# Week 1 - Hands On Exercise - Review Questions

ASD103A-21: Object-Oriented Data Structures using Python, Part1

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**Customers waiting in a checkout line: Yes, this is a queue. Customers join at the end and are served in a first-come, first-served order.**

**A deck of playing cards: No, this is not a queue. A deck of playing cards doesn't inherently follow a first-in, first-out order; cards can be drawn from anywhere in the deck.**

**A file directory system: No, this is not a queue. File directories typically don't follow a strict order based on when files were added or accessed.**

**A line of cars at a tollbooth: Yes, this is a queue. Cars wait in line and are processed in the order they arrived at the tollbooth.**

**Laundry in a hamper: No, this is not a queue. There's no inherent order or sequence in which laundry is added or removed from the hamper.**

**A group of friends having a picnic: No, this is not a queue. There's no sequential order in how friends join or leave the picnic.**

**A set of books on a bookshelf: No, this is not a queue. The arrangement of books on a bookshelf is not necessarily based on the order they were added.**

**A crowd of people watching a parade: No, this is not a queue. The position of people in the crowd doesn't follow a specific order.**

**A stack of papers on a desk: No, this is not a queue. Stacks follow a last-in, first-out (LIFO) order, which is different from the FIFO order of a queue.**

**A pack of wolves hunting in a forest: No, this is not a queue. The movement of wolves in a pack doesn't adhere to a strict first-in, first-out order.**

**A cluster of stars in a galaxy: No, this is not a queue. The arrangement of stars in a galaxy is not based on a specific order or sequence.**

**A collection of flowers in a garden: No, this is not a queue. The arrangement of flowers in a garden doesn't follow a particular order.**

**Question 2: Describe the operations used to modify a queue.**

**The fundamental operations to modify a queue are:**

**Enqueue (or Push): Adds an item to the rear or end of the queue.**

**Dequeue (or Pop): Removes and returns the item from the front or beginning of the queue.**

**Front (or Peek): Returns the item at the front of the queue without removing it.**

**IsEmpty: Checks if the queue is empty.**

**Size: Returns the number of elements in the queue.**

**Question 3: The front of a queue containing the items a, b, c is on the left. After two pop operations, explain the items in the queue. Add a code snippet to support your solution.**

**After two pop operations, the items in the queue will be:**

Queue: [c]

from collections import deque

# Creating a queue

queue = deque(['a', 'b', 'c'])

# Performing two pop operations

queue.popleft()

queue.popleft()

# Displaying the items in the queue

print("Queue:", list(queue))

**Question 4: The front of a queue containing the items a, b, c is on the left. After the operation add(d), explain the items in the queue. Add a code snippet to support your solution.**

**After the operation add(d), the items in the queue will be:**

Queue: [a, b, c, d]

from collections import deque

# Creating a queue

queue = deque(['a', 'b', 'c'])

# Adding 'd' to the rear of the queue

queue.append('d')

# Displaying the items in the queue

print("Queue:", list(queue))