

# Set-1

## STACKS & QUEUES using an Array



an array,

**PROGRAM** : To Implement the following operations on a Stack using

1 .PUSH,2.POP,3.PEEK,4.DISPLAY

```
#include <stdio.h>
#include<conio.h>
# define n 100
struct st
{
    int top;
    int stack[n];
};
struct st s;
void push();
void pop();
void peek();
void display();
void main()
{
    char choice;
    int option;
    s.top = -1;
```

```
do
{
    printf("1. PUSH\n");
    printf("2. POP\n");
    printf("3. PEEK\n");
    printf("4. DISPLAY\n");
    printf("ENTER OPTION\n");
    scanf ("%d",&option);

    switch (option)
    {
        case 1 : push();
            break;
        case 2 : pop();
            break;
        case 3 : peek();
            break;
        case 4 : display();
            break;
        default: printf("INVALID OPTION\n");
    }

    printf("PRESS 'Y' TO CONTINUE\n");
    choice = getch();
}

while ( choice == 'Y' || choice == 'y');
}

void push()
{
```

```
int x;

if (s.top == n-1)

    printf ("STACK OVERFLOW\n");

else

{
    printf("ENTER VALUE TO BE PUSHED\n");

    scanf ("%d",&x);

    s.top++;

    .stack[s.top] = x;

    printf("VALUE ADDED SUCCESSFULLY\n");

}

void pop()

{
    int x;

    if (s.top == -1)

        printf ("STACK UNDERFLOW\n");

    else

    {
        x = s.stack[s.top] ;

        printf("VALUE POPPED = %d\n",x);

        s.top--;

    }

}

void peek()

{
    int x;

    if (s.top == -1)

        printf ("STACK UNDERFLOW\n");

    else
```

```
{    x = s.stack[s.top] ;

    printf("VALUE AT TOP = %d\n",x);

    }}

void display()
{ int i;
  if (s.top == -1)
    printf ("STACK EMPTY\n");
  else
    for ( i =0;i<=s.top;i++)
      { printf("%d\t",s.stack[i] );
        }
}
```

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# QUEUE



**PROGRAM** : To Implement a Queue using an array

```
#include <stdio.h>

#include <conio.h>

# define n 100

struct st
{
    int f,r;
    int queue[n];
};

struct st s;

void add();
void del();
void display();
void main()
{
    char choice;
    int option;
    s.f = -1;
    s.r = -1;
    do
    {
        printf("1. ADD\n");
        printf("2. DELETE\n");
        printf("3. DISPLAY\n");
```

```
        printf("ENTER OPTION\n");
scanf ("%d",&option);
switch (option)
{
case 1 : add();
        break;
case 2 : del();
        break;
case 3 : display();
        break;
default: printf("INVALID OPTION\n");
}
printf("PRESS 'Y' TO CONTINUE\n");
choice = getch();
}
while ( choice == 'Y' || choice == 'y');
}
void add()
{
    int x;
    if (s.r == n-1)
        printf ("QUEUE OVERFLOW\n");
    else
    {
        printf("ENTER VALUE TO BE ADDED\n");
        scanf ("%d",&x);
        s.r++;
    }
}
```

```
        s.queue[s.r] = x;
        if (s.r == 0)
            s.f++;
        printf("VALUE ADDED SUCCESSFULLY\n");
    }
}

void del()
{
    int x;
    if (s.f == -1)
        printf ("QUEUE UNDERFLOW\n");
    else
    {
        x = s.queue[s.f] ;
        printf("VALUE DELETED = %d\n",x);
        if (s.f == s.r)
        {
            s.f = -1;
            s.r = -1;
        }
        else
            s.f++;
    }
}

void display()
{ int i;
    if (s.f == -1)
        printf ("QUEUE EMPTY\n");
    else
```

```
    for ( i =s.f;i<=s.r;i++)
    {
        printf("%d\t",s.queue[i] );
    }
}
```

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