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C Program to Implement Stack Operations Using Array

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C Program to implement Stack Operations Using Stack

Program for implementing a stack using arrays.It involves various operations such as push,pop,stack empty,stack full and display.

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

#define size 5
struct stack {
    int s[size];
    int top;
} st;

int stfull() {
    if (st.top >= size - 1)
        return 1;
    else
        return 0;
}

void push(int item) {
    st.top++;
    st.s[st.top] = item;
}

int stempty() {
    if (st.top == -1)
        return 1;
    else
        return 0;
}

int pop() {
    int item;
    item = st.s[st.top];
    st.top--;
    return (item);
}


void display() {
    int i;
    if (stempty())
        printf("\nStack Is Empty!");
    else {
        for (i = st.top; i >= 0; i--)
            printf("\n%d", st.s[i]);
    }
}
```

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```
}

int main() {
    int item, choice;
    char ans;
    st.top = -1;

    printf("\n\tImplementation Of Stack");
    do {
        printf("\nMain Menu");
        printf("\n1.Push \n2.Pop \n3.Display \n4.exit");
        printf("\nEnter Your Choice");
        scanf("%d", &choice);
        switch (choice) {
        case 1:
            printf("\nEnter The item to be pushed");
            scanf("%d", &item);
            if (stfull())
                printf("\nStack is Full!");
            else
                push(item);
            break;
        case 2:
            if (stempty())
                printf("\nEmpty stack!Underflow !!");
            else {
                item = pop();
                printf("\nThe popped element is %d", item);
            }
            break;
        case 3:
            display();
            break;
        case 4:
            exit(0);
        }
        printf("\nDo You want To Continue?");
        ans = getche();
    } while (ans == 'Y' || ans == 'y');

    return 0;
}
```

Explanation of the C Porgram : Stack Using Array

Step 1 : Declare One Stack Structure

```
#define size 5

struct stack
{
    int s[size];
    int top;
}st;
```

1. We have created 'stack' structure.

2. We have array of elements having size 'size'

3. To keep track of Topmost element we have declared top as structure member.

Step 2 : Push/Pop Operation

While pushing remember one thing in mind that we are incrementing the top and then adding element. and while removing or poping the element, we are firstly removing the element and then decrementing the top.

```
void push(int item) {
    st.top++;
    st.s[st.top] =item;
}
```

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