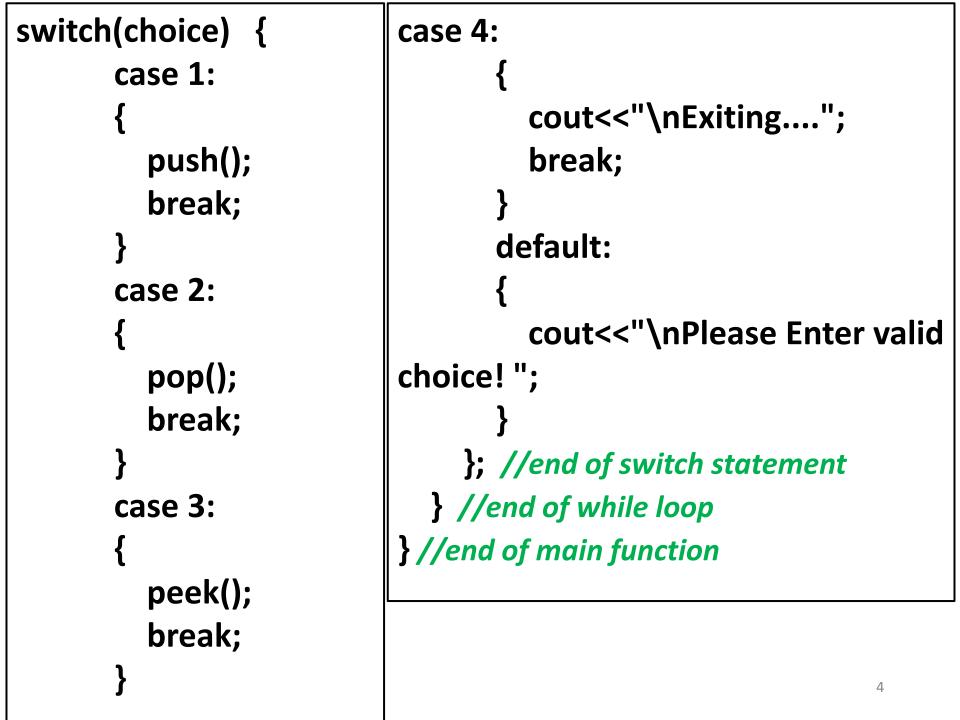
## Stack implementation using Array

```
Enter the number of elements in the stack: 5
       ****** Stack operations using Array ******
       Choose one from the following options...
       1.Push
       2.Pop
       3.Show
       4.Exit
Enter your choice: 1
Enter the value: 22
The Item is Pushed!
       Choose one from the following options...
       1.Push
       2.Pop
       3.Show
       4.Exit
Enter your choice:
```

```
// Array Based Stack implementation in C++
#include <iostream>
#include <stdlib.h>
using namespace std;
//public variable declaration
int stack[100],i,choice=0,n,top=-1;
//Function declaration
bool isempty();
bool isfull();
void push();
void pop();
void peek();
```

```
//main function definition
int main ()
  cout<<"Enter the number of elements in the stack: ";
  cin>>n;
  cout<<"\n\t******* Stack operations using Array
********
   cout<<"\n\t-----
  while(choice != 4)
    cout<<"\n\tChoose one from the following
options...\n";
    cout<<"\n\t1.Push\n\t2.Pop\n\t3.Show\n\t4.Exit";
    cout<<"\n\nEnter your choice: ";</pre>
    cin>>choice;
```



```
//isempty function definition
bool isempty()
   if(top==-1)
      return true;
   else
      return false;
```

```
//isfull function definition
bool isfull()
   if(top==n-1)
       return true;
   else
      return false;
```

```
//push function definition
void push()
  int val;
  if (isfull()) {
       cout<<"\nOverflow! The Stack is Full";
  else
    cout<<"Enter the value: ";
    cin>>val;
    top = top +1;
    stack[top] = val;
       cout<<"\nThe Item is Pushed!";</pre>
```

## //pop function definition void pop() if(isempty()) cout<<"\nUnderflow! The Stack is Empty!";</pre> else top = top -1;cout<<"\nltem Popped!";</pre>

