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Subject Code	**:**	**CE245**	**Subject Name**	**:**	**DATA STRUCTURE AND ALGORITHM**
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Definition:

Use a Circular Linked List to implement a Circular Queue. All elements are to be added by the user through the terminal. The size of the queue may not be more than 20. Write functions for: i) Adding an element ii) Removing an element iii) Searching for an element iv) Printing the list of elements in the Circular Queue.

Solution (code):

```
#include<stdio.h>
#include<conio.h>

struct node{
int data;
struct node * next;
};

struct node * front=0;
struct node * rear=0;

void enqueue(int x){
struct node * newnode;
newnode=(struct node *)malloc(sizeof(struct node));
newnode -> data=x;
newnode -> next=0;

if(rear == 0){
   front=rear=newnode;
```

```
    rear->next=front;
}
else{
    rear -> next=newnode;
    rear=newnode;
    rear -> next=front;
}
}

void dequeue(){
struct node * temp;
temp=front;

if(front==0 && rear==0){
    printf("Queue is empty.");
}
else if(front == rear){
    front=rear=0;
    free(temp);
}
else{
    front = rear -> next;
    rear -> next = front;
    free(temp);
}
}

void display(){
struct node * temp;
temp=front;

if(front==0 && rear==0){
    printf("Queue is empty.");
}
else{
    while(temp->next != front){
        printf(" %d",temp->data);
        temp=temp->next;
    }
    printf(" %d",temp->data);
```

```
}
}

void main(){
   int n,a;
   do{
   printf("\nEnter any operation number.\n1.Enqueqe.\n2.Dequeue.\n3.Displaying the
content.\n");
   scanf("%d",&n);

   switch(n){
      case 1: printf("\nEnter any element you want to enter in circular queue : ");
      scanf("%d",&a);
      enqueue(a);
      break;

      case 2: printf("\nFirst element will be deleted.");
      dequeue();
      break;

      case 3: printf("\nDisplaying the elements of circular queue.");
      display();
      break;

      default: printf("\nEnter valid choice.");
      exit(1);
   }
   }
   while(1);
   getch();
}
```

Input and Output Screen Shot:

```
Displaying the elements of circular queue
Enter any operation number.
1.Enqueqe.
2.Dequeue.
3.Displaying the content.
2
```

```
Enter any operation number.
1.Enqueqe.
2.Dequeue.
3.Displaying the content.
3
```

```
Enter any operation number.
1.Enqueqe.
2.Dequeue.
3.Displaying the content.
1

Enter any element you want to enter in circular queue : 1
```

```
First element will be deleted.
Enter any operation number.
1.Enqueqe.
2.Dequeue.
3.Displaying the content.
```