

Chat Message

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

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

```
#define MAX 10 // Maximum 10 messages
```

```
// Stack structure
```

```
typedef struct {
```

```
    char messages[MAX][50];
```

```
    int top;
```

```
} Stack;
```

```
// Initialize stack
```

```
void initStack(Stack *s) {
```

```
    s->top = -1;
```

```
}
```

```
// Check if empty
```

```
int isEmpty(Stack *s) {
```

```
    if (s->top == -1)
```

```
        return 1;
```

```
    else
```

```
        return 0;
    }
```

```
// Check if full
```

```
int isFull(Stack *s) {
    if (s->top == MAX - 1)
        return 1;
    else
        return 0;
}
```

```
// PUSH - Add message to stack
```

```
void push(Stack *s, char message[]) {
    if (isFull(s)) {
        printf("\nChat is FULL!\n");
        return;
    }

    s->top = s->top + 1;
    strcpy(s->messages[s->top], message);
    printf("Message sent: %s\n", message);
}
```

// POP - Remove message from stack

```
void pop(Stack *s) {
```

```
    if (isEmpty(s)) {
```

```
        printf("\nChat is EMPTY!\n");
```

```
        return;
```

```
    }
```

```
    printf("Deleted message: %s\n", s->messages[s->top]);
```

```
    s->top = s->top - 1;
```

```
}
```

// PEEK - View latest message without removing

```
void peek(Stack *s) {
```

```
    if (isEmpty(s)) {
```

```
        printf("\nNo messages in chat!\n");
```

```
        return;
```

```
    }
```

```
    printf("\nLatest message: %s\n", s->messages[s->top]);
```

```
}
```

// Display all messages

```
void display(Stack *s) {
```

```
if (isEmpty(s)) {  
    printf("\nChat is empty!\n");  
    return;  
}  
  
printf("\n--- CHAT HISTORY ---\n");  
for (int i = s->top; i >= 0; i--) {  
    printf("%d. %s\n", s->top - i + 1, s->messages[i]);  
}  
printf("Total messages: %d\n", s->top + 1);  
}
```

// Main function

```
int main() {  
    Stack chat;  
    initStack(&chat);  
  
    int choice;  
    char message[50];  
  
    printf("\n*** CHAT MESSAGE STACK ***\n");  
  
    while (1) {
```

```
printf("\n--- MENU ---\n");
printf("1. Send Message (Push)\n");
printf("2. Delete Last Message (Pop)\n");
printf("3. View Latest Message (Peek)\n");
printf("4. Display All Messages\n");
printf("5. Exit\n");
printf("\nEnter choice: ");
scanf("%d", &choice);

if (choice == 1) {
    printf("\nEnter message: ");
    scanf(" %[^\n]", message);
    push(&chat, message);
}
else if (choice == 2) {
    pop(&chat);
}
else if (choice == 3) {
    peek(&chat);
}
else if (choice == 4) {
    display(&chat);
}
```

```
    else if (choice == 5) {  
        printf("\nGoodbye!\n");  
        break;  
    }  
    else {  
        printf("\nInvalid choice!\n");  
    }  
}  
  
return 0;  
}
```