**PROGRAM 3)**

**Write a C program to simulate the working of Messaging System in which a message is placed in a circular Queue by a Message Sender, a message is removed from the circular queue by a Message Receiver, which can also display the contents of the Queue.**

**Program :**

#include<stdio.h>

#include<stdlib.h>

#include<string.h>

#define SIZE 5

struct queue

{

int front, rear;

char data[SIZE][30];

};

typedef struct queue CQUEUE;

void sender(CQUEUE\* q, char message[])

{

if (q->front == (q->rear + 1) % SIZE)

printf("\nQueue Full");

else

{

q->rear = (q->rear + 1) % SIZE;

strcpy(q->data[q->rear], message);

if (q->front == -1)

q->front = q->front + 1;

}

}

void receiver(CQUEUE\* q)

{

char\* del;

if (q->front == -1)

printf("\nQueue is empty");

else

{

del = q->data[q->front];

printf("\nThe message received is %s", del);

if (q->front == q->rear)

{

q->front = -1;

q->rear = -1;

}

else

q->front = (q->front + 1) % SIZE;

}

}

void display(CQUEUE q)

{

int i;

if (q.front == -1)

printf("\nQueue is empty");

else

{

printf("\nQueue contents are : \n");

for (i = q.front;i != q.rear;i = (i + 1) % SIZE)

printf("%s\n", q.data[i]);

printf("%s\n", q.data[i]);

}

}

int main()

{

int ch;

char message[30];

CQUEUE q;

q.front = -1,q.rear = -1;

while(1)

{

printf("\n1.Send a message");

printf("\n2.Receive a message");

printf("\n3.Display");

printf("\n4.Exit");

printf("\nEnter your choice:");

scanf("%d", &ch);

getchar();

switch (ch)

{

case 1:printf("\nEnter message to be sent:");

gets(message, 30);

sender(&q, message);

break;

case 2:

receiver(&q);

break;

case 3:

display(q);

break;

default:

exit(0);

}

}

return 0;

}

**OUTPUTS :**

OUTPUT 1)

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:1

Enter message to be sent:What is the day today?

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:2

The message received is What is the day today?

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:3

Queue is empty

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:1

Enter message to be sent:My name is Krishna

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:1

Enter message to be sent:Im in RVCE

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:3

Queue contents are :

My name is Krishna

Im in RVCE

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:4

OUTPUT 2)

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:1

Enter message to be sent:Im learning DSA

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:1

Enter message to be sent:I like competitive programming

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:1

Enter message to be sent:I live in banglore

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:1

Enter message to be sent:I study in RV College

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:1

Enter message to be sent:I like newer technologies

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:1

Enter message to be sent:I like to do ML and DL

Queue Full

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:3

Queue contents are :

Im learning DSA

I like competitive programming

I live in banglore

I study in RV College

I like newer technologies

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:4

OUTPUT 3)

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:1

Enter message to be sent:hello everyone!

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:2

The message received is hello everyone!

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:2

Queue is empty

1.Send a message

2.Receive a message

3.Display

4.Exit

Enter your choice:4