

S.No: 1	Exp. Name: <i>Project Module</i>	Date: 2024-06-15
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Aim:

Project Module

Source Code:

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hello.c
```

```

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

#define MAX 100

typedef struct {
    int front, rear;
    char data[MAX][50];
} Queue;

void initQueue(Queue *q) {
    q->front = -1;
    q->rear = -1;
}

int isFull(Queue *q) {
    return q->rear == MAX - 1;
}

int isEmpty(Queue *q) {
    return q->front == -1 || q->front > q->rear;
}

void enqueue(Queue *q, char *item) {
    if (isFull(q)) {
        printf("Queue is full. Cannot enqueue customer.\n");
        return;
    }
    if (isEmpty(q)) {
        q->front = 0;
    }
    strcpy(q->data[++q->rear], item);
    printf("Enqueued %s\n", item);
}

void dequeue(Queue *q) {
    if (isEmpty(q)) {
        printf("Queue is empty. Cannot dequeue customer.\n");
        return;
    }
    printf("Dequeued %s\n", q->data[q->front++]);
    if (q->front > q->rear) {
        initQueue(q); // Reset queue when empty
    }
}

```

```

void displayQueue(Queue *q) {
    if (isEmpty(q)) {
        printf("Queue is empty.\n");
        return;
    }
    printf("Queue: ");
    for (int i = q->front; i <= q->rear; i++) {
        printf("%s ", q->data[i]);
    }
    printf("\n");
}

int main() {
    Queue q;
    initQueue(&q);
    int choice;
    char customerID[50];

    while (1) {
        printf("Service Station Menu:\n");
        printf("1. Enqueue Customer\n");
        printf("2. Dequeue Customer\n");
        printf("3. Display Queue\n");
        printf("4. Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);

        switch (choice) {
            case 1:
                printf("Enter customer ID to enqueue: ");
                scanf("%s", customerID);
                enqueue(&q, customerID);
                break;
            case 2:
                dequeue(&q);
                break;
            case 3:
                displayQueue(&q);
                break;
            case 4:
                printf("Exiting program.\n");
                exit(0);
            default:
                printf("Invalid choice. Please try again.\n");
        }
    }
}

```

```
    }  
    return 0;  
}
```

Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Hello World