Practical No 8

- Program 1 : Implementation of QUEUE. To perform any Queue operations.

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//Name : Rakesh Mahadev Bandi
//Roll No : 3
//Class : SYCSE
//PRN No : 2024065738

#include <stdio.h>
#include <stdlib.h>

#define MAX 5

int queue[MAX];
int front = -1;
int rear = -1;

int isFull() {
    if (rear == MAX - 1) {
        return 1;
    }
    return 0;
}


int isEmpty() {
    if (front == -1 || front > rear) {
        return 1;
    }
    return 0;
}


void enqueue(int value) {
    if (isFull()) {
        printf("Queue Overflow! Cannot enqueue %d.\n", value);
    } else {
        if (front == -1) {
            front = 0;
```

```
        }
        rear = rear + 1;
        queue[rear] = value;
        printf("%d enqueued to the queue.\n", value);
    }
}

int dequeue() {
    if (isEmpty()) {
        printf("Queue Underflow! Cannot dequeue.\n");
        return -1;
    } else {
        int value = queue[front];
        front = front + 1;
        if (front > rear) {
            front = rear = -1;
        }
        return value;
    }
}


void display() {
    if (isEmpty()) {
        printf("Queue is empty.\n");
    } else {
        printf("Queue elements: ");
        int i;
        for (i = front; i <= rear; i++) {
            printf("%d ", queue[i]);
        }
        printf("\n");
    }
}

int main() {
    int choice, value;

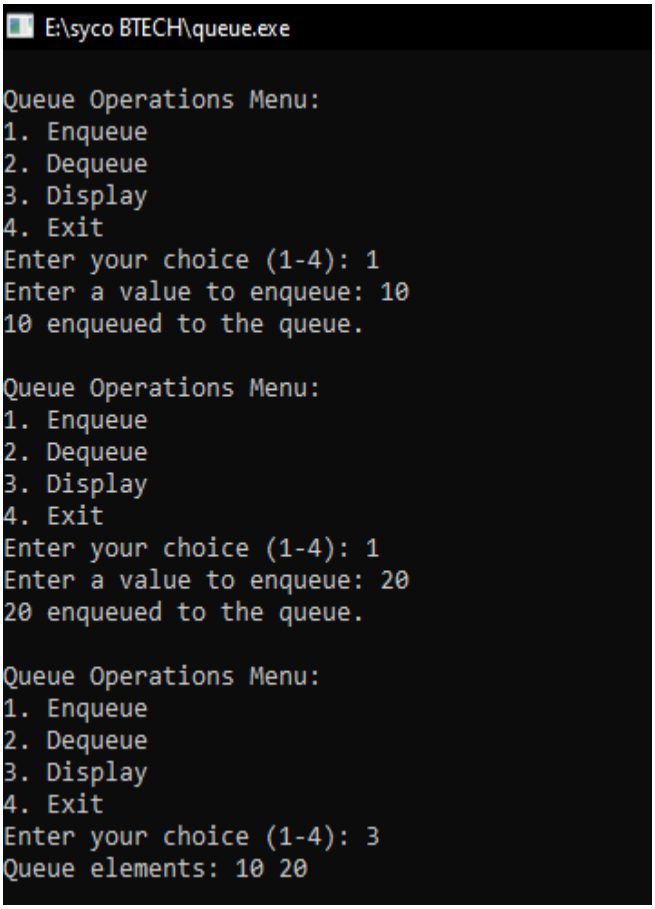
    while (1) {
        printf("\nQueue Operations Menu:\n");
```

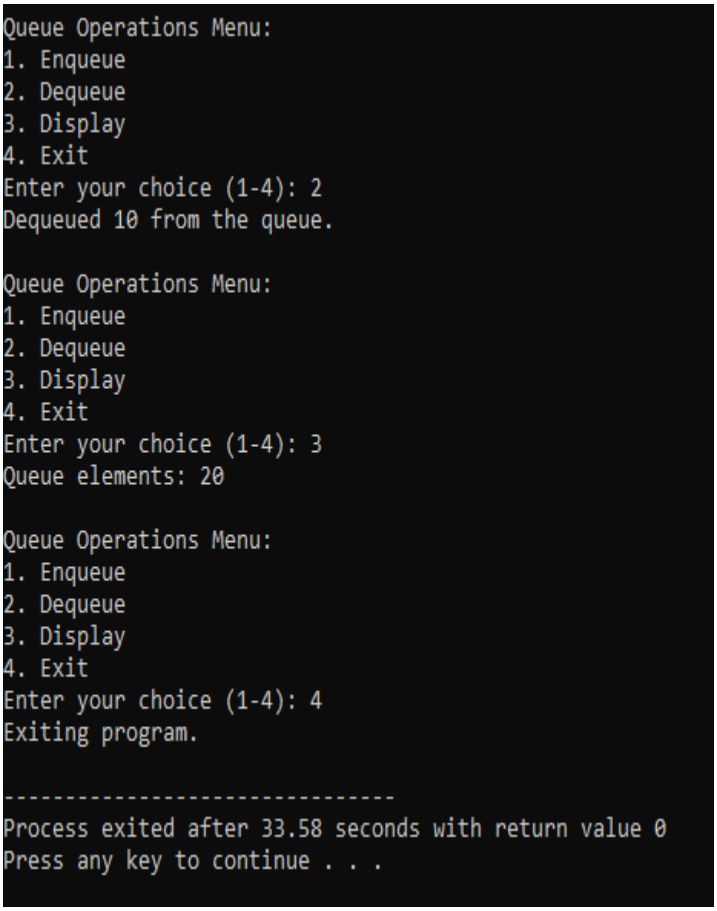
```
        printf("1. Enqueue\n");
        printf("2. Dequeue\n");
        printf("3. Display\n");
        printf("4. Exit\n");
        printf("Enter your choice (1-4): ");
        scanf("%d", &choice);

        switch (choice) {
            case 1:
                printf("Enter a value to enqueue: ");
                scanf("%d", &value);
                enqueue(value);
                break;
            case 2:
                value = dequeue();
                if (value != -1) {
                    printf("Dequeued %d from the queue.\n", value);
                }
                break;
            case 3:
                display();
                break;
            case 4:
                printf("Exiting program.\n");
                exit(0);
            default:
                printf("Invalid choice! Please select a valid option (1-4).\n");
        }
    }

    return 0;
}
```

Output:


E:\syco BTECH\queue.exe
Queue Operations Menu:
1. Enqueue
2. Dequeue
3. Display
4. Exit
Enter your choice (1-4): 1
Enter a value to enqueue: 10
10 enqueued to the queue.
Queue Operations Menu:
1. Enqueue
2. Dequeue
3. Display
4. Exit
Enter your choice (1-4): 1
Enter a value to enqueue: 20
20 enqueued to the queue.
Queue Operations Menu:
1. Enqueue
2. Dequeue
3. Display
4. Exit
Enter your choice (1-4): 3
Queue elements: 10 20


Queue Operations Menu:
1. Enqueue
2. Dequeue
3. Display
4. Exit
Enter your choice (1-4): 2
Dequeued 10 from the queue.
Queue Operations Menu:
1. Enqueue
2. Dequeue
3. Display
4. Exit
Enter your choice (1-4): 3
Queue elements: 20
Queue Operations Menu:
1. Enqueue
2. Dequeue
3. Display
4. Exit
Enter your choice (1-4): 4
Exiting program.

Process exited after 33.58 seconds with return value 0
Press any key to continue . . .