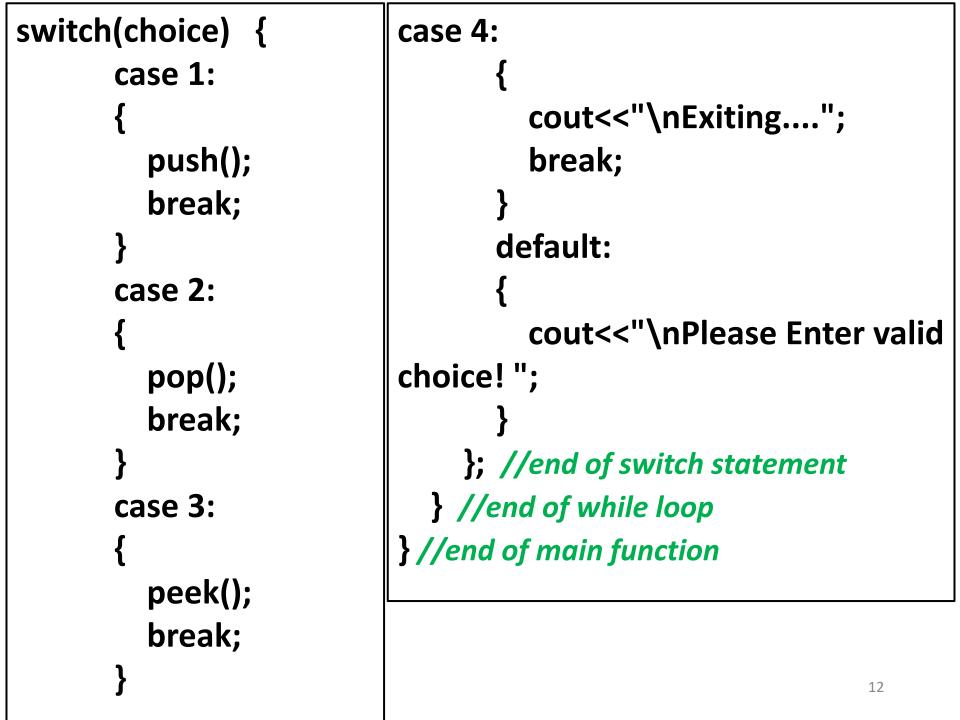
## //Peek function definition void peek() if(isempty()) cout<<"\nUnderflow! The Stack is Empty"; else cout<<"\nList of Elements in the Stack: "; for (i=top;i>=0;i--) cout<<stack[i]<<" ";</pre>

## Stack implementation using Linked List

```
******* Stack operations using Linked List *******
        Choose one from the following options...
        1.Push
        2.Pop
       3.Display
       4. Exit
Enter your choice: 1
Enter the data: 22
The Item is Pushed!
        Choose one from the following options...
        1.Push
        2.Pop
        3.Display
       4.Exit
Enter your choice:
```

```
//Linked List Based Stack implementation in C++
#include <iostream>
#include <stdlib.h>
using namespace std;
//Function declaration
void push();
void pop();
void peek();
//Node Creation
struct node {
   int val;
   struct node *next;
};
struct node *head = NULL;
```

```
//main function definition
int main ()
  int choice = 0;
  cout<<"\n\t******* Stack operations using Linked List
********
  cout<<"\n\t-----\n";
while(choice != 4)
    cout<<"\n\tChoose one from the following
options...\n";
    cout<<"\n\t1.Push\n\t2.Pop\n\t3.Show\n\t4.Exit";
    cout<<"\n\nEnter your choice: ";
    cin>>choice;
```



```
//push function definition
void push ()
  int data;
  struct node *ptr = (struct node*)malloc(sizeof(struct node));
  if(ptr == NULL)
    cout<<"\nSorry!, Not able to push the element";
  else
    cout<<"\nEnter the data: ";
    cin>>data;
```

```
if(head==NULL)
       ptr->val = data;
       ptr -> next = NULL;
       head=ptr;
    else
       ptr->val = data;
       ptr->next = head;
       head=ptr;
    cout<<"\nThe Item is Pushed! \n";
  \ //end of the first 'else' statement
} //end of push function
```

```
//pop function definition
void pop() {
  int item;
  struct node *ptr;
  if(head==NULL) {
   cout<<"\nUnderflow! The Stack is Empty";</pre>
  else
    item = head->val;
    ptr = head;
    head = head->next;
    delete ptr;
    cout<<"\nltem popped\n";</pre>
```

```
//Peek function definition
void peek() {
  int i;
  struct node *ptr;
  ptr=head;
  if(ptr==NULL) {
    cout<<"\nUnderflow! The Stack is Empty";
  else
     cout<<"\nList of Stack Elements: ";</pre>
     while(ptr!=NULL)
       cout<<ptr>>val<<" ";</pre>
       ptr = ptr->next;
```