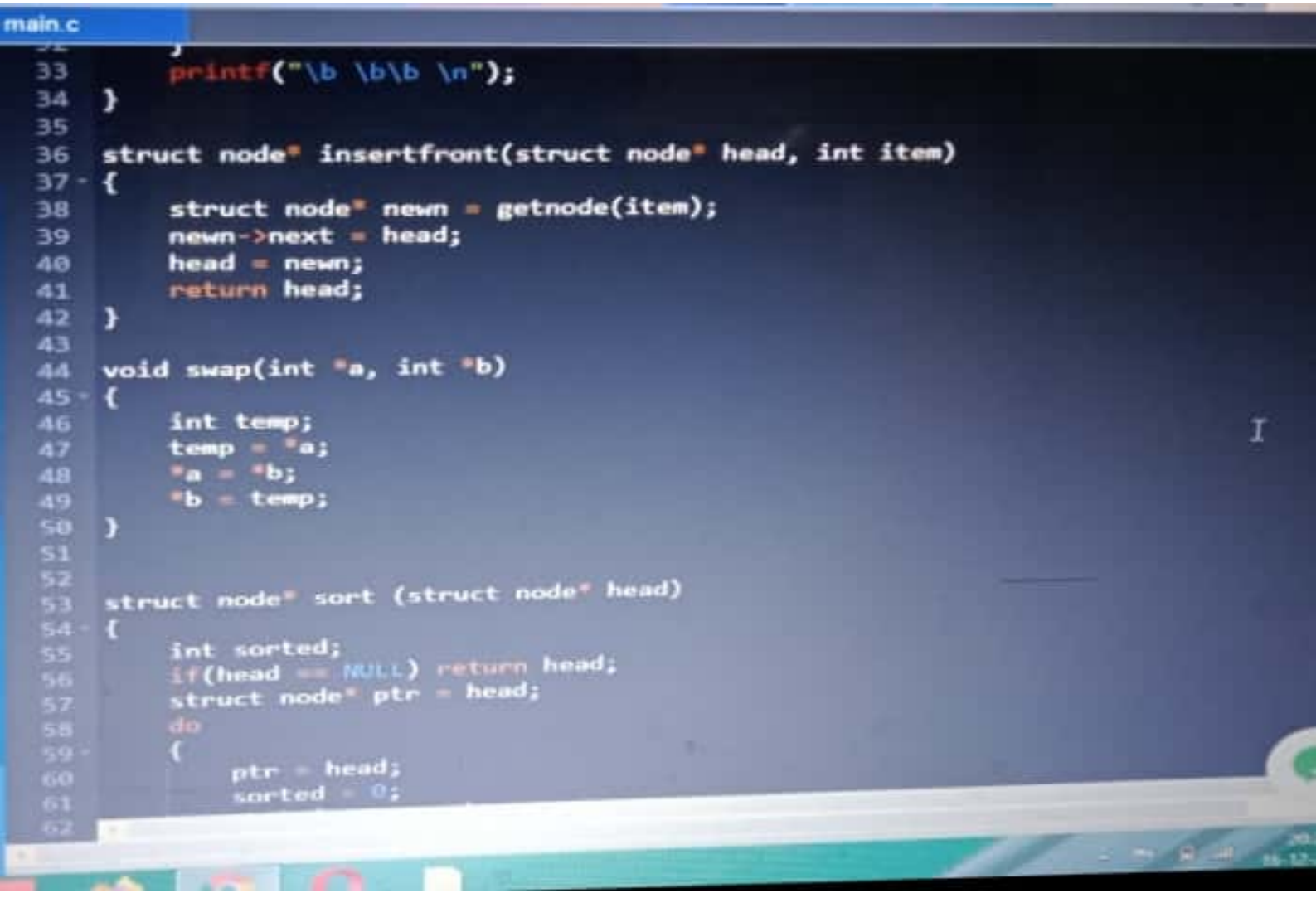
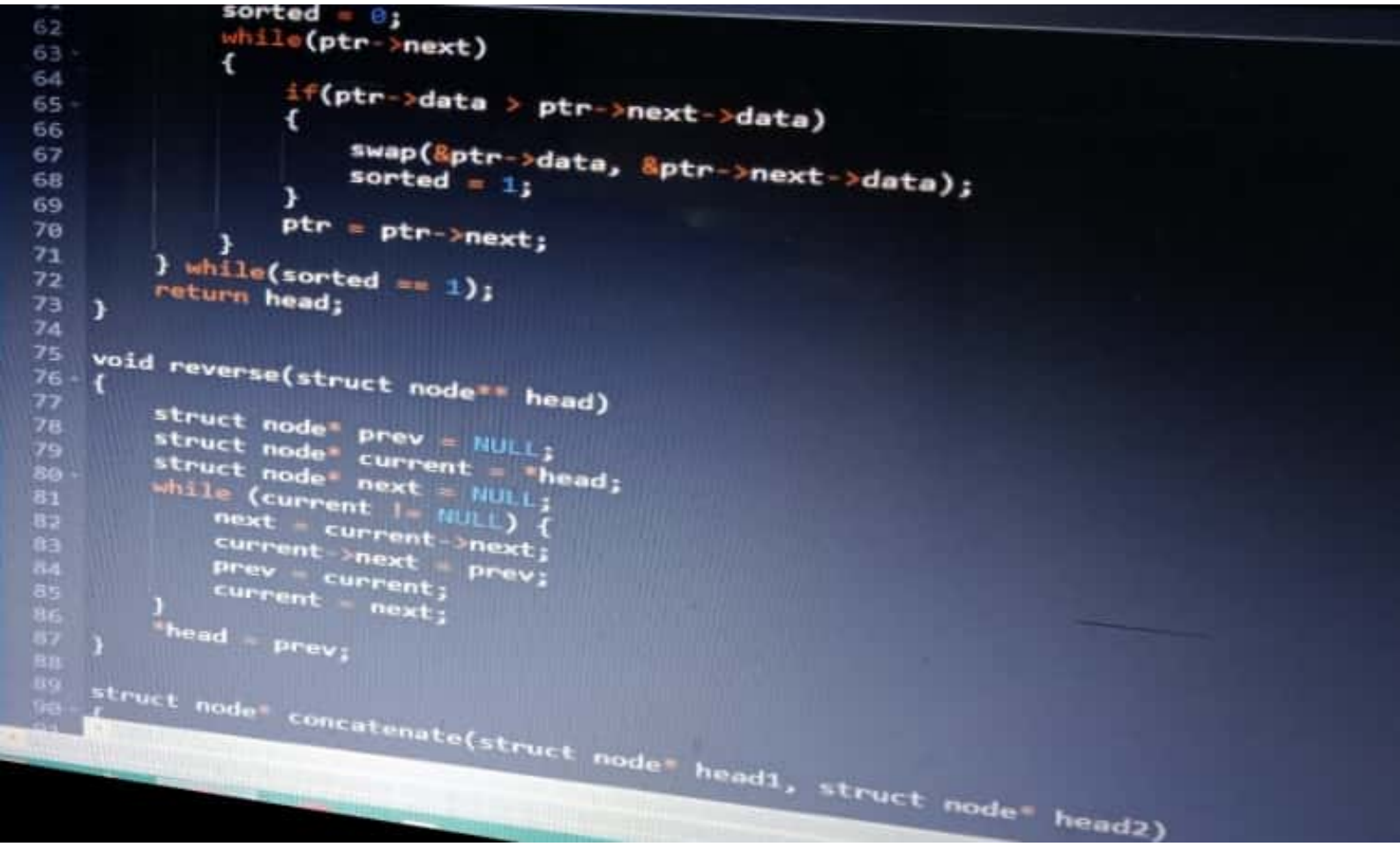
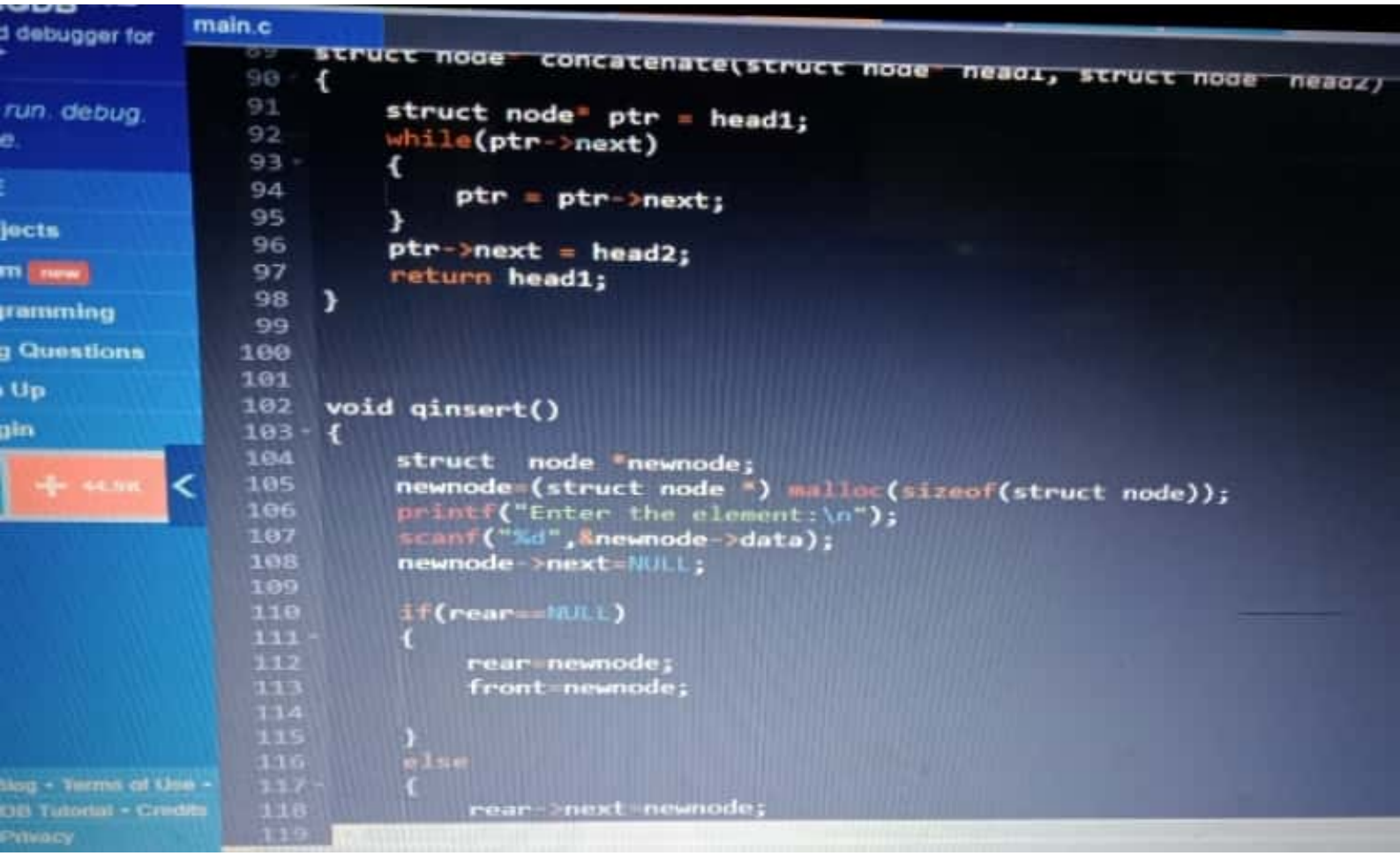
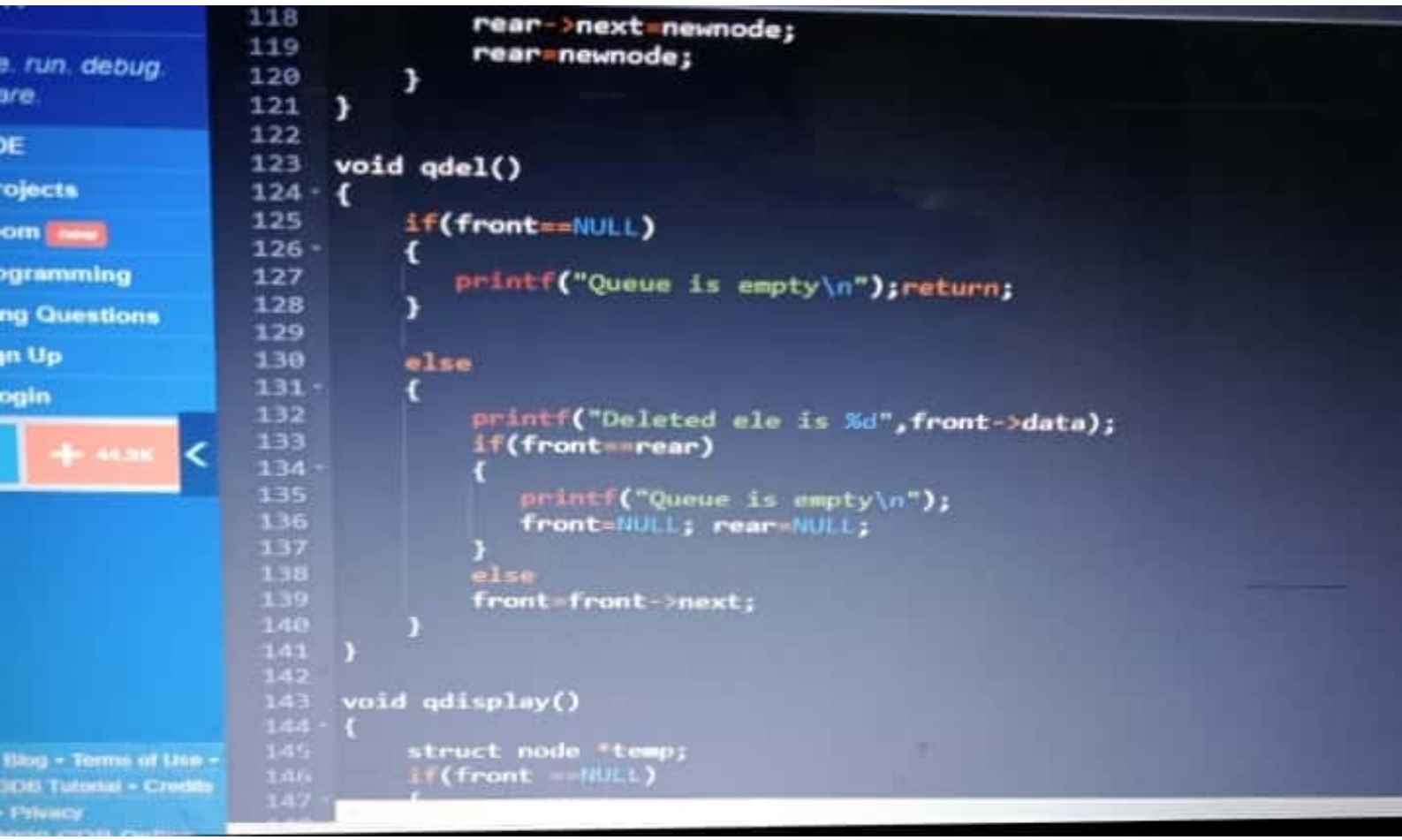
```c
#include <stdio.h>
#include <stdlib.h>

struct node
{
    int data;
    struct node* next;
};

struct  node *rear=NULL, *front =NULL, *top=NULL;

struct node* getnode(int item)
{
    struct node* newn = (struct node*)malloc(sizeof(struct node));
    newn->data = item;
    newn->next = NULL;
    return newn;
}

void display(struct node* head)
{
    if(head == NULL)
    {
        printf("List is empty.\n");
        return;
    }
    struct node* ptr = head;
    while(ptr)
    {
```



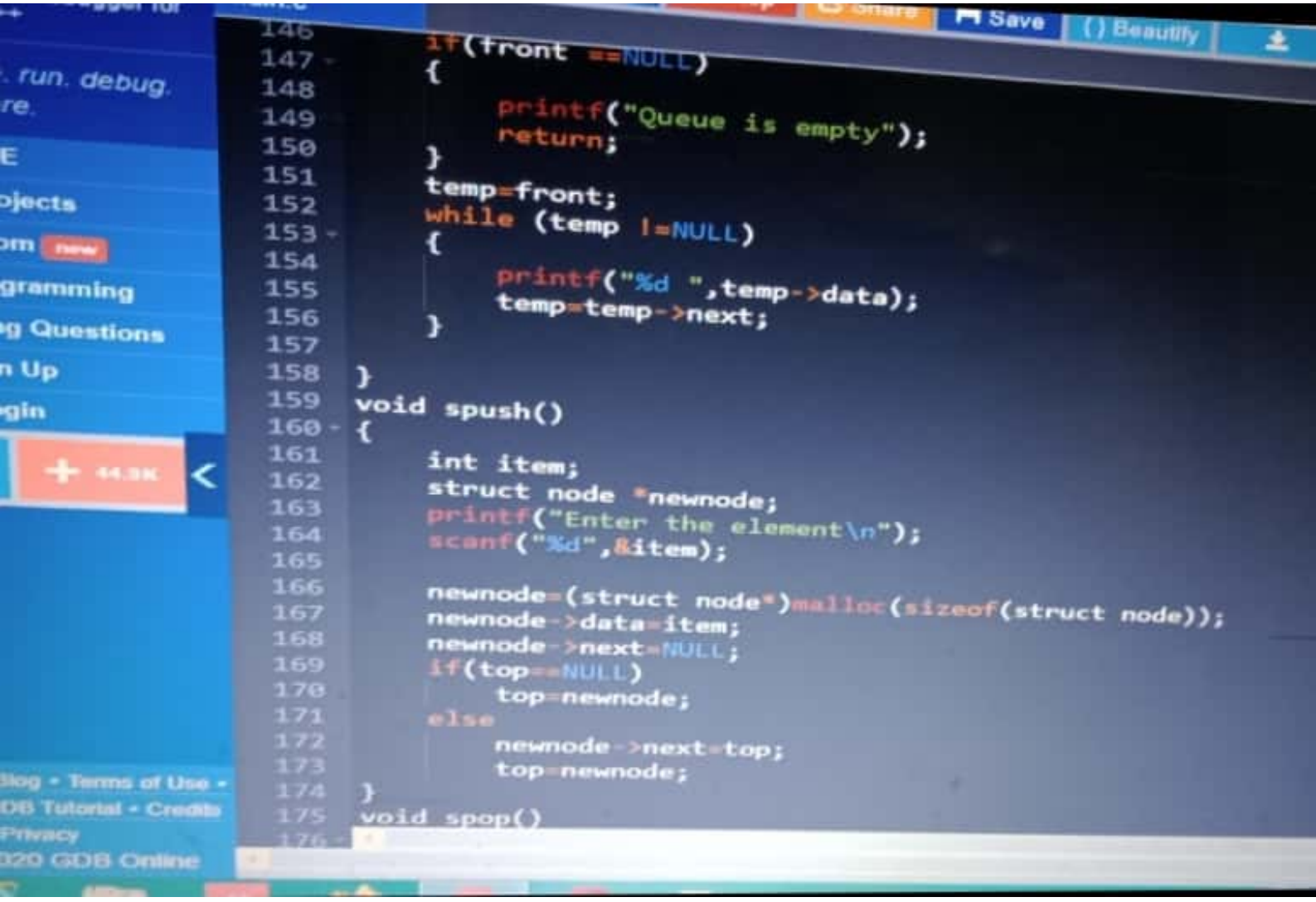


```
        sorted = 0;
        while(ptr->next)
        {
            if(ptr->data > ptr->next->data)
