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Roll No: 70 Semester: 3rd Sem.

Subject: Data structures and Algorithms.

Practical: 2 IMPLEMENTATION OF STACK ADT USING CLASS

CODE:

```
#include<iostream>

using namespace std;

class stack
{
    private :
    int top;
    int *ptr;
    int C;
    public:
    void createstack(int i)
    {
        ptr=(int*)malloc(i*sizeof(int));
        top=-1;
        C=i;

    }
    int isempty()
    { if(top==-1)
    {
        return 1 ;
    }
    else
```

```
return 0;
}
int isfull()
{
    if(top==C-1)
        return 1;
    else
        return 0;
}
void push(int i)
{
    if(isfull())
        cout<<"Stack overflow";
    else
        top++;
    ptr[top]=i;
}
int pop()
{
    if(isempty())
    {
        cout<<"Stack underflow";
        return 0;
    }
    else
    { top--;
      return ptr[top+1];

    }
}
```

```

    }

    void print()
    {
        for(int i=0;i<=top;i++)
        cout<<ptr[i]<<endl ;
    }

```

```
};
```

```
int main()
```

```
{
```

```
    stack s;
```

```
    bool flag=true ;
```

```
    cout<<"Press 1 to create an stack "<<endl ;
```

```
    cout<<"Press 2 to push element in stack "<<endl ;
```

```
    cout<<"Press 3 to pop element in tha array "<<endl ;
```

```
    cout<<"Press 4 to check that stack is full "<<endl ;
```

```
    cout<<"Press 5 check that stack is Empty"<<endl ;
```

```
    cout<<"Press 6 to print all element in tha stack "<<endl ;
```

```
    // cout<<"Press 7 to insert element in tha array "<<endl ;
```

```
    // cout<<" press 8 to show all elements of that array"<<endl;
```

```
    // cout<<" press 9 to sort"<<endl ;
```

```
    // cout<<" press 10 to sort"<<endl ;
```

```
    while(flag)
```

```
    {
```

```

        cout<<"Enter choice"<<endl ;
int choice;
cin>>choice;

switch(choice)
{ case 1:
    { int Ca;
        cout<<" Enter capacity of that stack "<<endl ;
cin>>Ca;
        s.createstack(Ca);
        cout<<"We Succesfully created an stack"<<endl ;
    }
break ;
case 2 :
{ int N,INDEX;

    cout<<" Enter element that has to be push ";
int i;
    cin>>i;
    s.push(i);
}
break ;
case 3:
{cout<<"Poped Element is:"<<s.pop()<<endl ;

}
break ;
case 4 :
```

```
{ int i=s.isfull();  
if(i==1)  
cout<<"Stack is Full";  
else  
cout<<" no space" ;  
  
}  
break ;  
case 5 :  
{int i=s.isempty();  
if(i==1)  
cout<<"Stack is Empty";  
else  
cout<<"space available " ;  
}  
break ;  
case 6 :  
{ s.print();  
}  
break ;  
case 7:  
{flag=false;  
}  
break ;  
default :  
{  
    cout<<" Enter valid choice";  
}  
}
```

```
}  
  
}
```

Output:



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main.cpp



Run

Output

```
121 cout<<"stack is Empty " ;  
122 else  
123 cout<<"space available " ;  
124 }  
125 break ;  
126 case 6 :  
127 { s.print();  
128 }  
129 break ;  
130 case 7:  
131 {flag=false;  
132 }  
133 break ;  
134 default :  
135 {  
136     cout<<" Enter valid choice";  
137 }  
138 }  
139  
140 }  
141 }  
142 }
```

/tmp/RQ41snqDhr.o

```
Press 1 to create an stack  
Press 2 to push element in stack  
Press 3 to pop element in tha array  
Press 4 to check that stack is full  
Press 5 check that stack is Empty  
Press 6 to print all element in tha stack  
Enter choice  
1  
Enter capacity of that stack  
5  
We Succesfully created an stack  
Enter choice  
|
```

