1) #Write a program to simulate the working of stack using an array with the follow
a. PUSH b. POP . display
The program should print appropriate mes
-ages for stack overflow and underflo

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

int top=-1;
int S[STACK_SIZE];
int item;

void PUSH(){
 if (top == STACK_SIZE -1) {
   Printf ("stack  Overflow\n");
    return;
  }
  top = top+1;
  S[top] = item;
}
int POP()
 {
  if (top == -1) {
   return -1;
  }
  return S[top--];
}
 void  display()
  {
    if (top == -1 ) {
    Printf ("Stack is Empty\n");
     return;
    }
```

```
Printf("Contents of the stack:\n");
for(int i =0; i<=top; i++)
 {
  printf("%d\n",s[i]);
 }
}
 int main()
  {
  int item_deleted;
      int choice;
  for(;;)
   {
    Printf ("\n1: Push\n2: Pop\n3: Display\n
    Exit\n");
    printf ("Enter your choice:");
    scanf("%d", &choice);

    switch(choice)
     {
     case 1:
        printf ("Enter the item to be inser
        scanf("%d", &item);
        push();
        break;
      case 2:
        item_deleted = pop();
        if (item_deleted == -1)
          {
            printf ("stack is empty\n");
          }
          else {
            printf ("Item deleted is %d\n",
                  Item_deleted); }
```

```
        break;
    case 3:
        display();
        break;
    case 4:
        exit(0);
    default;
        printf("Invalid Choice. Please try again.\n");
    }
}
return 0;
}
```

Seen

output

```
1. Push  2. Pop  3: display  4. Exit
Enter your choice: 1
Enter the item to be inserted: 23
Enter your choice: 2
Item deleteded is 23
Enter your choice: 3
23, 23
Enter your choice: 3
Stack is Empty
Enter your choice: 2
Stack underflow, Stack is empty
Enter your choice:
1, 1, 1, 1,
Enter your choice: 1
Stack is overflow
```

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