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Library Book Return Counter using Stack

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

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

```
#define MAX 10
```

```
char stack[MAX][50];
```

```
int top = -1;
```

```
void push(char book[]) {
```

```
    if (top == MAX - 1)
```

```
        printf("Shelf is full! Cannot add more books.\n");
```

```
    else {
```

```
        strcpy(stack[++top], book);
```

```
        printf("Book returned: %s\n", book);
```

```
    }
```

```
}
```

```
void pop() {
```

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

```
        printf("No books to re-shelve!\n");
```

```
    else {
```

```

        printf("Re-shelving book: %s\n", stack[top--]);
    }
}

void peek() {
    if (top == -1)
        printf("No books in the pile.\n");
    else
        printf("Top book waiting: %s\n", stack[top]);
}

void display() {
    if (top == -1)
        printf("No books in the return pile.\n");
    else {
        printf("\n Books at the Return Counter (Top to Bottom):\n");
        for (int i = top; i >= 0; i--)
            printf(" %d. %s\n", i + 1, stack[i]);
        printf("-----\n");
    }
}

int main() {
    int choice;
    char book[50];

```

```
printf(" Library Book Return Counter Simulation using Stack\n");
```

```
while (1) {
```

```
    printf("\n1. Return a Book\n2. Re-shelve Top Book\n3. View Top Book\n4. Display All Returned Books\n5. Exit\n");
```

```
    printf("Enter your choice: ");
```

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

```
    getchar(); // consume newline
```

```
    switch (choice) {
```

```
        case 1:
```

```
            printf("Enter book title: ");
```

```
            gets(book);
```

```
            push(book);
```

```
            break;
```

```
        case 2:
```

```
            pop();
```

```
            break;
```

```
        case 3:
```

```
            peek();
```

```
            break;
```

```
        case 4:
```

```
            display();
```

```
        break;
    case 5:
        printf("Exiting Library Simulation.\n");
        return 0;
    default:
        printf("Invalid choice! Try again.\n");
    }
}
}
```

Application:-

At a library return counter:

- When people return books, the most recently returned book stays on top of the pile.
- When the librarian picks up books to re-shelve, they take from the top — following LIFO (Last In, First Out) order.