



Name _____ Std _____ Sec _____

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CAD PROGRAM 1:

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Write a program to simulate the working of stack using an array with the following

- a) Push
- b) Pop
- c) ~~Display~~ : (top) of stack = n+1;

The program should print appropriate messages for stack overflow, stack underflow.

```
= #include <stdio.h>
# define n 5
int stack[5];
int top = -1; /* overflow */
void push() {
    if (top == n-1) {
        printf("overflow");
    } else {
        printf("enter data: ");
        if (scanf("%d", &x) != 1) {
            printf("incorrect input");
        } else {
            top++;
            stack[top] = x;
            printf("Value entered: ");
            for (int i = top; i >= 0; i--) {
                printf("%d", stack[i]);
            }
            printf("\n");
        }
    }
}
void pop() {
    if (top <= -1) {
        printf("underflow");
    } else {
        printf("item deleted: ");
        top--;
    }
}
```

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output :

```

for (top = -1; { (initial value of top)
    printf("underflow"); // if other values are
}                                // just CP
else {
    item = stack[top];           // top + 1 = 0
    for (i = 0; i < top; i++) {   // for (i = 0; i < top; i++)
        printf("%d", item);      // printf("%d", stack[i]);
    }
}
}

void peek() {
    if (top == -1) {
        printf("underflow");
    } else {
        printf("%d", stack[top]);
    }
}

int main() {
    int ch;
    while (1) { // for (1)
        printf("Enter the function to perform: ");
        scanf("%d", &ch);
        switch (ch) {
            case 1: push(); break;
            case 2: { // if (ch == 2)
                pop();
            }
            case 3: peek(); break;
            case 4: return 0;
            default: { // if (ch != 1, 2, 3)
                printf("Enter value in range");
            }
        }
    }
}

```

output: enter the function to perform : 1

enter data : 1

Value entered : 1

enter the function to perform : 1

enter data : 2

Value entered : 2 1

enter the function to perform : 1

enter data

~~Value entered : 3~~

Value entered : 3 2 1

enter the function to perform : 2

~~Popped: 3~~

enter the function to perform : 1

enter data : 4

Value entered : 4 2 1

enter the function to perform : 4

↓
29/09