

3a) WAP to simulate the working of a queue of integers using an array.

Provide the following operations: Insert, Delete, Display

The program should print appropriate messages for queue empty and queue overflow conditions

C:\Users\apurv\Documents\c_programs\p3.cpp - [Executing] - Dev-C++ 5.11

```
1 #include <stdio.h>
2 #include <stdlib.h>
3
4 #define MAX 5
5
6 int queue[MAX];
7 int front = -1, rear = -1;
8
9 void enqueue(int x) {
10     if (rear == MAX - 1) {
11         printf("Queue Overflow\n");
12     } else {
13         if (front == -1) front = 0;
14         queue[++rear] = x;
15         printf("%d inserted\n", x);
16     }
17 }
18
19 void dequeue() {
20     if (front == -1 || front > rear) {
21         printf("Queue Underflow\n");
22     } else {
23         printf("Deleted element: %d\n", queue[front]);
24         front++;
25     }
26 }
27
28 void display() {
29     if (front == -1 || front > rear) {
30         printf("Queue is empty\n");
31     }
32 }
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\apurv\Documents\c_programs\p3.exe
- Output Size: 130.5830078125 KiB
- Compilation Time: 0.69s

Line: 54 Col: 24 Sel: 0 Lines: 71 Length: 1428 Insert Done parsing in 0.031 seconds

C:\Users\apurv\Documents\c_programs\p3.cpp - [Executing] - Dev-C++ 5.11

```
1 #include <stdio.h>
2 #include <stdlib.h>
3
4 #define MAX 5
5
6 int queue[MAX];
7 int front = -1, rear = -1;
8
9 void display() {
10     if (front == -1 || front > rear) {
11         printf("Queue is empty\n");
12     } else {
13         for (int i = front; i <= rear; i++) {
14             printf("%d ", queue[i]);
15         }
16         printf("\n");
17     }
18 }
19
20 int main() {
21     int choice, value;
22
23     while (1) {
24         printf("\n1. Insert\n2. Delete\n3. Display\n4. Exit\nEnter your choice: ");
25         scanf("%d", &choice);
26
27         switch (choice) {
28             case 1:
29                 printf("Enter value to insert: ");
30                 scanf("%d", &value);
31                 enqueue(value);
32                 break;
33
34             case 2:
35                 dequeue();
36                 break;
37
38             case 3:
39                 display();
40                 break;
41
42             case 4:
43                 exit(0);
44             default:
45                 printf("Invalid choice\n");
46         }
47     }
48 }
```

Compilation results...

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- Output Filename: C:\Users\apurv\Documents\c_programs\p3.exe
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TIFF-GCC 4.9.2 64-bit Release

(globals)

Project Classes Debug [M]Untitled1.cpp p2.cpp p1.cpp [T]p3.cpp

```
42     while ( 1 ) {
43         printf ("\\n1. Insert\\n2. Delete\\n3. Display\\n4. Exit\\nEnter your choice: ");
44         scanf ("%d", &choice );
45
46         switch ( choice ) {
47             case 1:
48                 printf ("Enter value to insert: ");
49                 scanf ("%d", &value );
50                 enqueue ( value );
51                 break;
52
53             case 2:
54                 dequeue ();
55                 break;
56
57             case 3:
58                 display ();
59                 break;
56
58             case 4:
59                 exit ( 0 );
60
61             default:
62                 printf ("Invalid choice\\n");
63
64         }
65
66     }
67
68
69     return 0;
70 }
```

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Compilation results...

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- Errors: 0

- Warnings: 0

- Output Filename: C:\Users\apurv\Documents\c_programs\p3.exe

- Output Size: 130.5830079125 KiB

- Compilation Time: 0.69s

Line 54 Col: 24 Sel: 0 Lines: 71 Length: 1428 Insert Done parsing in 0.031 seconds

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C:\Users\apurv\Documents\c_programs\p3.exe

```
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter value to insert: 46
46 inserted

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter value to insert: 78
78 inserted

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter value to insert: 23
23 inserted

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 2
Deleted element: 46

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 3
78 23

1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 
```

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