

Date :- 14 October 2020, Name : Gurbir Singh , USN: 1BM19CS063

DS Lab Program 3:-

Q. 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.

Soln

Output :-

```
#include < stdio.h >
#include < conio.h >
#include < process.h >
#define QUE_SIZE 3
```

```
int item, front_of_QUE = 0, rear = -1, q[10];
```

```
{ if ( rear == QUE_SIZE - 1 )
```

```
    printf (" Queue Overflow \n " );
```

```
    return ;
```

```
}
```

```
    rear = rear + 1;
```

```
    q[rear] = item;
```

```
}
```

```
int delete_front ()
```

```
{
```

```
if { ( front_of_QUE > rear ) }
```

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```
front of que = 0;
```

```
rear = -1;
```

```
return -1;
```

```
{
```

```
return q[front of que++];
```

```
}
```

```
void display()
```

```
{
```

```
int i;
```

```
if (front of que > rear)
```

```
{
```

```
printf ("queue is empty \n");
```

```
return;
```

```
{
```

```
printf ("contents of queue \n");
```

```
for (i = front of que; i <= rear; i++)
```

```
{
```

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

```
}
```

```
{
```

```
int main()
```

```
{
```

```
int choice;
```

```
for ( ; ; )
```

```
printf ("\n 1: insert rear\n 2: delete front\n 3: display\n 4: exit\n");
```

```
printf ("Enter the choice \n");
```

```
scanf ("%d", &choice);
```

```
switch (choice)
```

```
{
```

```
case 1: printf ("Enter the item to be inserted \n");
```

```
scanf ("%d", &item);
```

```
insert rear();
```

```
break;
```

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```
case 2 : item = deletefront ();
if (item == -1)
    printf ("Queue is empty \n");
```

```
= else
```

```
    printf ("Item deleted = %d \n", item);
break;
```

```
case 3 : display ();
```

```
break;
```

```
{}
```

```
} return 0;
```

Output:-

1: insertrear

2: deletefront

3: display

4: exit

Enter the choice

1

Enter the item to be inserted

11

1: insertrear

2: deletefront

3: display

4: exit

Enter the choice

1.

Enter the item to be inserted

22

Button 1 : insert rear

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2: delete front

3: display

4: exit

Enter the choice

1

Enter the item to be inserted

33

1: insert rear

2: delete front

3: display

4: exit

Enter the choice

1

Enter the item to be inserted

44

Queue Overflow

1: insert rear

2: delete front

3: display

4: exit

Enter the choice

3

Contents of Queue :-

11

22

33

1: insert rear

2: delete front

3: display

4: exit

Enter the choice

2

Item deleted = 11

1: insert rear

2: delete front

3: display

4: exit

Enter the choice

2

Item deleted = 22

1: insert rear

2: delete front

3: display

4: exit

Enter the choice

2

Item deleted = 33.

1: insert rear

2: delete front

3: display

4: exit

Enter the choice

2

Queue is Empty.

1: insert rear

2: delete front

3: display

4: exit

Enter the choice

3

Queue is empty.

main.cpp [linearqueues] - Code::Blocks 17.12

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Management X

Projects Symbols Files

Workspace

linearqueues

Sources main.cpp

main.cpp

```
25 }
26     void displayQ()
27 {
28     int i;
29     if(frontofque>rear)
30     {
31         printf("queue is empty\n");
32         return;
33     }
34     printf("Contents of queue\n");
35     for(i=frontofque;i<=rear;i++)
36     {
37         printf("%d\n",q[i]);
38     }
39 }
40 int main()
41 {
42     int choice;
43     for(;;)
44     {
45         printf("\n1:insertrear\n2:deletefront\n3:display\n4:exit\n");
46         printf("enter the choice\n");
47         scanf("%d",&choice);
48         switch(choice)
49         {
50             case 1:printf("Enter the item to be inserted\n");
51                 scanf("%d",&item);
```

Logs & others

Code::Blocks Search results Ccc Build log Build messages CppCheck/Vera++ CppCheck/Vera++ messages Cscope Debugger DoxyBlocks Fortran info

Nothing to be done (all items are up-to-date).

