ASSIGNMENT3: PROJECT 70

STACK AND QUEUE REFLECTION

I. STACK REFLECTION

Why does a stack model recent activity well?

LIFO property: A stack always exposes the most recently added item. That mirrors "recent activity" because the last action is the one you typically want to undo or revisit.

Real-world examples: browser back-history, undo/redo in editors, call stacks in programming, each operation pushes a new state and undo pops it.

Temporal locality: Recent items are often the ones accessed again soon; stack captures this by keeping the latest items readily available.

Simplicity: stacks are simple, fast (O (1) push/pop), and predictable for operations tied to recent events.

II. QUEUE REFLECTION

Why does FIFO matter in service businesses?

Fairness and expectations: Customers expect “first-come, first-served.” FIFO aligns service order with arrival time and reduces complaints and perceived unfairness.

Predictable waiting times: FIFO makes it easier to estimate how long a customer will wait based on the queue length and average service time. That predictability reduces anxiety and abandonment.

Operational efficiency: FIFO smooths the flow of work staff can batch or pipeline tasks knowing older requests are prioritized, which helps balance load among stations.

Reduced conflicts and churn: When service is transparent and consistent, customers are less likely to leave or dispute. That reduces friction for staff and improves reputation.

Simplicity & auditability: FIFO is simple to implement and explain; exceptions (priority customers, emergencies) are explicit rules rather than hidden behaviors.

- **Legal/regulatory / fairness constraints:** In some contexts (e.g., ticket sales, permit queues), FIFO may be required or expected to avoid discrimination claims.