            {
                swap(&ptr->data, &ptr->next->data);
                sorted = 1;
            }
            ptr = ptr->next;
        }
    } while(sorted == 1);
    return head;
}

void reverse(struct node** head)
{
    struct node* prev = NULL;
    struct node* current = *head;
    struct node* next = NULL;
    while (current != NULL) {
        next = current->next;
        current->next = prev;
        prev = current;
        current = next;
    }
    *head = prev;
}

struct node* concatenate(struct node* head1, struct node* head2)
```

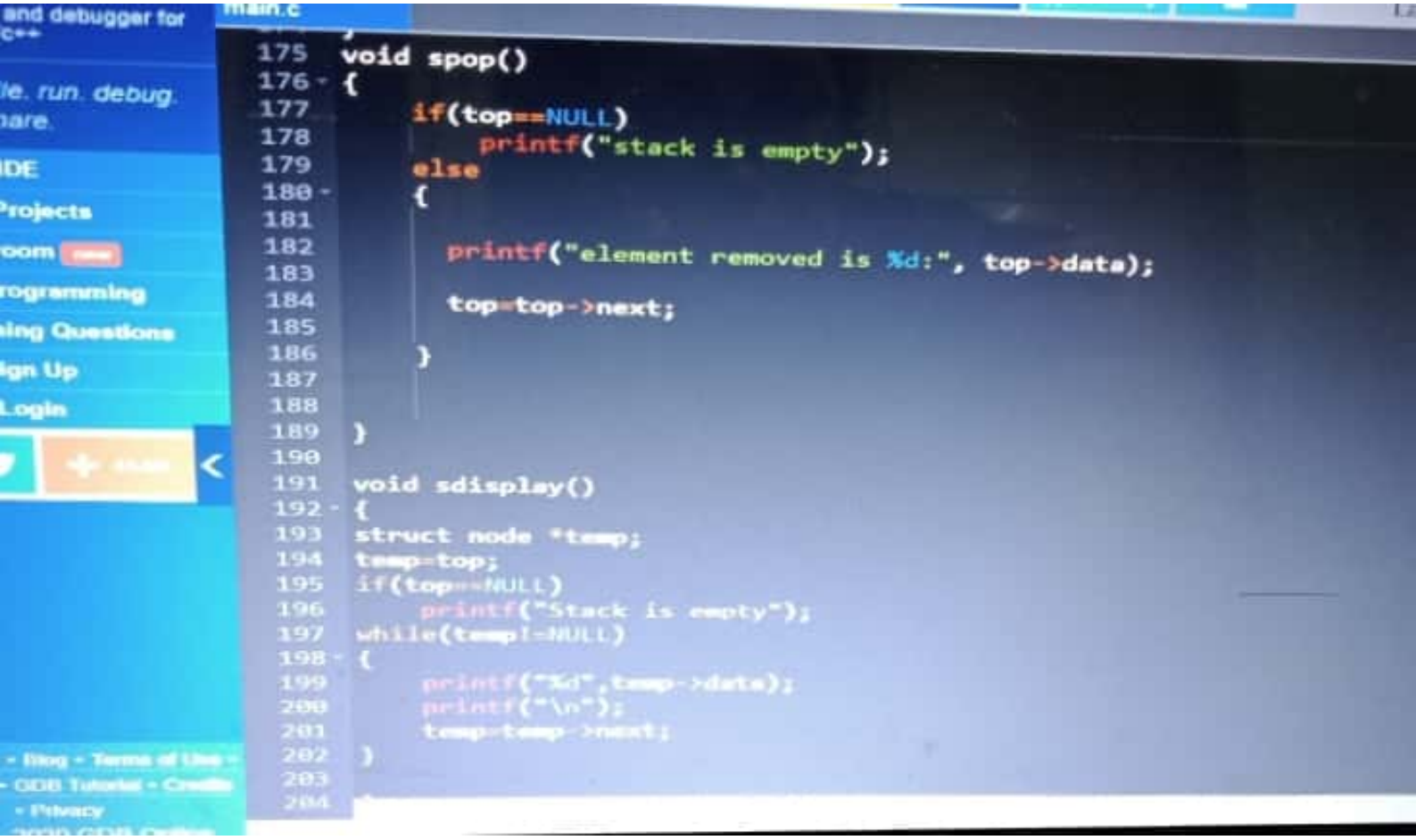




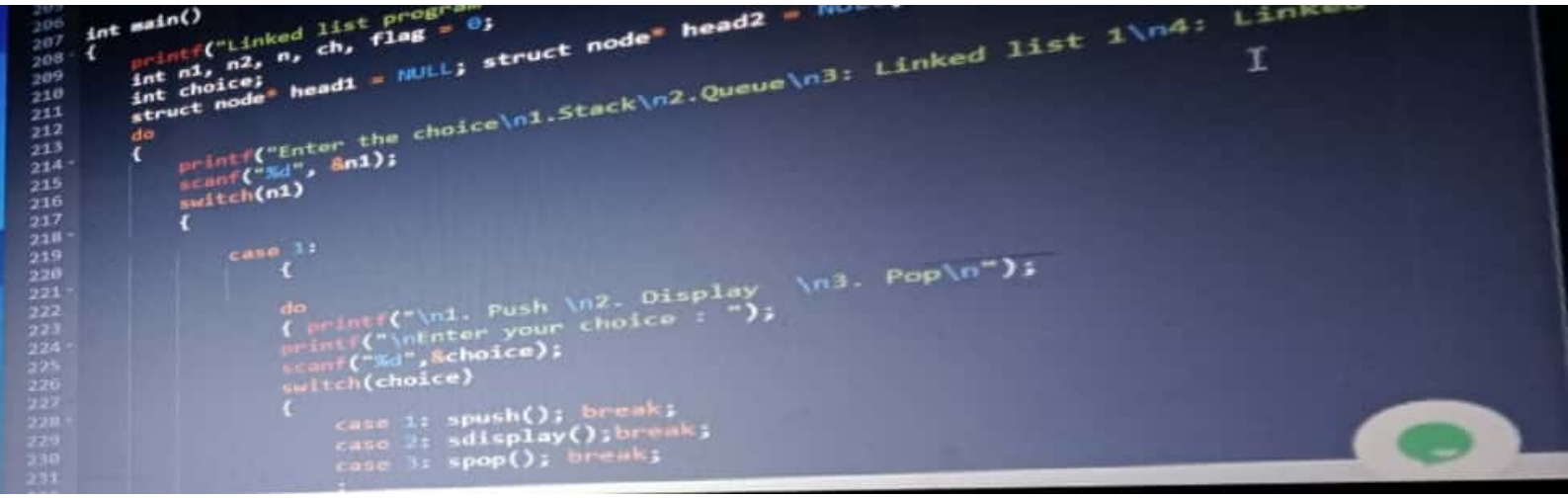
```
        rear->next=newnode;
        rear=newnode;
    }
}

void qdel()
{
    if(front==NULL)
    {
        printf("Queue is empty\n");return;
    }

    else
    {
        printf("Deleted ele is %d",front->data);
        if(front==rear)
        {
            printf("Queue is empty\n");
            front=NULL; rear=NULL;
        }
        else
        front=front->next;
    }
}

void qdisplay()
{
    struct node *temp;
    if(front ==NULL)
```



```
    if(front ==NULL)
    {
        printf("Queue is empty");
        return;
    }
    temp=front;
    while (temp !=NULL)
    {
        printf("%d ",temp->data);
        temp=temp->next;
    }

}
void spush()
{
    int item;
    struct node *newnode;
    printf("Enter the element\n");
    scanf("%d",&item);

    newnode=(struct node*)malloc(sizeof(struct node));
    newnode->data=item;
    newnode->next=NULL;
    if(top==NULL)
        top=newnode;
    else
        newnode->next=top;
        top=newnode;
}
void spop()
```

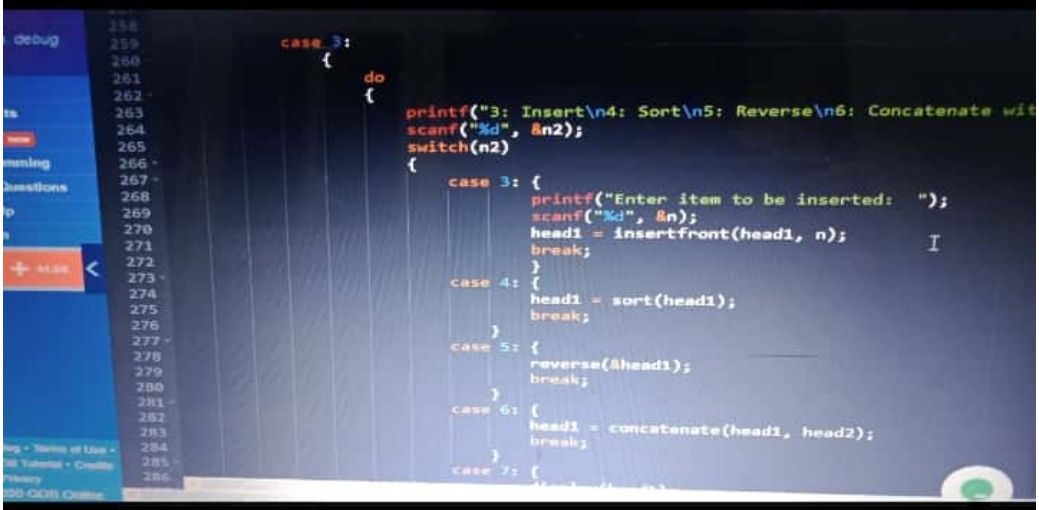


```c
void spop()
{
    if(top==NULL)
        printf("stack is empty");
    else
    {

      printf("element removed is %d:", top->data);

      top=top->next;

    }


}

void sdisplay()
{
struct node *temp;
temp=top;
if(top==NULL)
    printf("Stack is empty");
while(temp!=NULL)
{
    printf("%d",temp->data);
    printf("\n");
    temp=temp->next;
}
```



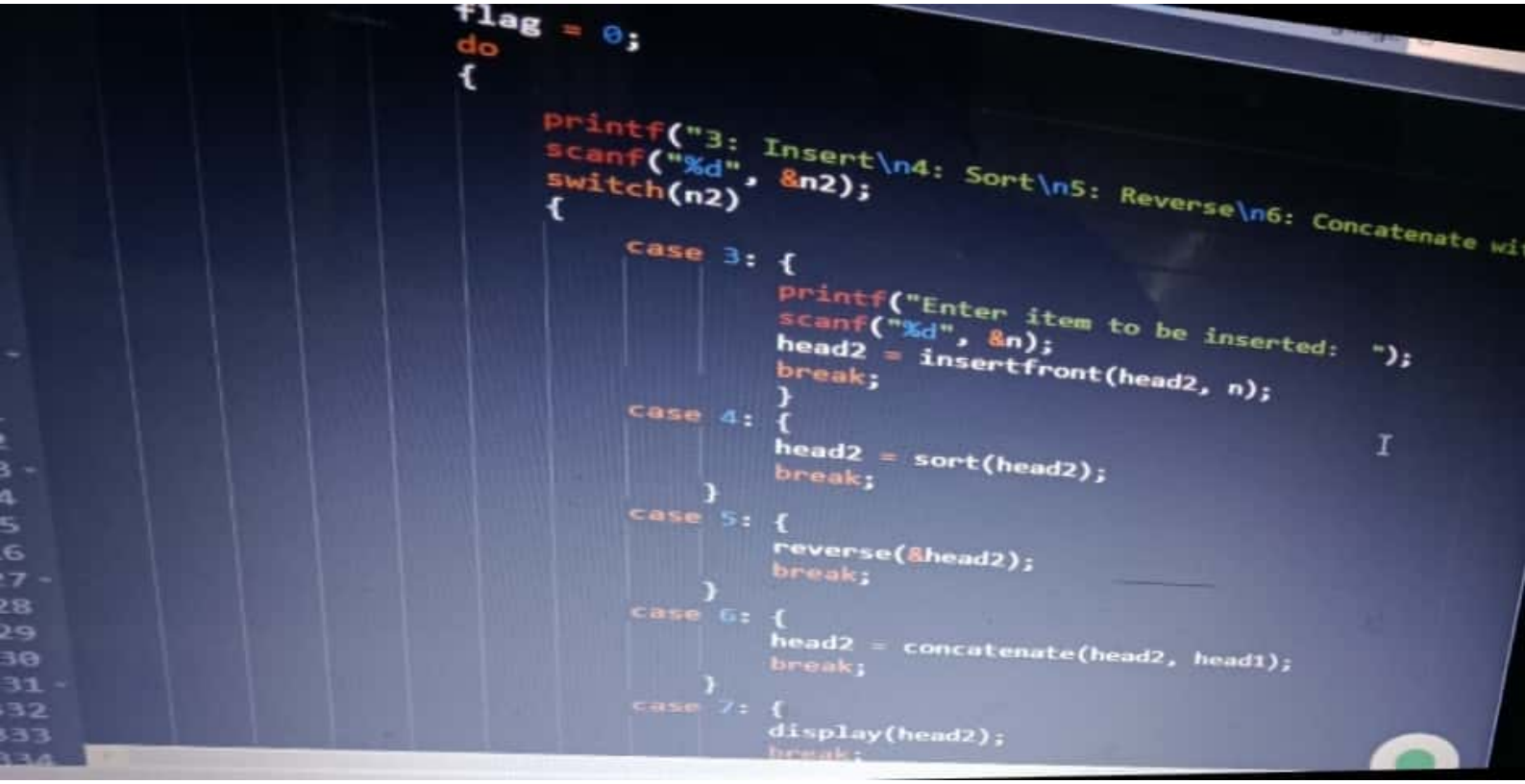
```
int main()
{
    printf("Linked list progra
    int n1, n2, n, ch, flag = 0;
    int choice;
    struct node* head1 = NULL; struct node* head2 =
    do
    {
        printf("Enter the choice\n1.Stack\n2.Queue\n3: Linked list 1\n4: Linke
        scanf("%d", &n1);
        switch(n1)
        {
            case 1:
                {
                do
                { printf("\n1. Push \n2. Display  \n3. Pop\n");
                printf("\nEnter your choice : ");
                scanf("%d",&choice);
                switch(choice)
                {
                    case 1: spush(); break;
                    case 2: sdisplay();break;
                    case 3: spop(); break;
```

```
}

        case 2:
            {
            do
            { printf("\nQueue implementation using linked list\n");
              printf("\n1. Create \n2. Display  \n3. Delete  \n4. Exit \n");
              printf("\nEnter your choice : ");
              scanf("%d",&choice);
              switch(choice)
              { case 1: qinsert(); break;
                case 2: qdisplay();break;
                case 3: qdel(); break;

              }
              }while(choice!=10);
            }


    case 3:
        {
            do
            {
                printf("3: Insert\n4: Sort\n5: Reverse\n6: Concatenate with 1
                scanf("%d", &n2);
                switch(n2)
                {
```



```
case 3:
    {
        do
        {
            printf("3: Insert\n4: Sort\n5: Reverse\n6: Concatenate wi
            scanf("%d", &n2);
            switch(n2)
            {
                case 3: {
                        printf("Enter item to be inserted:  ");
                        scanf("%d", &n);
                        head1 = insertfront(head1, n);
                        break;
                        }
                case 4: {
                        head1 = sort(head1);
                        break;
                    }
                case 5: {
                        reverse(&head1);
                        break;
                    }
                case 6: {
                        head1 = concatenate(head1, head2);
                        break;
                    }
                case 7: {
```

```
            }
        case 5: {
                    reverse(&head1);
                    break;
                }
        case 6: {
                    head1 = concatenate(head1, head2);
                    break;
                }
        case 7: {
                    display(head1);
                    break;
                }
        case 8: {
                    flag = 1;
                    break;
                }
        case 9: {
                    exit(0);
                }
        default: printf("Invalid input.\n");
    }
    if(flag == 1)
    {
        break;
    }
}while(1);
break;
}
```



```
flag = 0;
do
{
    printf("3: Insert\n4: Sort\n5: Reverse\n6: Concatenate wi
    scanf("%d", &n2);
    switch(n2)
    {
        case 3: {
                printf("Enter item to be inserted: ");
                scanf("%d", &n);
                head2 = insertfront(head2, n);
                break;
                }
        case 4: {
                head2 = sort(head2);
                break;
            }
        case 5: {
                reverse(&head2);
                break;
            }
        case 6: {
                head2 = concatenate(head2, head1);
                break;
            }
        case 7: {
                display(head2);
                break;
```