----- Run: Debug in linearqueues (compiler: GNU GCC Compiler) -----

Checking for existence: C:\linearqueues\bin\Debug\linearqueues.exe

Executing: "C:\Program Files (x86)\CodeBlocks\cb_console_runner.exe" "C:\linearqueues\bin\Debug\linearqueues.exe" (in C:\linearqueues\.)

C:\linearqueues\main.cpp

Type here to search

C/C++ Windows (CR+LF) WINDOWS-1252 Line 5, Col 4, Pos 82 Insert Read/Write default

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Management X main.cpp X

Projects Symbols Files

Workspace

linearqueues

Sources

main.cpp

```
1 #include<stdio.h>
2 #include<conio.h>
3 #include<process.h>
4 #define QUE_SIZE 3
5 int item, frontofque=0,rear=-1,q[10];
6 void insertrear()
7 {
8     if(rear==QUE_SIZE-1)
9     {
10         printf("Queue Overflow\n");
11         return;
12     }
13     rear=rear+1;
14     q[rear]=item;
15 }
16 int deletefront()
17 {
18     if(frontofque>rear)
19     {
20         frontofque=0;
21         rear=-1;
22         return -1;
23     }
24     return q[frontofque++];
25 }
26 void displayQ()
27 {
```

Logs & others

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C:\linearqueues\main.cpp C/C++ Windows (CR+LF) WINDOWS-1252 Line 5, Col 4, Pos 82 Insert Read/Write default
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Management X main.cpp X

Projects Symbols Files

Workspace

linearqueues

Sources

main.cpp

```
1 #include<stdio.h>
2 #include<conio.h>
3 #include<process.h>
4 #define QUE_SIZE 3
5 int item, frontofque=0,rear=-1,q[10];
6 void insertrear()
7 {
8     if(rear==QUE_SIZE-1)
9     {
10        printf("Queue Overflow\n");
11        return;
12    }
13    rear=rear+1;
14    q[rear]=item;
15 }
16 int deletefront()
17 {
18     if(frontofque>rear)
19     {
20        frontofque=0;
21        rear=-1;
22        return -1;
23    }
24    return q[frontofque++];
25 }
26 void displayQ()
27 {
```

C:\linearqueues\bin\Debug\linearqueues.exe

2
Queue is empty
1:insertrear
2:deletefront
3:display
4:exit
enter the choice
3
Queue is empty
1:insertrear
2:deletefront
3:display
4:exit
enter the choice

Logs & others

Code::Blocks Search results Cccc

Nothing to be done (all items are up-to-date).

----- Run: Debug in linearqueues (com

Checking for existence: C:\linearqueues\bin\Debug\linearqueues.exe
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C:\linearqueues\main.cpp

C/C++ Windows (CR+LF) WINDOWS-1252 Line 5, Col 4, Pos 82 Insert Read/Write default

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main.cpp [linearqueues] - Code::Blocks 17.12

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Management X

Projects Symbols Files

Workspace

linearqueues

Sources main.cpp

```
int main()
{
    int choice;
    for(;;)
    {
        printf("\n1:insertrear\n2:deletefront\n3:display\n4:exit\n");
        printf("enter the choice\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 is empty\n");
                      else
                          printf("Item deleted=%d\n", item);
                      break;
            case 3:displayQ();
                      break;
            default:
        }
    }
    return 0;
}
```

Logs & others

Code::Blocks X Search results X Ccc X Build log X Build messages X CppCheck/Vera++ X CppCheck/Vera++ messages X Cscope X Debugger X Doxygen X Fortan info X

Nothing to be done (all items are up-to-date).

----- Run: Debug in linearqueues (compiler: GNU GCC Compiler) -----

Checking for existence: C:\linearqueues\bin\Debug\linearqueues.exe

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C:\linearqueues\main.cpp C/C++ Windows (CR+LF) WINDOWS-1252 Line 5, Col 4, Pos 82 Insert Read/Write default

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Management X main.cpp X

Projects Symbols Files

Workspace

linearqueues

Sources

main.cpp

```
1 #include<stdio.h>
2 #include<conio.h>
3 #include<process.h>
4 #define QUE_SIZE 3
5 int item, frontofque=0,rear=-1,q[10];
6 void insertrear()
7 {
8     if(rear==QUE_SIZE-1)
9     {
10        printf("Queue Overflow\n");
11        return;
12    }
13    rear=rear+1;
14    q[rear]=item;
15 }
16 int deletefront()
17 {
18     if(frontofque>rear)
19     {
20        frontofque=0;
21        rear=-1;
22        return -1;
23    }
24    return q[frontofque++];
25 }
26 void displayQ()
27 {

```

C:\linearqueues\bin\Debug\linearqueues.exe

1:insertrear
2:deletefront
3:display
4:exit
enter the choice
1
Enter the item to be inserted
11

1:insertrear
2:deletefront
3:display
4:exit
enter the choice
1
Enter the item to be inserted
22

1:insertrear
2:deletefront
3:display
4:exit
enter the choice
1
Enter the item to be inserted

Nothing to be done (all items are up-to-date) 33

----- Run: Debug in linearqueues (com1:
1:insertrear
2:deletefront
Checking for existence: C:\linearqueues\bin\Debug\linearqueues.exe
Executing: "C:\Program Files (x86)\CodeBlocks\cb_console_runner.exe" "C:\linearqueues\bin\Debug\linearqueues.exe" (in C:\linearqueues\.)

C:\linearqueues\main.cpp

C/C++ Windows (CR+LF) WINDOWS-1252 Line 5, Col 4, Pos 82 Insert Read/Write default

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Management X main.cpp X

Projects Symbols Files

Workspace

linearqueues

Sources

main.cpp

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1 #include<stdio.h>
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15 }
16 int deletefront()
17 {
18     if(frontofque>rear)
19     {
20         frontofque=0;
21         rear=-1;
22         return -1;
23     }
24     return q[frontofque++];
25 }
26 void displayQ()
27 {
1:insertrear
2:deletefront
3:display
4:exit
enter the choice
2
Item deleted=11
1:insertrear
2:deletefront
3:display
4:exit
enter the choice
2
Item deleted=22
1:insertrear
2:deletefront
3:display
4:exit
enter the choice
2
Item deleted=33
----- Run: Debug in linearqueues (com1:insertrear
Checking for existence: C:\linearqueues\bin\Debug\linearqueues.exe
Executing: "C:\Program Files (x86)\CodeBlocks\cb_console_runner.exe" "C:\linearqueues\bin\Debug\linearqueues.exe" (in C:\linearqueues\.)
```

C:\linearqueues\main.cpp C/C++ Windows (CR+LF) WINDOWS-1252 Line 5, Col 4, Pos 82 Insert Read/Write default

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Management X main.cpp X

Projects Symbols Files

Workspace

linearqueues

Sources

main.cpp

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26 void displayQ()
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1:insertrear
2:deletefront
3:display
4:exit
enter the choice
2
Item deleted=11
1:insertrear
2:deletefront
3:display
4:exit
enter the choice
2
Item deleted=22
1:insertrear
2:deletefront
3:display
4:exit
enter the choice
2
Item deleted=33
----- Run: Debug in linearqueues (com1:insertrear
Checking for existence: C:\linearqueues\bin\Debug\linearqueues.exe
Executing: "C:\Program Files (x86)\CodeBlocks\cb_console_runner.exe" "C:\linearqueues\bin\Debug\linearqueues.exe" (in C:\linearqueues\.)
```

C:\linearqueues\main.cpp C/C++ Windows (CR+LF) WINDOWS-1252 Line 5, Col 4, Pos 82 Insert Read/Write default

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