DATA STRUCTURE AND ANALYSIS OF ALGORITHM

KCA 253 : Session 2020-21

EXPERIMENT NO – 7

PROGRAM :

```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
#define MAX 10
#define NILL -1
typedef struct queuetype
{
   int a[MAX];
   int front,rear;
}qu;
void main()
{
   int isfull(qu *);
   int isempty(qu *);
   void equeue(qu *,int);
   int deletequeue(qu *);
   qu q;
   q.front=q.rear=NILL;
   int ch,item;
   while(1)
   {
      printf("\n.....");
      printf("\n1.Insert in Queue.\n2.delete from Queue.\n3.Exit\n");
```

```
printf("enter Your choice:");
scanf("%d",&ch);
switch(ch)
{
   case 1:
   printf("\nEnter element to Insert:");
   scanf("%d",&item);
   if(isfull(&q))
   {
      printf("Queue is full");
   }
   else
   {
      equeue(&q,item);
   }
   printf("Element inserted is %d",item);
   break;
   case 2:
   if(isempty(&q))
   {
      printf("\nQueue is empty");
   }
   else
   {
      item=deletequeue(&q);
      printf("\nDeleted %d",item);
   }
   break;
```

```
            case 3:
            exit(1);
            default:
            printf("\nEntered wrong choice");
        }
    }
}
int isfull(qu *Q)
{
    if(Q->front==0 && Q->rear==MAX-1)
    {
        return 1;
    }
    else
        return 0;
}
int isempty(qu *Q)
{
    if(Q->front==NILL)
        return 1;
    else
        return 0;
}
void equeue(qu *Q,int item)
{
    int i;
    if(Q->front==NILL)
    {
```

```
        Q->front=Q->rear=0;
    }
    else if(Q->rear==MAX-1)
    {
        for(i=Q->front;i<=Q->rear;i++)
        {
            Q->a[i-Q->front]=Q->a[i];
        }
        Q->rear=Q->rear - Q->front;
        Q->front=0;
        Q->rear=Q->rear+1;
    }
    else
    {
        Q->rear=Q->rear+1;
    }
    Q->a[Q->rear]=item;
}
int deletequeue(qu *Q)
{
    int i;
    i=Q->a[Q->front];
    if(Q->front==Q->rear)
        (Q->front=Q->rear)==NILL;
    else
        Q->front=Q->front+1;
    return i;
}
```

OUTPUT :

```
.............................
1.Insert in Queue.
2.delete from Queue.
3.Exit
enter Your choice:1

Enter element to Insert:45
Element inserted is 45
.............................
1.Insert in Queue.
2.delete from Queue.
3.Exit
enter Your choice:1

Enter element to Insert:78
Element inserted is 78
.............................
1.Insert in Queue.
2.delete from Queue.
3.Exit
enter Your choice:1

Enter element to Insert:65
Element inserted is 65
.............................
1.Insert in Queue.
2.delete from Queue.
3.Exit
enter Your choice:2

Deleted 45
.............................
1.Insert in Queue.
2.delete from Queue.
3.Exit
enter Your choice:3

--------------------------------
Process exited after 10.76 seconds with return value 1
Press any key to continue . . .
```