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/*Stack demonstration in C
   Bhargav Andhe A-03*/
#include <stdio.h>
#include <stdlib.h>
#define LEN 5

int stack[LEN];
int top=-1;

void display(){
    int i;
    printf("\nCurrent Stack status: \n");
    for (i = 0; i ≤ top; i++) printf("%d ", stack[i]);
    printf("\n");
}

void pop(){
    if (top == -1) printf("\nUnderflow, Cannot pop!\n");
    else {
        printf("\nRemoved %d from stack!\n", stack[top]);
        stack[top] = 0;
        top -= 1;
        display();
    }
}

void push(){
    int e;
    if (top ≥ LEN-1) printf("\nOverflow, Cannot push!\n");
    else {
        printf("\nEnter an element to be inserted: ");
        scanf("%d", &e);
        stack[top+1] = e;
        top += 1;
    }
}
```

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        printf("\nInserted %d to stack!", e);
        display();
    }
}
```

```
void main(){
    int ch;
    printf("Max length of stack = %d", LEN);

    while (1){
        printf("\nTop = %d\n", top);
        printf("\n1. POP\n2. Push\n3. Display\n4. Quit\n");
        printf("Enter Choice : ");
        scanf("%d", &ch);

        switch (ch){
            case 1:
                pop();
                break;
            case 2:
                push();
                break;
            case 3:
                display();
                break;
            case 4:
                exit(0);
                break;
            default:
                printf("\nInvalid choice, Please try again!\n");
                break;
        }
    }
}
```

Output:

```
bhargav@ubuntu: ~/Documents/Studies/C
bhargav@ubuntu:~/Documents/Studies/C$ ./stack
Max length of stack = 5
Top = -1

1. POP
2. Push
3. Display
4. Quit
Enter Choice : 2

Enter an element to be inserted: 8

Inserted 8 to stack!
Current Stack status:
8

Top = 0

1. POP
2. Push
3. Display
4. Quit
Enter Choice : 2

Enter an element to be inserted: 9

Inserted 9 to stack!
Current Stack status:
8 9

Top = 1

1. POP
2. Push
3. Display
4. Quit
Enter Choice : 1

Removed 9 from stack!

Current Stack status:
8

Top = 0

1. POP
2. Push
3. Display
4. Quit
Enter Choice : 1

Removed 8 from stack!

Current Stack status:
```

```
bhargav@ubuntu: ~/Documents/Studies/C
2. Push
3. Display
4. Quit
Enter Choice : 1

Removed 3 from stack!

Current Stack status:

Top = -1

1. POP
2. Push
3. Display
4. Quit
Enter Choice : 1

Underflow, Cannot pop!

Top = -1

1. POP
2. Push
```

```
bhargav@ubuntu: ~/Documents/Studies/C
3. Display
4. Quit
Enter Choice : 2

Enter an element to be inserted: 1

Inserted 1 to stack!
Current Stack status:
3 4 6 5 1

Top = 4

1. POP
2. Push
3. Display
4. Quit
Enter Choice : 2

Overflow, Cannot push!

Top = 4

1. POP
2. Push
```

```
bhargav@ubuntu: ~/Documents/Studies/C
Enter an element to be inserted: 7

Inserted 7 to stack!
Current Stack status:
4 6 7

Top = 2

1. POP
2. Push
3. Display
4. Quit
Enter Choice : 3

Current Stack status:
4 6 7

Top = 2

1. POP
2. Push
3. Display
4. Quit
Enter Choice : █
```

```
bhargav@ubuntu: ~/Documents/Studies/C

Inserted 7 to stack!
Current Stack status:
4 6 7

Top = 2

1. POP
2. Push
3. Display
4. Quit
Enter Choice : 3

Current Stack status:
4 6 7

Top = 2

1. POP
2. Push
3. Display
4. Quit
Enter Choice : 4
bhargav@ubuntu:~/Documents/Studies/C$ █
```