

PROGRAM 3

Write a program to simulate the working of a queue of integers using an array. Provide the following operations: a) Insert b) Delete c) Display. The program should print appropriate messages for queue empty and queue overflow conditions -

```
#include <stdio.h>
#include <stdlib.h>
#define max 3
int front = 0, rear = 0;
int queue[max];

void insert()
{
    if (rear == max)
        printf("Queue is full\n");
    else
        {
            printf("Enter the element to insert: ");
            scanf("%d", &queue[rear]);
            rear++;
        }
    }

void delete ()
{
    if (front == rear)
        printf("Queue is empty\n");
```

```

        else
        {
            printf("The deleted element: %d\n",
queue[front]);
            front++;
        }
    }

void display()
{
    int i;
    if (rear == 0 || front == rear)
        printf("Queue is empty\n");
    else
    {
        printf("The elements of queue are: ");
        for (i = front; i < rear; i++)
            printf("%d\t", queue[i]);
        printf("\n");
    }
}

int main()
{
    int ch;
    while (1)
    {
        printf("\n1. Insert\n2. Delete\n3. Display\n4.
Exit\nEnter your choice: ");

```

```
scanf("%d", &ch);
switch (ch)
{
case 1:
    insert();
    break;

case 2:
    delete ();
    break;

case 3:
    display();
    break;

case 4:
    exit(0);

default:
    printf("\nInvalid Input");
}
}
}
```

Output -

```
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter the element to insert: 12

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter the element to insert: 50

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 2
The deleted element: 12

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 3
The elements of queue are: 50

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 4

...Program finished with exit code 0
Press ENTER to exit console.
```