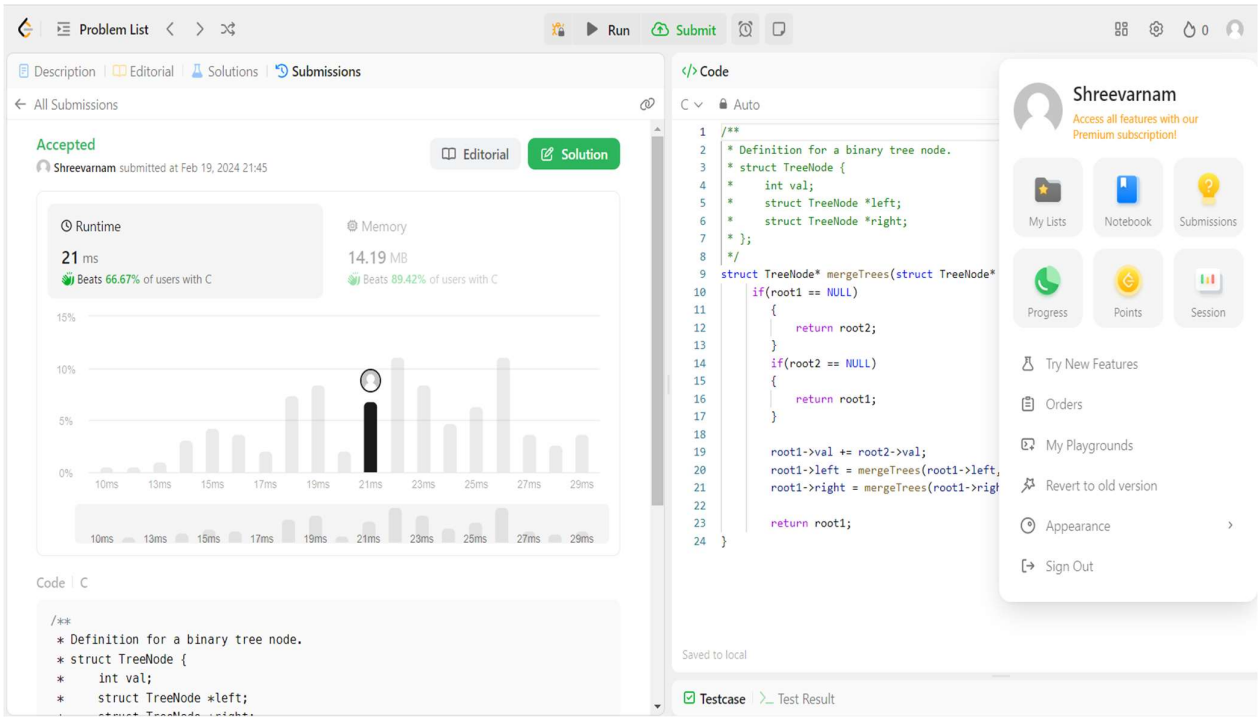
```
struct TreeNode* mergeTrees(struct TreeNode* root1, struct TreeNode*
root2) {
if(root1 == NULL)
{
return root2;
}
if(root2 == NULL)
{
return root1;
}
root1->val += root2->val;
root1->left = mergeTrees(root1->left,root2->left);
```

root1->right = mergeTrees(root1->right,root2->right);

return root1;

}

OUTPUT:



HR-1 HACKER RANK:Merge two sorted linked lists.

CODE:

SinglyLinkedListNode* mergeLists(SinglyLinkedListNode* head1,

SinglyLinkedListNode*

head2)

{

SinglyLinkedListNode *head3 = NULL, *t1 = head1, *t2 = head2,

*t3 = NULL;

while (t1 != NULL && t2 != NULL) {

SinglyLinkedListNode* newNode =

```
malloc(sizeof(SinglyLinkedListNode));
if (t1->data < t2->data) {
newNode->data = t1->data;
t1 = t1->next;
} else {
newNode->data = t2->data;
t2 = t2->next;
}
newNode->next = NULL;
if (head3 == NULL) {
head3 = newNode;
t3 = head3;
} else {
t3->next = newNode;
t3 = newNode;
}
}
// If one of the lists is not fully processed, append the remaining
elements to
the merged list.
if (t1 != NULL) {
if (head3 == NULL) {
head3 = t1;
} else {
t3->next = t1;
}
```

```
}
if (t2 != NULL) {
if (head3 == NULL) {
head3 = t2;
} else {
t3->next = t2;
}
}
return head3;
}
```

OUTPUT: