WAP to Implement Single Link List to simulate Stack & Queue Operations.

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

/* Node structure */
struct node {
   int data;
   struct node *next;
};

/* Global pointers */
struct node *top = NULL;     // for Stack
struct node *front = NULL;   // for Queue
struct node *rear = NULL;    // for Queue

/* ---------- STACK OPERATIONS ---------- */
void push(int x) {
   struct node *newnode = (struct node *)malloc(sizeof(struct node));
   newnode->data = x;
   newnode->next = top;
   top = newnode;
   printf("Pushed %d into Stack\n", x);
}

void pop() {
   if (top == NULL) {
      printf("Stack Underflow\n");
      return;
```

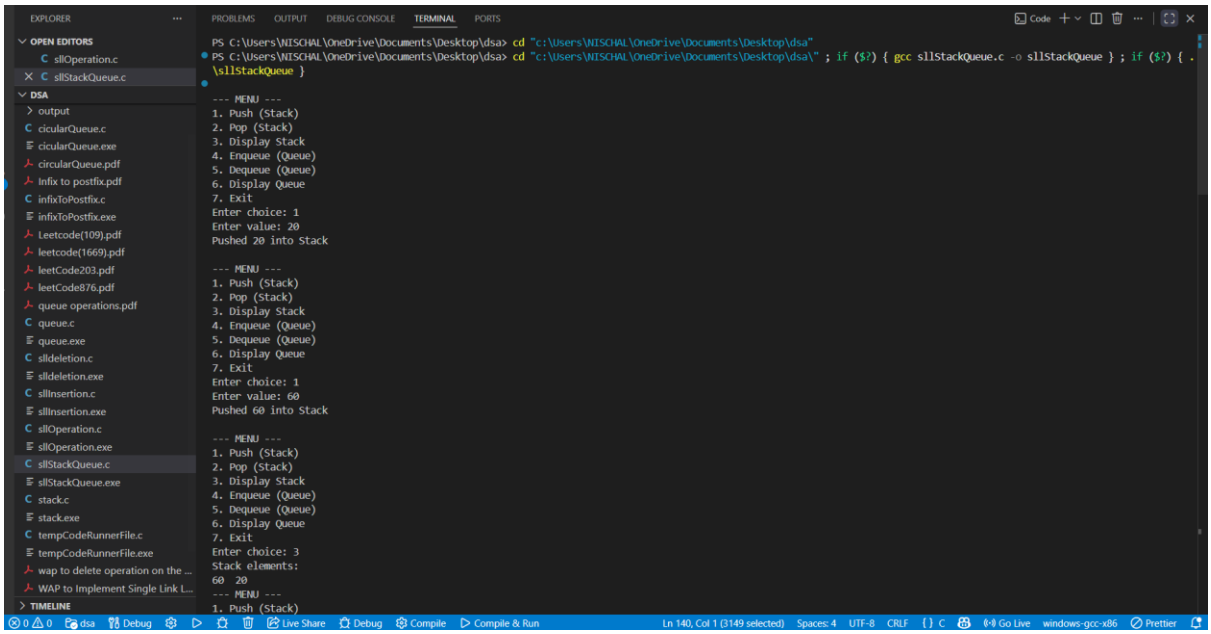
```
    }
    struct node *temp = top;
    printf("Popped %d from Stack\n", temp->data);
    top = top->next;
    free(temp);
}

void displayStack() {
    struct node *temp = top;
    if (temp == NULL) {
        printf("Stack is Empty\n");
        return;
    }
    printf("Stack elements:\n");
    while (temp != NULL) {
        printf("%d  ", temp->data);
        temp = temp->next;
    }

}

/* ---------- QUEUE OPERATIONS ---------- */
void enqueue(int x) {
    struct node *newnode = (struct node *)malloc(sizeof(struct node));
    newnode->data = x;
    newnode->next = NULL;

    if (rear == NULL) {
        front = rear = newnode;
```

```
    } else {
        rear->next = newnode;
        rear = newnode;
    }
    printf("Enqueued %d into Queue\n", x);
}

void dequeue() {
    if (front == NULL) {
        printf("Queue Underflow\n");
        return;
    }
    struct node *temp = front;
    printf("Dequeued %d from Queue\n", temp->data);
    front = front->next;

    if (front == NULL)
        rear = NULL;

    free(temp);
}

void displayQueue() {
    struct node *temp = front;
    if (temp == NULL) {
        printf("Queue is Empty\n");
        return;
    }
    printf("Queue elements:\n");
```

```
    while (temp != NULL) {
        printf("%d   ", temp->data);
        temp = temp->next;
    }

}

/* ---------- MAIN FUNCTION ---------- */
int main() {
    int choice, value;

    while (1) {
        printf("\n--- MENU ---\n");
        printf("1. Push (Stack)\n");
        printf("2. Pop (Stack)\n");
        printf("3. Display Stack\n");
        printf("4. Enqueue (Queue)\n");
        printf("5. Dequeue (Queue)\n");
        printf("6. Display Queue\n");
        printf("7. Exit\n");
        printf("Enter choice: ");
        scanf("%d", &choice);

        switch (choice) {
        case 1:
            printf("Enter value: ");
            scanf("%d", &value);
            push(value);
            break;
```

```
        case 2:
            pop();
            break;
        case 3:
            displayStack();
            break;
        case 4:
            printf("Enter value: ");
            scanf("%d", &value);
            enqueue(value);
            break;
        case 5:
            dequeue();
            break;
        case 6:
            displayQueue();
            break;
        case 7:
            exit(0);
        default:
            printf("Invalid Choice\n");
        }
    }
    return 0;
}
```

OUTPUT:


EXPLORER
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
OPEN EDITORS
sllOperation.c
sllStackQueue.c
DSA
output
cicularQueue.c
cicularQueue.exe
circularQueue.pdf
Infix to postfix.pdf
infixToPostfix.c
infixToPostfix.exe
Leetcode(109).pdf
leetcode(1669).pdf
leetCode203.pdf
leetCode876.pdf
queue operations.pdf
queue.c
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slldeletion.c
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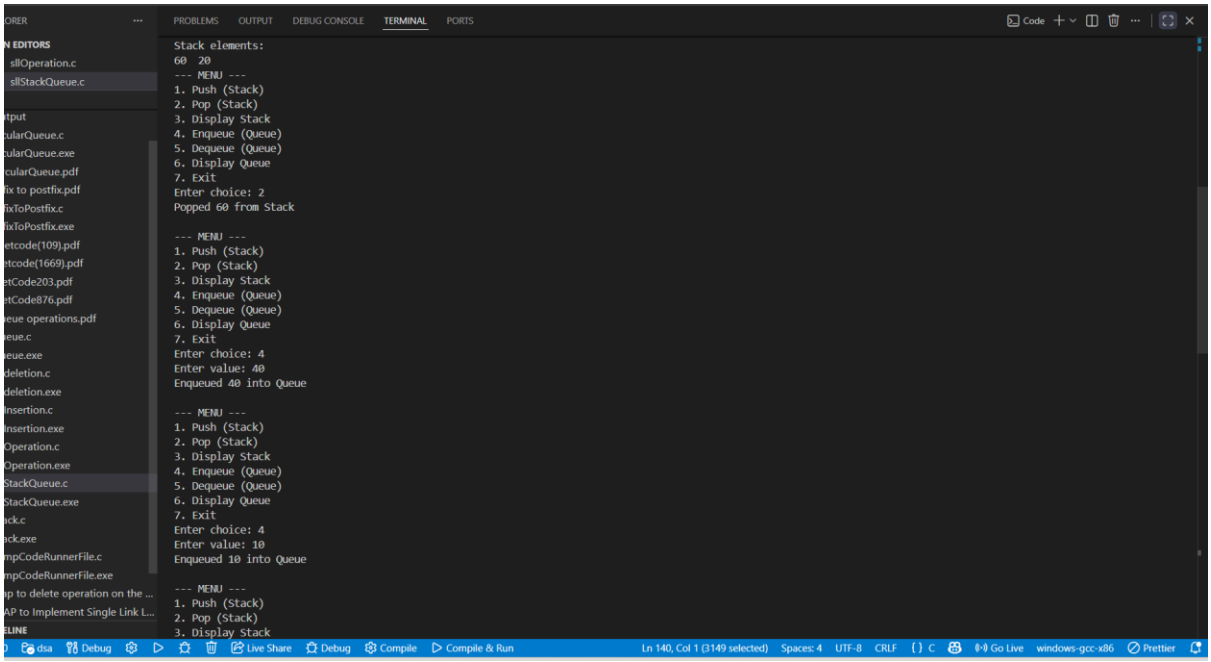
stack.c
stack.exe
tempCodeRunnerFile.c
tempCodeRunnerFile.exe
wap to delete operation on the ...
WAP to Implement Single Link L...
TIMELINE
PS C:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa> cd "c:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa"
PS C:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa> cd "c:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa\" ; if ($?) { gcc sllStackQueue.c -o sllStackQueue } ; if ($?) { .
\sllStackQueue }
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Enter choice: 1
Enter value: 20
Pushed 20 into Stack
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Enter choice: 1
Enter value: 60
Pushed 60 into Stack
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Enter choice: 3
Stack elements:
60 20
--- MENU ---
1. Push (Stack)
dsa Debug Live Share Debug Compile Compile & Run
Ln 140, Col 1 (3149 selected) Spaces: 4 UTF-8 CRLF C Go Live windows-gcc-x86 Prettier


PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Stack elements:
60 20
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Enter choice: 2
Popped 60 from Stack
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Enter choice: 4
Enter value: 40
Enqueued 40 into Queue
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Enter choice: 4
Enter value: 10
Enqueued 10 into Queue
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
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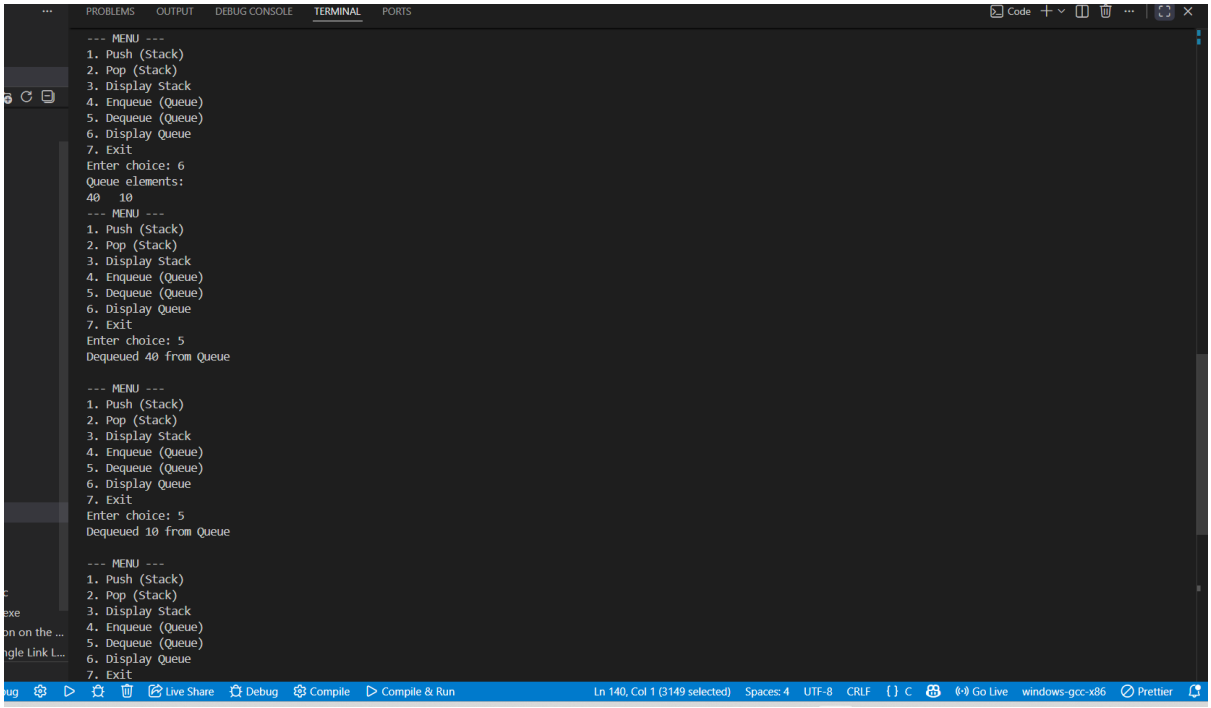
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
Code
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Enter choice: 6
Queue elements:
40 10
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Enter choice: 5
Dequeued 40 from Queue
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Enter choice: 5
Dequeued 10 from Queue
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Live Share
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Compile
Compile & Run
Ln 140, Col 1 (3149 selected)
Spaces: 4
UTF-8
CRLF
C
Go Live
windows-gcc-x86
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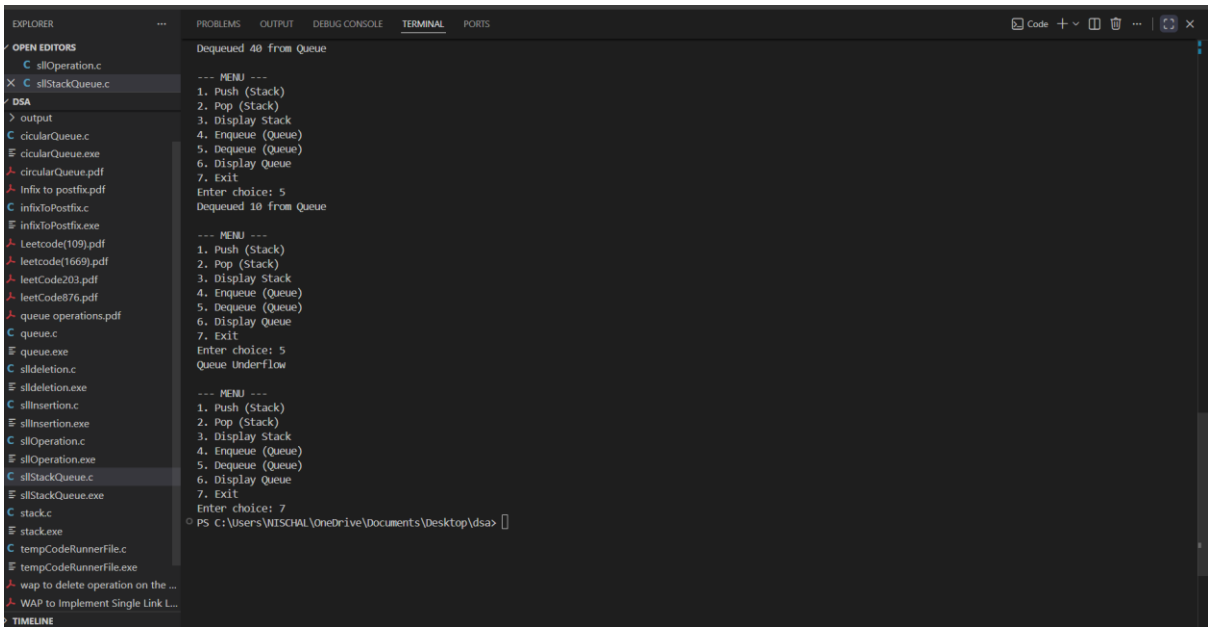
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WAP to Implement Single Link L...
TIMELINE
PROBLEMS
OUTPUT
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PORTS
Code
Dequeued 40 from Queue
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Enter choice: 5
Dequeued 10 from Queue
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Enter choice: 5
Queue Underflow
--- MENU ---
1. Push (Stack)
2. Pop (Stack)
3. Display Stack
4. Enqueue (Queue)
5. Dequeue (Queue)
6. Display Queue
7. Exit
Enter choice: 7
PS C:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa>