PROGRAM 1

Write a program to simulate the working of stack using an array with the following : a) Push b) Pop c) Display.
The program should print appropriate messages for stack overflow, stack underflow -

```c
#include <stdio.h>
#include <stdlib.h>
#define MAX 3

int top = -1, stack[MAX];
void push();
void pop();
void display();

int main()
{
    int ch;

    while (1)
    {
        printf("\n1.Push\n2.Pop\n3.Display\n4.Exit");
        printf("\n\nEnter your choice(1-4):");
        scanf("%d", &ch);

        switch (ch)
        {
        case 1:
            push();
            break;
        case 2:
            pop();
            break;
        case 3:
            display();
            break;
        case 4:
            exit(0);

        default:
            printf("\nWrong Choice!!");
        }
    }
```

```c
    return 0;
}

void push()
{
    int val;

    if (top == MAX - 1)
    {
        printf("\nStack overflow!!");
    }
    else
    {
        printf("\nEnter element to push:");
        scanf("%d", &val);
        top = top + 1;
        stack[top] = val;
    }
}

void pop()
{
    if (top == -1)
    {
        printf("\nStack underflow!!");
    }
    else
    {
        printf("\nPopped element is %d", stack[top]);
        top = top - 1;
    }
}

void display()
{
    int i;

    if (top == -1)
    {
        printf("\nStack is empty!!");
    }
    else
    {
        printf("\nStack is...\n");
        for (i = top; i >= 0; --i)
            printf("%d\n", stack[i]);
```

```
    }
}
```

Output –

```
1.Push
2.Pop
3.Display
4.Exit

Enter your choice(1-4):1

Enter element to push:7

1.Push
2.Pop
3.Display
4.Exit

Enter your choice(1-4):1

Enter element to push:3

1.Push
2.Pop
3.Display
4.Exit

Enter your choice(1-4):1

Enter element to push:0

1.Push
2.Pop
3.Display
4.Exit

Enter your choice(1-4):2
1.Push
2.Pop
3.Display
4.Exit

Enter your choice(1-4):3

Stack is...
3
7

1.Push
2.Pop
3.Display
4.Exit

Enter your choice(1-4):4

...Program finished with exit code 0
Press ENTER to exit console.
```