Program - 04
Title :   Write a Program to Implement Stack Operations by using Array.

Code:

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

#define MAX_SIZE 100

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

void push(int value) {
    if (top == MAX_SIZE - 1) {
        printf("Stack overflow!\n");
        return;
    }
    stack[++top] = value;
}

int pop() {
    if (top == -1) {
        printf("Stack underflow!\n");
        return -1;
    }
    return stack[top--];
}

int peek() {
    if (top == -1) {
        printf("Stack is empty!\n");
        return -1;
    }
    return stack[top];
}

void display() {
    if (top == -1) {
        printf("Stack is empty!\n");
        return;
    }
    printf("Stack: ");
    for (int i = top; i >= 0; i--) {
        printf("%d ", stack[i]);
    }
    printf("\n");
}

int main() {
    int choice, value;

    do {
        printf("\n\nStack Operations\n");
        printf("1. Push\n");
        printf("2. Pop\n");
        printf("3. Peek\n");
        printf("4. Display\n");
```

```c
        printf("5. Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);

        switch(choice) {
            case 1:
                printf("Enter the value to push: ");
                scanf("%d", &value);
                push(value);
                break;
            case 2:
                value = pop();
                if (value != -1) {
                    printf("Popped value: %d\n", value);
                }
                break;
            case 3:
                value = peek();
                if (value != -1) {
                    printf("Top value: %d\n", value);
                }
                break;
            case 4:
                display();
                break;
            case 5:
                printf("Exiting...\n");
                exit(0);
            default:
                printf("Invalid choice!\n");
        }
    } while (1);

    return 0;
}
```

Output :

Push	Pop	Peek

```
Stack Operations
1. Push
2. Pop
3. Peek
4. Display
5. Exit
Enter your choice: 1
Enter the value to push: 3

Stack Operations
1. Push
2. Pop
3. Peek
4. Display
5. Exit
Enter your choice: 1
Enter the value to push: 8

Stack Operations
1. Push
2. Pop
3. Peek
4. Display
5. Exit
Enter your choice: 4
Stack: 8 3
```

```
Stack: 8 3

Stack Operations
1. Push
2. Pop
3. Peek
4. Display
5. Exit
Enter your choice: 2
Popped value: 8

Stack Operations
1. Push
2. Pop
3. Peek
4. Display
5. Exit
Enter your choice: 4
Stack: 3
```

```
Stack Operations
1. Push
2. Pop
3. Peek
4. Display
5. Exit
Enter your choice: 3
Top value: 3
```

Date : ___/____/_____   Teacher Sign …………………………………………………