Problems on Queue

1. What Is a Queue? Explain Its Features.
2. What Are the Types of Queues?
3. What Are Common Applications of Queues?
4. Write a C program to implement a queue using an array. Programs should contain functions for inserting elements into the queue, displaying queue elements, and checking whether the queue is empty or not.

Expected Output:
Initialize a queue!
Check the queue is empty or not? Yes
Insert some elements into the queue:
Queue elements are: 1 2 3
Insert another element into the queue:
Queue elements are: 1 2 3 4
Check the queue is empty or not? No

5. Write a C program to implement a queue using an array. Create a function that removes an element from the queue.

Expected Output:
Initialize a queue!
Insert some elements into the queue:
Queue elements are: 1 2 3
Delete an element from the said queue:
Queue elements are: 2 3
Insert another element into the queue:
Queue elements are: 2 3 4

6. Write a C program to implement a queue using a linked list. Programs should contain functions for inserting elements into the queue, displaying queue elements, and checking whether the queue is empty or not.

Expected Output:
Initialize a queue!
Check the queue is empty or not? Yes
Insert some elements into the queue:
1 2 3
Insert another element into the queue:
1 2 3 4
Check the queue is empty or not? No

7. Write a C program to count the number of elements in a queue.

Expected Output:
Initialize a queue!

Check the queue is empty or not? Yes
Number of elements in queue: 0
Insert some elements into the queue:
Queue elements are: 1 2 3
Number of elements in queue: 3
Delete two elements from the said queue:
Queue elements are: 3
Number of elements in queue: 1
Insert another element into the queue:
Queue elements are: 3 4
Number of elements in the queue: 2

8. Write a C program to reverse the elements of a queue.
Expected Output:
Queue elements are:
1 2 3 4 5
Reverse Queue, elements are:
5 4 3 2 1
Add two elements to the said queue:
Queue elements are:
5 4 3 2 1 100 200
Reverse Queue, elements are:
200 100 1 2 3 4 5

9. Write a C program to calculate the sum of the elements in a queue.
Expected Output:
Queue elements are: 1 2 3 4 5
Sum of the elements in the queue is: 15
Remove 2 elements from the said queue:
Queue elements are: 3 4 5
Sum of the elements in the queue is: 12
Insert 3 more elements:
Queue elements are: 3 4 5 300 400 500
Sum of the elements in the queue is: 1212