**DS LAB-5**

**WAP to simulate the working of a circular queue of integers using an array.**

**Provide the following operations. a) Insert b) Delete c) Display.**

#include <stdio.h>

#include<stdlib.h>

#define size 5

int Q[size];

int rear=-1;

int front=-1;

int IsFull()

{

if(front==(rear+1)%size)

{

return 0;

}

else

{

return -1;

}

}

int IsEmpty()

{

if(front==-1 && rear==-1)

{

return 0;

}

else

{

return -1;

}

}

void Enqueue(int x)

{

int item;

if(IsFull()==0)

{

printf("Queue Overflow\n");

}

else if(IsEmpty()==0)

{

front=0;

rear=0;

}

else

{

rear=(rear+1)%size;

}

Q[rear]=x;

}

int Dequeue()

{

int x;

if(IsEmpty()==0)

{

printf("Queue underflow\n");

}

else if(front==rear)

{

x=Q[front];

front=-1;

rear=-1;

}

else

{

x=Q[front];

front=(front+1)%size;

}

return x;

}

void Display()

{

int i;

if(IsEmpty()==0)

printf("Queue is Empty\n");

else

{

printf("Queue elements:\n");

for(i=front;i!=rear;i=((i+1)%size))

{

printf("%d\n",Q[i]);

}

printf("%d\n",Q[i]);

}

}

void main()

{

int choice,x,b;

while(1)

{

printf("1.Enqueue,2.Dequeue,3.Display,4.Exit\n");

printf("Enter your choice\n");

scanf("%d",&choice);

switch(choice)

{

case 1:printf("Enter the number to be inserted into the queue\n");

scanf("%d",&x);

Enqueue(x);

break;

case 2:b=Dequeue();

printf("%d was removed from the queue\n",b);

break;

case 3:Display();

break;

case 4:exit(1);

default:printf("Invalid input\n");

}

}

}

**OUTPUT:**



