

DATA STRUCTURES & ALGORITHMS

#08

queue

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| Student Name: |
| Roll Number: Section: |
| Work submitted on: |

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| **Maximum Marks** | **Performance** | **Viva** | **Total** |
| **Marks Obtained** |  |  |  |
| **Remarks (if any)** |  | | |
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| **Experiment evaluated by** | | | |
| Instructor Name: | | | |
| Signature: | | | |

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| Queue Related Tasks |

**Task1**: Given a queue of integers, write a function to find the sum of all elements.

Example:

Input: Queue: 2 -> 4 -> 6 -> 8 -> None

Output: 20

**Task2**: Write a function to reverse the first K elements of a queue.

Example:

Input: Queue: 1 -> 2 -> 3 -> 4 -> 5 -> None, K = 3

Output: 3 -> 2 -> 1 -> 4 -> 5 -> None

**Task3**: Write a function to find the average of the first N elements in a queue.

Example:

Input: Queue: 5 -> 10 -> 15 -> 20 -> 25 -> None, N = 4

Output: 12.5

**Task4**: Implement a circular queue using an array and write functions to enqueue and dequeue elements.

Example:

Input:

Enqueue 7

Enqueue 3

Dequeue

Enqueue 9

Output: 3 -> 9

**Task5**: Write a function to check if a queue is a palindrome (the elements are the same when read forward and backward).

Example:

Input: Queue: 3 -> 5 -> 4 -> 5 -> 3 -> None

Output: True