STACK PROGRAM IN C

We shall see the stack implementation in C programming language here. You can try the program by clicking on the Try-it button. To learn the theory aspect of stacks, click on visit previous page.

Implementation in C

```c
#include <stdio.h>

int MAXSIZE = 8;
int stack[8];
int top = -1;

int isempty() {

   if(top == -1)
      return 1;
   else
      return 0;
}

int isfull() {

   if(top == MAXSIZE)
      return 1;
   else
      return 0;
}

int peek() {
   return stack[top];
}


int pop() {
   int data;

   if(!isempty()) {
      data = stack[top];
      top = top - 1;
      return data;
   }else {
      printf("Could not retrieve data, Stack is empty.\n");
   }
}

int push(int data) {

   if(!isfull()) {
      top = top + 1;
      stack[top] = data;
   }else {
      printf("Could not insert data, Stack is full.\n");
   }
}

int main() {
   // push items on to the stack
   push(3);
   push(5);
   push(9);
   push(1);
   push(12);
   push(15);
```

```c
      printf("Element at top of the stack: %d\n" ,peek());
      printf("Elements: \n");

      // print stack data
      while(!isempty()) {
         int data = pop();
         printf("%d\n",data);
      }

      printf("Stack full: %s\n" , isfull()?"true":"false");
      printf("Stack empty: %s\n" , isempty()?"true":"false");

      return 0;
}
```

Output

Output of the program is as follows −

```
Element at top of the stack: 15
Elements:
15
12
1
9
5
3
Stack full: false
Stack empty: true
```