Program 1

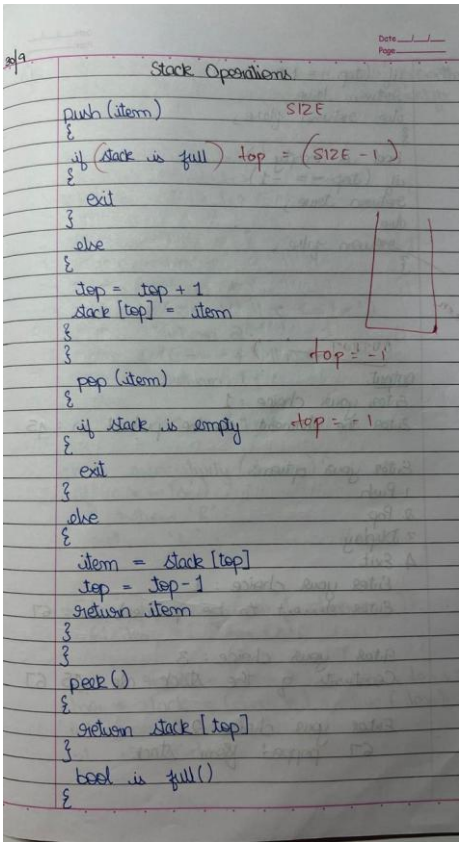
Write a program to simulate the working of stack using an array with the following:
a) Push
b) Pop
c) Display
The program should print appropriate messages for stack overflow, stack underflow

Code:

```
#include<stdio.h>
#include<stdlib.h>
#define size 5

int top=-1;
int stack[size];
int item;

void push(){
   if(top==size-1){
      printf("Stack Overload\n");
   }
   else{
      top+=1;
      stack[top]=item;
   }
}

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

void display(){
   if(top==-1){
      printf("Stack is empty!");
   }
   else{
      printf("Content of the stacks:");
      for(int i=0;i<=top;i++){
         printf("%d ",stack[i]);
      }printf("\n");
   }
}

void main(){
```

```
    int choice;
    while(1){
        printf("Enter your options:\n");
        printf("1.Push\n2.Pop\n3.Display\n4.Exit\n");
        printf("Enter your choice:");
        scanf("%d",&choice);
        switch(choice){
            case 1:printf("Enter the element to be pushed in:");scanf("%d",&item);push();break;
            case 2:if(top==-1){
                printf("stack is empty!\n");
            }else{
                printf("%d popped from stack\n", stack[top]);
            }
            pop();
            break;
            case 3:display();
            break;
            case 4:exit(0);
        }
    }
}
```

```
Enter your choice:1
Enter the element to be pushed in:45
Enter your options:
1.Push
2.Pop
3.Display
4.Exit
Enter your choice:1
Enter the element to be pushed in:67
Enter your options:
1.Push
2.Pop
3.Display
4.Exit
Enter your choice:3
Content of the stacks:45 67
Enter your options:
1.Push
2.Pop
3.Display
4.Exit
Enter your choice:2
67 popped from stack
Enter your options:
1.Push
2.Pop
3.Display
4.Exit
Enter your choice:
```



```
if (top == MAXSIZE)
return true;
else return false;
}
bool is empty ():
if (top == -1)
return true;
else
return false;
}
```

OUTPUT :

Output

Enter your choice : 1
Enter the element to be pushed in : 45

Enter your options
1. Push
2. Pop
3. Display
4. Exit
Enter your choice : 1
Enter element to be pushed in : 67

Enter your choice : 3
Contents of the stack are 45 67

Enter your choice: 2
67 popped from stack