# Stack using Array

```c
#include <stdio.h>
#include <stdlib.h>

struct Stack
{
    int size;
    int top;
    int *S;
};

void create(struct Stack *st)
{
    printf("Enter Size");
    scanf("%d",&st->size);
    st->top=-1;
    st->S=(int *)malloc(st->size*sizeof(int));
}

void Display(struct Stack st)
{
    int i;
    for(i=st.top;i>=0;i--)
        printf("%d ",st.S[i]);
    printf("\n");

}

void push(struct Stack *st,int x)
{
    if(st->top==st->size-1)
        printf("Stack overflow\n");
    else
    {
        st->top++;
        st->S[st->top]=x;
    }
```

```
}

int pop(struct Stack *st)
{
    int x=-1;

    if(st->top==-1)
        printf("Stack Underflow\n");
    else
    {
        x=st->S[st->top--];
    }
    return x;
}

int peek(struct Stack st,int index)
{
    int x=-1;
    if(st.top-index+1<0)
        printf("Invalid Index \n");
    x=st.S[st.top-index+1];

    return x;
}

int isEmpty(struct Stack st)
{
    if(st.top==-1)
        return 1;
    return 0;
}

int isFull(struct Stack st)
{
    return st.top==st.size-1;
}

int stackTop(struct Stack st)
{
    if(!isEmpty(st))
```

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        return st.S[st.top];
    return -1;
}


int main()
{
    struct Stack st;
    create(&st);

    push(&st,10);
    push(&st,20);
    push(&st,30);
    push(&st,40);

    printf("%d \n",peek(st,2));


    Display(st);

    return 0;
}
```