3. Write a program to simulate the working of queue of integers using an array. Provide the following operations.

a) Insert Rear

b) Delete Front

c) Display the contents of queue

The program should print the appropriate messages for a queue empty and queue full condition.

Sol":- ~~#include~~

```
#include <stdio.h>
#include <stdlib.h>
#define QUE_SIZE 3
void insertrear();
int deletefront();
void displayq();
int item, front=0, rear=-1, q[100];
void main(){
    int choice = 1;
    while (choice != 0) {
        printf("Enter your choice \n");
        printf("1. insert rear \n 2. delete front\n 3. display \n 4. exit \n");
        scanf("%d", &choice);
        switch (choice)
        {
            case 1: printf("Enter the item to be inserted \n");
                    scanf("%d", &item);
                    insertrear();
                    break;
            case 2: item = deletefront();
                    if (item == -1) {
```

```
            printf ("Queue Empty \n");
        }
        else {
            printf ("item deleted is %d \n", item);
        }
        break;
      case 3: display();
        break;
      case 4: choice = 0;
        break;
      default : printf ("Invalid input \n");
        }
    }
}
void insertrear () {
    if (rear == QUE_SIZE-1) {
        printf ("Queue overflow \n");
    }
    else {
        rear = rear + 1;
        q[rear] = item;
    }
}
int deletefront() {
    if (front > rear) {
        front = 0;
        rear = -1;
        return -1;
    }
    return q[front++];
}
```

```
void displayq() {
    int i;
    if (front > rear) {
        printf ("Empty queue \n");
    }
    else {
        Printf ("Contents of queue \n");
        for (i = front; i <= rear ; i++) {
            Printf ("%d \n", q[i] );
        }
    }
}
```